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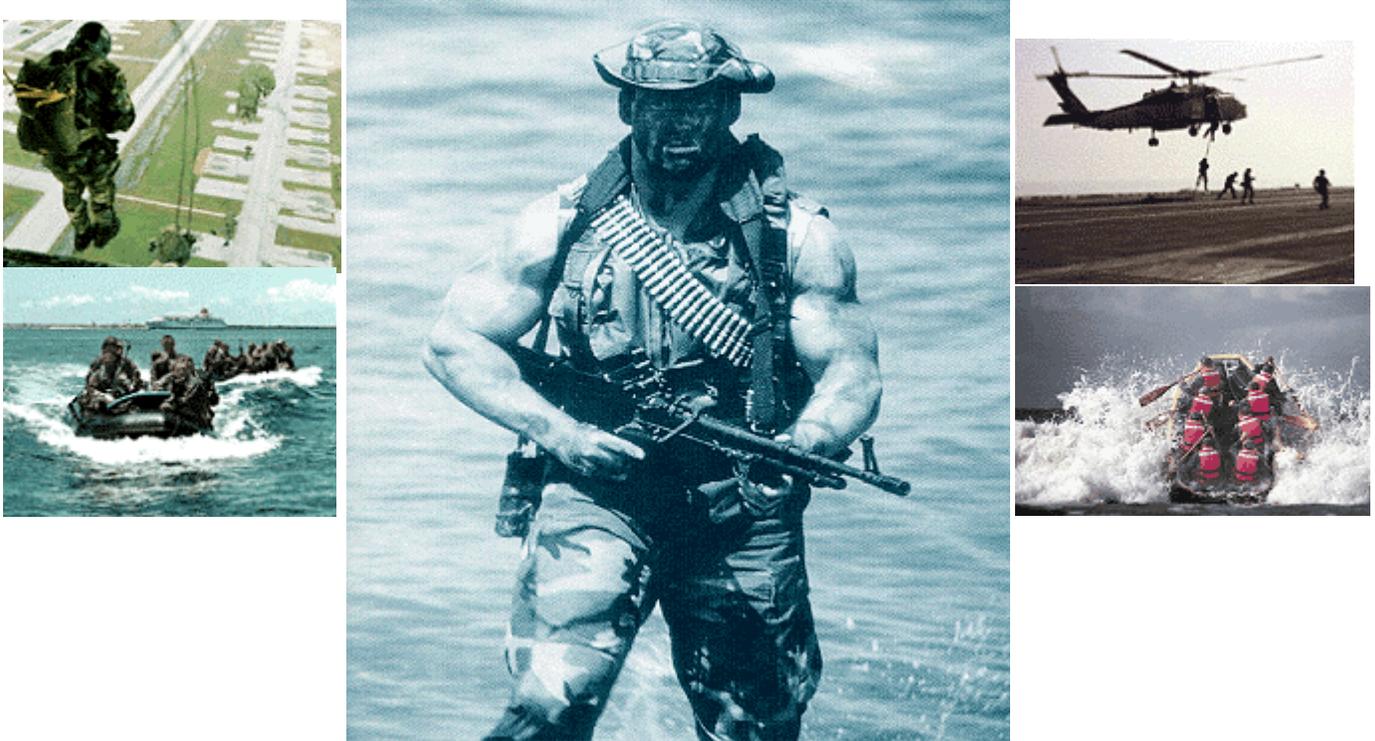
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Consideration of Nutritional Ergogenic Aids for Athletic Performance

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Athletes are continuously searching for the latest nutritional information in hopes of improving their performance and gaining a competitive edge. During the course of their search they may turn to dietitians who can advise them well on ways to enhance performance nutrition. For the vast majority of active duty members, consuming a well balanced diet is sufficient to achieve or maintain a desired level of athletic performance. Assessing the clients needs and recommending appropriately tailored nutrition strategies to achieve positive energy, nutrient, nitrogen, and fluid balance is essential. Inevitably however, during the counseling session, an athlete will turn the topic of discussion toward ergogenic aids, and inquire about how these supplements may play a role in helping them achieve their ultimate goals. Many clients admittedly sacrifice sound nutritional practices for the appeal of flashy supplements that seduce them with the lure of powerful marketing that promises success in a bottle. In response, dietitians may hurriedly attempt to counter this marketing ploy by proclaiming that all supplements are worthless. If the conversation about ergogenic aids ends without further discussion then the client may be lost, along with the opportunity to capitalize on a teachable moment. Dietitians must take the same approach concerning nutritional ergogenic aids as they do with all evidence based counseling they provide and apply a critical eye on what the research says may be beneficial. Unfortunately it is often a blurry line, where one potentially beneficial nutritional supplement may resemble several that are harmful. We may ask, “why bother at all, all our clients need to do is eat right.” If our audience is programmed to hear us automatically dismiss all supplements as useless then they may not consider approaching us in the future. In turn, they may seek a less reputable source, which at worst may harm them and at best may perpetuate the misinformation that brought them to us in the first place. We must educate the client on the difference between marketing hype and sound scientific recommendations. But in order to gain their confidence we must be able to acknowledge what the research says works so they will listen to us when we tell them what doesn't.



The goal of this article is to divide several nutritional ergogenic aids into categories of effectiveness based on previous reviews and research findings. Then list what dietitians may want to consider when asked about their effectiveness. The information provided comes from both primary and secondary referenced sources so that further reading can be conducted. One helpful web site is www.sportsci.org that provides candid discussion by reputable researchers who debate supplement use and effectiveness.

The ultimate goal of our military members is to accomplish the mission. It is our job to keep them healthy so they can. In so doing we must educate them on supplement use, but may find that success is achieved in varying degrees. For some it may be getting clients to avoid use altogether. For others it may be a victory in getting them not to exceed the recommended dose. Still others may respond to economic reasons. After all, why spend \$2.00 for a packet of protein powder when you can achieve a comparable amino acid profile in milk or eggs for a fraction of the cost. Finally, the volume of rapidly emerging nutritional supplements is endless. As one supplement falls out of vogue several appear in its place. It may even be beneficial to peruse the bodybuilding or lay magazines that clients read in anticipation of the changing fashion of supplementation questions. If we arm our clients with useful critical thinking skills they can apply these tools when evaluating any supplement, no matter how rapidly they appear.

Definition and Classification of Ergogenic Aids

Ergogenic Aid: A technique or practice that can improve exercise performance capacity and or enhance training adaptations. Dr. Mel Williams describes in *The Ergogenic Edge* how he classified sports ergogenics into 5 categories, aside from training methods. He originally listed in *Beyond Training: How Athletes Enhance Performance Legally and Illegally* a description of these categories. They are provided with a brief explanation of how they are intended to effect performance.

I. Types of Ergogenic Aids:

- **Training methods:** Techniques intended to improve performance of a specific event. e.g. runners may conduct interval training, Fartlek runs, or continuous exercise that improves cardiorespiratory and muscular endurance or power.
- **Physiological:** Substances intended to alter the body's physiology. e.g. sodium bicarbonate loading that buffers the acidity in lactate energy systems which can limit performance capacity.
- **Mechanical:** Found in many sports especially those involving speed. e.g. clothing and equipment such as aerodynamic handlebars, body suits, and low wind resistant helmets.
- **Pharmacological:** Designed to act in a way similar to hormones. e.g. steroids, amphetamines etc.
- **Psychological:** Skill practiced to either calm, focus or arouse as required by particular sport. e.g. mental imagery, mental focus, mental relaxation.
- **Nutritional:** e.g. substances found in food or dietary supplements that are thought to improve athletic performance. This will be the main focus of this article.

II. Burden of Proof. When helping clients evaluate ergogenic aids consider the following criterion.

- Does science support the claim?
- Is there any scientific evidence that the rationale may affect exercise?
- Is there any well-controlled (placebo, double blind, randomized) data supporting the ergogenic value in athletes?
- Has the study been replicated?
- Was the research conducted in animals or humans?
- Is it safe and legal?
- Are the findings necessarily applicable to a military setting?



The benefit of a sound diet has been proven. The evidence supporting consumption of ergogenic substances is ambiguous, and not uniformly applicable to all athletes, not to mention expensive. Furthermore, what works for one athlete may be ineffective or harmful to another. The following section will place ergogenic substances into one of five categories. Careful evaluation of the literature pertaining to the ingredients and evaluation of the athlete's health, diet, nutrition needs, current supplement and drug use, and energy requirements is necessary when making recommendations.

There are two comprehensive resources published in 2001 that are useful to review. The first is *Power Eating: build muscle, boost energy and cut fat*, 2nd edition, by Dr. Susan Kleiner. This book categorizes herbs, vitamin supplements and ergogenic aids, as they relate to performance usefulness in body builders, as described by a dietitian who has conducted extensive research in this area. She discusses the importance of eating well first before supplementing and makes healthy eating sound exciting. The second resource is by Dr. Brian Leutholz and Dr. Richard Kreider entitled *Optimizing Nutrition for Exercise and Sport in Nutrition Health: Strategies for Disease Prevention*. Another comprehensive review of supplements that provided guidance for this article.

III. Categories of nutritional ergogenic aids as they relate to athletic performance.

- Effective Ergogenic Aids that Appear to be Safe
- Potentially Effective Based on Preliminary Research
- Too Early to Determine Effectiveness
- Limited to No Value and Not Worth the Money
- Potentially Dangerous, Harmful, or Illegal and Have No Military Application

1. Effective Ergogenic Aids that are Appear to be Safe

Ergogenic Aid	Proposed Ergogenic Value or Scientific Rationale	What dietitians may want to consider
Water	Dehydration causes performance decrements. They can occur with minimal water loss. Goal should be to prevent greater than 2% dehydration. Significant impairment in performance occurs as water loss continues past 4%.	Often not thought of as an ergogenic aid, preventing dehydration is paramount to effective performance. Plan ahead to prevent 2% dehydration: Measure body weight. Exercise 30 minutes in competition climate with no fluid intake. Measure post exercise weight. Subtract post-wt from pre-wt, multiply X 2 to determine fluid loss per hour. Ingest 1 liter per 2.2 lbs. lost. Example: Pre-wt 180.0 lbs. – Post-wt 178.0 lbs. = 2 x 2 = 4 lbs. water loss per hour/2.2 = 1.8 liters per hour that must be consumed. (3,16)
Carbohydrate	Primary fuel source for anaerobic and high intensity aerobic workouts. Limiting agent in endurance events using oxidative metabolism as an energy system.	Consume diet with 55-65% CHO. Carbo-loading is beneficial for endurance events lasting greater than 90 minutes. Generally requires taper in training 3-5 days prior to event and increasing carbohydrate by 200-400 grams/day to “supersaturate” muscle and liver glycogen to extend endurance. Must also be consumed during and after competition for optimal endurance capacity and recovery. Body builders often need to be reminded that this is their primary fuel source for lifting, not protein. (3,16)
Glucose Electrolyte Solution (GES)	Consumption of sports drinks (GES) during exercise proposed to improve time to exhaustion by maintaining blood glucose levels.	GES with 6-8% concentration are beneficial for maintaining hydration in exercise bouts > 60 min. They preserve glucose levels in endurance events lasting 3-4 hours at 70% VO2 max. In hot/humid environments drink 6-8 oz every 10-15 min alternating water and GES to prevent 2% dehydration using the above formula. GES containing sodium increases water absorption by 30%. (3,16) Over consumption adds unneeded

Ergogenic Aid	Proposed Ergogenic Value or Scientific Rationale	What dietitians may want to consider
		calories in non exercising or recreational athletes.



Creatine	During periods of intense maximal effort lasting less than 30 seconds ATP is used for fuel. The ability to maintain ATP stores is determined by muscle levels of phosphocreatine. Increasing muscle reservoirs of PC helps to donate needed inorganic phosphate to maintain levels of ATP and extend performance in repetitive bouts.	By far the most studied ergogenic aid. Nearly three hundred studies testing effectiveness have been conducted with nearly 65% showing statistically significant improvements in performance. Many non-statistically significant results still showing 1-10% improvement as reported by Dr. R. Kreider at the 6 th International Symposium on Guanidino (Creatine) Compounds. Creatine loading (20 g/d x 5 days) has been shown to improve performance in high intensity, repetitive exercises e.g. single sprints, repetitive sprints, one-rep weight-lifting max, vertical jump, and when repetitive contraction of muscle is required. 5 g/day following initial preload phase has shown improvements in muscle mass and strength. Long term studies of one year show safety. Anecdotal links to cramping and kidney damage have been refuted by research. More recent research using deuterium labeled water indicates gains in weight associated with muscle accretion and not body water. Mixing in a carbohydrate drink aids in absorption. Generally not effective in endurance activities. (6,36,38,45,60)
Bicarbonate Loading	Sodium bicarbonate (baking soda) may blunt exercise induced acidity during intense activities delaying fatigue in events lasting 1-3 minutes using lactate energy system.	Research showing effectiveness does so at a dose of 300 mg/kg of body weight taken 1-2 hours before exercise. Shown to delay fatigue by buffering the acid byproduct of anaerobic glycolysis found in short intense or repetitive running. One meta analytic review showed a 27% improvement in performance by delaying time to exhaustion. Several others studies in the analysis showed no improvement. GI distress, bloating, nausea, stomach cramps have been reported. Beneficial for elite athletes only. Excess intake can cause metabolic alkalosis (too little acid). Contraindicated in individuals with high blood pressure. (32,42,43,44)
Phosphate Loading	Sodium phosphate has been studied for its ability to delay fatigue during various durations of exercise. Associated primarily with an increase in oxygen transport to muscles when using aerobic oxidative metabolism as the primary energy system. Associated with increased cardiac output as a result of increased stroke volume.	Research has shown some effective results with doses of 4g/d for 3-6 days prior to an endurance event. Increase in maximum oxygen uptake by 5-10% seen in some endurance athletes. Phosphates also buffer acid byproducts of metabolism delaying fatigue. May upset stomach or soften stool. Contraindicated in individuals who over consume soft drinks due to high phosphate content. Exceeding recommended dose could cause vomiting and mineral imbalance. Recommended for elite athletes only. Not for recreational fitness. (32,48,62)
Caffeine	A central nervous system stimulant purported to release free fatty acids, spare muscle glycogen and extend endurance.	Shown to spare glycogen and utilize fat in endurance events such as running. Benefits reported when 6-13 mg/kg taken 30 m-1 hr prior to

Ergogenic Aid	Proposed Ergogenic Value or Scientific Rationale	What dietitians may want to consider
	May release epinephrine and improve cardiovascular function.	endurance event. 4.4 mg/kg shown to produce ergogenic effect. 81 kg man x 4.4 mg/kg = 356mg/~80mg per cup of coffee =4.5 cups. Sensitivity to caffeine varies among individuals however. Beneficial effects blunted by habitual users, but 1-2 weeks abstinence prior to event may reinstate ergogenic affect. Irritability, nervousness, increased urination, dehydration, upset stomach are side effects. Tolerance dictates. Usefulness in military operations is being studied. (13,48)

2. Potentially Effective (strong theoretical value but more research is needed)

Ergogenic Aid	Proposed Ergogenic Value or Scientific Rationale	What dietitians may want to consider
Branched-Chain Amino Acids	Exercise induced muscle oxidation of BCAA occurs while fat oxidation increases in the blood releasing tryptophan from its albumin carrier. The ratio of free tryptophan to BCAA increases allowing entry of free tryptophan into the brain. This converts to serotonin linked to “central fatigue” decreasing performance capacity.	Isoleucine, leucine and valine have been combined with CHO, glutamine, and essential amino acids in an attempt to increase blood levels and prevent increases in free tryptophan to minimize central fatigue. Research is equivocal. 200-800 mg of BCAA has been utilized. BCAA /glutamine (2-4g/hr) in CHO drink may help reduce exercise induced catabolism and promote recovery during intense training. Though consumption of BCAA’s with CHO has shown improved plasma levels, they don’t necessarily equate to performance improvements. GI disturbances have been reported as well as elevation in ammonia levels.(8,14,15,37)
Calcium HMB (B-hydroxy B-methylbutyrate)	A metabolite of leucine, reported to build muscle. Also associated with inhibiting the breakdown of lean tissue during sustained endurance events. Proposed to inhibit the decrease in muscle strength found in a person who has over trained.	Initial research reported a dose-related response that increased fat free mass and strength in untrained subjects initiating training by ingesting 1.5 to 3 g/d. Subsequent studies supplementing trained athletes found no improvement even with longer duration intake. Benefits associated with initial strength training response in untrained and elderly. Benefits do not appear to result when consumed by trained athletes. (24,51)
Glutamine	Related to immune function. Exercise potentiates a drop in glutamine level resulting in reduced lymphocyte function. Post exercise muscle levels drop and may not be adequately replenished with repeated bouts of intense training increasing incidence of fatigue.	Thought to promote muscle growth and prevent immunosuppression associated with exercise. Low dose supplementation does not appear to prevent exercise-induced drop in glutamine level. 4 -12g dosage may increase glutamine levels but evidence linking this with improved training adaptations is lacking. (5,62)
Glycerol	Reported to promote fluid retention by increasing plasma osmolality decreasing urine formation and creating a state of “hyper-hydration.”	Glycerol consumption of 1 g/kg taken with 25-ml water/kg/lean body mass may be beneficial in attenuating dehydration in susceptible individuals during sustained exercise. Helps to maintain hydration while training in hot climates, any further benefits are not known. (48,49)
Post Exercise Carbohydrate/ Protein	Timing the consumption of CHO/PRO following an exercise bout is thought to increase the insulin response further enhancing glycogen re-synthesis and protein uptake. Beneficial for strength training or endurance athletes improving anabolism and recovery after exercise.	1.5 g/kg of CHO with .5 g/kg of PRO following exercise may promote anabolism through improved protein synthesis accompanied by efficient glycogen resynthesis. CHO/PRO combo taken immediately after exercise appears to improve glycogen resynthesis better than no food, CHO alone, or PRO alone. (35,53,55)

3. Too Early to Tell (Good theoretical rationale but insufficient research to support use)



Ergogenic Aid	Proposed Ergogenic Value or Scientific Rationale	What dietitians may want to consider
Antioxidants	<p>Vit E: Supplementation proposed to prevent the formation of exercise induced free radicals and preventing the destruction of red blood cells thereby increasing oxygen delivery to the muscle.</p> <p>Vit C: Studied for its antioxidant qualities in athletes has been proposed to improve metabolism during exercise and enhance immunity.</p> <p>Vit A: Investigated for its possible role in preventing exercise induced lipid peroxidation.</p>	<p>Vit E: No ergogenic value reported with 400 IU at sea level. High altitude exercise may benefit from supplementation by minimizing markers of muscle damage. (54,64)</p> <p>Vit C: Supplementation does not appear to enhance exercise metabolism when athletes maintain an isocaloric intake. Some evidence that 500 mg of Vit C post-intense exercise may decrease upper respiratory tract infections.(25,64,68)</p> <p>Vit A: Studies looking at improved sport vision did not find benefit. Benefits may exist with regard to protection from exercise induced lipid peroxidation. (64,68)</p>
Arginine, Ornithine, Lysine	<p>These amino acids purported to stimulate growth hormone and preserve or enhance lean body mass while sleeping. Further suggested that consumption during training may increase muscle mass and strength.</p>	<p>Various studies testing doses of these amino acids either separately or in combination ranging from 2-25g/d found no enhancement of growth hormone. Any studies showing improvements in growth hormone did not equate to gains in muscle size or an ergogenic effect. Caution should be raised with consumption because physiological imbalances can occur.(41,61,68)</p>
Chitosan	<p>Promoted as a dietary fat blocker rather than an ergogenic aid it has been sought for its potential to affect body composition. By blocking fat it is also suspected of lowering cholesterol levels.</p>	<p>Preliminary studies showed promise but were conducted in animals. Recent studies involving humans show varied results. Some evidence linked to lowering cholesterol but several studies showing no effect on fecal fat, cholesterol levels or body composition. Tendency may be to eat more calories when on it. Studies need to be conducted while following a calorie controlled diet to assess weight loss effectiveness.(31,46)</p>
Colostrum	<p>Bovine colostrum studied for its potential as a high quality protein source that may speed uptake and assist strength training athletes in maximizing muscle gains.</p>	<p>In one study 20-grams/d powder taken in aerobically and heavy resistance trained individuals showed an increase of 1.49 kg all from bone free lean body mass as measured by DEXA vs. a 2.11 gain in total body weight in the whey protein control group in 8 wks of supplementation. This suggests a possible role in improving muscle gains. Further studies are required. (4)</p>
Conjugated Linoleic Acids	<p>Essential FA's found in whole dairy products first added to animal feed showing decreased body fat, increased bone mass, improved immunity and inhibition of atherosclerosis. Benefit in humans suggested to decrease body fat, delay bone loss and improve health.</p>	<p>Many of the studies linking CLA to weight loss were conducted in laboratory animals. CLA is primary ingredient in one weight loss formula on the market. Of the few studies conducted on humans up to 10 grams per day was consumed. There was no link with fat loss. However, at least one study showed evidence that CLA may affect bone mass and immune status. Further studies are required.(19,39,67)</p>
Medium Chain Triglycerides	<p>MCT's escape digestion and are absorbed directly into the mitochondria for entrance into beta-oxidation. Rapid metabolism has been linked to thermogenesis and weight loss.</p>	<p>Levels ranging from .1g/kg to 30 grams per day were studied for effect on exercise capacity during low to moderate intensities and thermogenic effect for weight loss. No significant improvements at low intensity exercise or with thermogenic effect</p>

Ergogenic Aid	Proposed Ergogenic Value or Scientific Rationale	What dietitians may want to consider
	Purported to serve as an efficient fuel source prolonging endurance activities.	at high doses. Can cause diarrhea at high doses. When consumed with CHO cyclists were able to spare glycogen in time trials peddling to exhaustion.(28,56)
Ribose	A carbohydrate studied for its unique structure having five carbons instead of six, plays a role in the make up of RNA and DNA. A component of riboflavin related to ATP production, supplementation is thought to increase ATP production improving exercise capacity.	Initial benefits reported in a patient population with regard to ATP availability with doses up to 60 grams. May improve predictability of thallium stress tests. Some data suggests possible role in maintaining blood glucose in endurance events and improving peak power output. (26,29,57)
Poly lactate	An amino acid lactate salt byproduct of anaerobic metabolism purported to easily convert to pyruvate and enter the TCA cycle and provide an energy substrate.	Results are equivocal. PL has been studied in and compared to various GES. When added to a glucose polymer drink did not affect exercise performance. Other studies have shown physiological improvements but no net gain in exercise capacity. (20,52)
Zinc/Magnesium /Aspartate (ZMA)	Gaining popularity based on suggestions that it promotes anabolism during sleep. Theory based on studies that suggest testosterone and insulin like growth factor (IGF-1) may be blunted due to Zn and Mg deficiency.	ZMA supplementation has been theorized to increase IGF-1 and testosterone, which can lead to greater gains in recovery, anabolism and strength. Bolstered by one study that showed increases in testosterone and IGF-1 gains in football players during spring training sparking interest and the need for more research. (9)

4. Limited to No Value and Not Worth the Money

Ergogenic Aid	Proposed Ergogenic Value or Scientific Rationale	What dietitians may want to consider
Boron	An ultra trace mineral that is marketed to athletes to promote muscle growth during resistance training. Initial study showed promise as a testosterone promoter with 3 mg/d supplementation.	Supplementation with 2.5 grams of boron for 7 weeks showed no increases in testosterone, nor gains in body composition or strength. (21)
Calcium Pyruvate	A product of carbohydrate metabolism and also found in food, it has been suggested to enhance fat loss and extend endurance events by serving as a fuel substrate during exercise.	Has been combined with DHAP or studied independently at doses of 6-25 g/d. Significantly higher occurrence of weight loss occurred in individuals following a low calorie diet. However, doses marketed to promote fat loss are generally much lower (.5-2g/d) and haven't shown any affect on weight loss or body composition. (62)
L-Carnitine	L-Carnitine acts like a shuttle transporting fatty acids from the cytosol to the mitochondria for fat metabolism. Theoretical increases may enhance fat transport, spare glycogen and promote fat loss.	Initial refereed reports showed a possible rationale for its use when .5-2 g/day were consumed. Subsequent studies failed to show an ergogenic effect. No improvement with energy metabolism, exercise capacity or body composition. If client consumes carnitine make sure that is the L form and not D-cartinitine which can be harmful. (30,62)
Chromium	An essential trace mineral commonly sold in the picolinate form, chromium was purported to increase muscle mass and burn fat. Adequate chromium levels working in conjunction with insulin may delay fatigue by sparing glycogen.	Human studies followed earlier animal research that showed promise as a supplement. However, doses of 200-800mcg/d does not solicit the desired effect. It is commonly accepted that most diets do not meet the daily requirement and exercise may further decrease levels. Supplementation may help achieve the appropriate daily requirement but not the desired ergogenic effect. (50,58)

Ergogenic Aid	Proposed Ergogenic Value or Scientific Rationale	What dietitians may want to consider
Inosine	A naturally occurring compound required by the body. Ergogenic benefits claimed for endurance activities and anaerobic/power events. Thought to improve ATP production.	Several well-controlled studies have not been able to substantiate the theoretical claims as an ergogenic substance. It showed a decrease time to fatigue during bicycle sprints resulting in impaired performance. (63)
Gamma Oryzanol (Ferulic Acid)	A phytosterol thought to increase testosterone levels and increase lean body mass. Cattle injected with GO had elevation in their growth hormone levels but body composition was not assessed.	Research data are limited. Nine weeks of supplementation with .5 g/d did not affect strength, body composition or anabolic hormones. Adverse reactions may also occur with use.(23,59)
Smilax Officinalis	Plant sterols that are structurally related to hormones such as testosterone. Thought to provide an androgenic affect on muscle growth and enhance immune function.	Extracted from an herb, some data suggests a possible link between SO and immune function but no research studies have linked SO with increases in muscle mass. Taken in spray form or drop in doses of up to 500 mg. (7,27)
Vanadium (Vanadium Sulfate)	May be involved in reactions that produce insulin like effects speeding amino acids and glucose into the muscle. This possible link has prompted researchers to study its effect on gains in muscle mass, strength, and power.	Vanadium is a trace mineral that can be found in the diet. Very high doses can be toxic. There seems to be little scientific indication to support its use. No positive gains were achieved in muscle mass, strength or power output.(20)

5. Dangerous, Harmful, Illegal and/or Have no Military Application.

Ergogenic Aid	Proposed Ergogenic Value or Scientific Rationale	What dietitians may want to consider
Anabolic/Androgenic Steroids (AAS)	Classified as a pharmacological ergogenic aid it mimics the hormone testosterone thus causing gains in muscle mass, strength and decreases in body fat.	Steroids have been shown to be effective. However, when taken at levels that produced anabolic effect can also produce side effects that may include heart disease, liver disease, masculinization of females, breast enlargement in males, decreased HDL, increased LDL, facial acne, impotence, testicular atrophy. They are illegal and banned from sport competition. (1,66)
Androstenedione	A naturally occurring androgen that is a close precursor to testosterone. Purported to increase muscle mass, strength and decrease body fat.	One study with men showed no enhancement of muscle strength in the andro-supplemented group taking 200 mg/d orally. A reduction in HDL cholesterol was noted with no net improvement of serum testosterone but rather an increase in estrogen levels in the experimental group. Another study showed no improvement in 1 rep max weight lift over the placebo. A reduction in HDL cholesterol was noted in the andro group as well. No studies have shown effectiveness.(10,11,33,69)
Alcohol	Alcohol has been studied for its use as a psychological stress reducer in precision sports such as riflery, archery and dart throwing. It also has been investigated as an energy source.	Some limited research does support an ergogenic effect in precision sports like riflery or in biathlons that involve intense output followed by precision shooting when about one drink of alcohol is consumed (BAC 0.02), 30-60 minutes prior to competition. However, its use is illegal in these sports. Psychological ergogenic aids prove beneficial. (2)
Amphetamines	Powerful stimulants to the CNS. Athletes can solicit physiological responses that relate to sport competition. Increased muscle contractility, increased blood flow to the muscle and decreased sense of fatigue.	Adverse effects of amphetamine use include headaches, dizziness, sleeplessness and anxiety. Several deaths have occurred as a result. They are illegal and should be avoided.(62)



Ergogenic Aid	Proposed Ergogenic Value or Scientific Rationale	What dietitians may want to consider
Dehydration	To make body weight measurements in various sports such as wrestling or for military physical readiness measurements.	Studies looking at sports applications of diuretic induced dehydration show varying results. Performance levels were not diminished in anaerobic sports that require burst of power. Performance in aerobic sports was compromised secondary to diminished cardiac output from decreases in plasma volume. A 2% water loss may equate to a much higher plasma volume decrease that can greatly impair performance and health. Death results with a 15-20% water loss.(3,16,62)
Ephedra	Classified as a pharmacological ergogenic because of its ability to mimic sympathomimetic nervous system hormones such as epinephrine and norepinephrine. Generally marketed for weight loss or to increase energy. Activation of the pathway may enhance muscle contractility, cardiac output, enlarge bronchial pathway to the lungs and increased blood sugar levels.	Improvement in exercise performance capacity is not backed by research. Side effects may include nervousness, tension, headache, GI distress, and irregular heartbeat. In some cases seizures and psychoses occur. At least 17 deaths have occurred and 75 lawsuits have been leveled against manufacturers of this product. In one study ephedra did not improve muscular strength, endurance, speed, reaction time or aerobic capacity. Another study showed no benefit over a placebo in muscle strength or bicycle time trials. Avoid ephedrine if taking MAO inhibitors or psuedoephedrine. (12,62,68)
Erythropoietin	A hormone produced by the kidney, stimulates synthesis of red blood cells. A synthetic version rEPO was created to stimulate RBC production to improve aerobic endurance by increasing the oxygen carrying capacity of the blood to the muscles.	rEPO has been shown to increase the hemoglobin concentration of the blood from 6-11 percent over 6 weeks. An effective ergogenic aid historically consumed in cyclists prompting a ban on anyone with a hematocrit level greater than 50. Its use is illegal and deemed unethical by sports organizations. Several cycling deaths have been associated with its use. (18,62)
Excess Caffeine	In an effort to achieve ergogenic effect over consumption may cause caffeine-ism with possible side effects.	No benefit of excess. Possible side effects of flushing of the face, nervousness, trembling, anxiety and heart palpitations. Abuse may result alone or when stacking with other supplements such as ma huang/ephedra and aspirin to achieve thermogenesis for weight loss. (62)
Fasting, Very Low Calorie Diets	To make weight or achieve an “ideal” sport specific body frame. Gymnasts, dancers, wrestlers etc., or in military settings during physical readiness testing.	Negative energy state, negative nitrogen balance, muscle wasting, compromised nutrition status, female triad. Bone loss, electrolyte imbalance, and ultimately death.(3)
Gamma-Butyrolactone (GBL)	Purported to increase growth hormone, build muscle and improve athletic performance.	It is converted to gamma-hydroxybutyrate (GHB) which the FDA classifies as a dangerous drug. GHB has been linked to approximately 55 documented adverse health effects. FDA has asked consumers not to purchase these products and asked manufacturers to voluntarily recall them. (22)
Growth Hormone	Human growth hormone is classified as a physiological sports ergogenic. Sought by athletes to improve gains in muscle mass.	In hGH deficient individuals, supplementation increases muscle mass and decreases body fat. In subjects who have normal levels, an increase in body mass occurs but not necessarily an increase in lean body mass. MRI showed no increase in contractile protein. Enlargement of organs was cause for weight gain. Side effects may include

Ergogenic Aid	Proposed Ergogenic Value or Scientific Rationale	What dietitians may want to consider
		thickening of the soft tissue of the face and enlargement of the liver, kidneys and heart that may increase risk for diabetes and cardiac myopathy. It is illegal. (62,65)
Yohimbine	Herbal extract purported to increase testosterone levels to gain muscle and decrease body fat. Investigated as an herbal remedy for impotence.	Classified as an unsafe herb by the FDA. No standardization of dosages exists so consistent intake is difficult to ensure. Side effects include anxiety, panic attacks, hallucinations, elevated blood pressure, heart rate, dizziness, headache flushing, nausea, chills. Avoid if taking prescription monoamine oxidase inhibitors. Well-controlled research does not substantiate claims. (47,62)

IV. Dietary Supplement Health and Education Act of 1994.

In 1994 Congress passed the DSHEA making the ingredients in dietary supplements exempt from presale safety evaluation, required of other food ingredients. Manufacturers are not allowed to make claims about the supplements ability to “diagnose, prevent, treat, or cure a disease.” However, they are allowed to make “structure or function” claims that describes the effects they purport it to have on the consumers body. This is where claims can get creative to say the least, often misleading the consumer. This is legal however, as long as the seller places the following sentence on the bottle: “This statement has not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.”

Dietitians need to carefully evaluate vitamins, minerals, herbals or any other performance enhancing supplement or drug an athlete wants to use. As each client is different, so must our approach be with regard to our recommendations.

V. Resource List for Further Reading Regarding Supplements.

www.eatright.org/adap1200.html

ADA Position Paper on Nutrition and Athletic Performance

www.sportsci.org

Site for sport scientists. Provides link to information on nutritional ergogenic aids link.

www.ais.org.au/nutrition/index.htm

Fact sheets and classifications.

www.hmse.memphis.edu/faculty/kreider/creatine%20abstracts.htm

Provides information on creatine research and sport nutrition presentations.

www.arborcom.com

Nutrition Web site provides information on clinical and applied nutrition as well as Food science and Food topics.

www.nutribase.com

Various topics on nutrition

www.nutrifit.org

SCAN’s Homepage

www.acsm.org

American College of Sports Medicine

www.fda.gov

Food and Drug Administrations Home Page.

www.css.edu/users/tboone2/asep/fldr/fldr.htm

Online Journal of Exercise Physiology often contains research articles on ergogenic aids
www.odds.od.nih.gov
 NIH Office of Dietary Supplements. Contains fact sheets.
www.sportsmedicine.com
 Exercise Nutrition and Health
www-sci.lib.uci.edu/hsg/nutrition.html
 Nutrition Information
www.ncaa.org
 Some information listed on banned substances in NCAA
www.nhrc.navy.mil
 Navy Health Research Center. Human Performance and Ergogenic Aid Research
www.humankinetics.com/products/journals/journal.cfm?id=IJSNEM
 Information on the International Journal of Sport Nutrition and Exercise Metabolism
<http://www.usuhs.mil/mim/ergopam.pdf>
 A Compendium of Research of Nutritional Ergogenic Aids for the Special Operations Community
<http://www-nehc.med.navy.mil/hp/>
 Navy Environmental Health Center Homepage
www.brooks.af.mil/web/af/altmed/homeframe.htm
 Air Force Home Page
www.hooah4health.com
 Army Health Promotion and Wellness Web Site
<http://chppm-www.apgea.army.mil/dhpw>
 Army Center for Health Promotion and Preventive Medicine

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Carbohydrates on Trial

By 2LT Angela Briscoe

How often do you think about carbohydrates? Did you know that carbohydrates provide the major source of dietary energy for all peoples of the world? The recent revival of low-carbohydrate diets has put carbohydrates on trial. Many of these diets state or imply that carbohydrates and insulin make people fat. Before passing judgment on carbohydrates, I would like to share some basic information about them and their uses in our bodies.

Carbohydrates provide an important source of energy for our bodies. They provide four calories per gram and contain carbon, hydrogen, and oxygen. They consist of three types (sugars, starches, and fibers) found in fruits, vegetables, grains, legumes, tubers, dairy products, and sugar foods. The body breaks down carbohydrates to glucose, the brain's primary source of fuel and the best source of fuel for our bodies. If the body does not need glucose right away, it is stored in the liver and muscles as glycogen.

Low carbohydrate diets claim that increased insulin levels make people fat. Although some people do have insulin problems, there is no good evidence that increased insulin levels make people fat. Insulin is important to our bodies. It is needed for the body's cells to use sugar for energy. For people who do have insulin problems, decreasing weight and increasing exercise manage ineffective use of insulin better than does strictly reducing carbohydrates.

If carbohydrates fuel our bodies so efficiently, why are they now on trial? The apparent failure of low-fat, high-carbohydrate diets may be one reason. Uninformed consumers mistakenly believe low-fat or fat-free means they can eat as much as they want, however, low-fat does not mean low-calorie or calorie-free. Consuming more calories (whether from carbohydrates, protein, or fat) than one expends will lead to weight gain.

Another reason people may be turning to low-carbohydrate, high-protein diets is that they may seem easier to follow. These diets are very restrictive, eliminating some important nutrients. Sound research shows that carbohydrates are not bad, but allow the body to function at its best. There is little to no research, however, on low-carbohydrate diets, which are often high in protein and fat. Although you can lose weight on these diets, there are some health concerns that should be addressed.

The weight loss seen with low-carbohydrate diets is generally due to severe calorie restriction and fluid loss. Because these diets are so restrictive, they often cannot be maintained long-term. Once the diet is stopped, individuals usually gain back the lost weight. These diets are also dangerous because they limit vitamins, minerals and fiber and may increase the loss of vitamins B and K, and calcium.

The high amounts of protein in these diets do provide energy, but the body uses it less efficiently than energy from carbohydrates, and it creates extra work for the liver and kidneys. Many high-protein foods are also high in saturated fat. Several studies indicate a diet high in saturated fat increases the risk of coronary heart disease and certain cancers.

Another concern is that most advocates of high-protein, low-carbohydrate diets do not hold degrees in nutrition. In

addition, there are few, if any, studies on the effects of a high-protein, low-carbohydrate diet. Explanations of these diets are often misinterpreted or exaggerated in a ways that cannot be proven, and are obtained only from anecdotal reports. Some authors of these diets, such as the Atkins diet, state that people on their diets have a decrease in cholesterol, however, anytime there is an energy deficit, cholesterol will decrease.

So how can you avoid dangerous or ineffective diets and still lose weight? Beware of diets that make the following claims:

- Diets that promote quick weight loss
- Diets that bill themselves as "cure-alls"
- Diets that recommend or require supplements
- Diets that specify what should be eaten at what time, with no exceptions
- Diets that limit or avoid certain foods
- Diets that are short-term
- No food or diet provides the magic answer to health or weight loss -- it is all about habits
- Eliminating food groups or not combining certain foods simply decreases variety and nutrition, not weight
- Buying special products, supplements, or formulas will only decrease the weight of your wallet
- If it sounds too good to be true, it probably is

Although some special groups of people require special diets, for most people dietitians recommend following a diet that is balanced (with about 55% of energy coming from carbohydrates), varied, and contains all food groups. This can be done using the food guide pyramid. Following these recommendations along with exercise is the best route to a healthy weight and good health. For further information refer to the American Dietetic Association (ADA) website (<http://www.eatright.org>). So, now what do you think of carbohydrates?

Herbal Ephedrine - Is it Worth the Risks?

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To be a top-notch soldier in the U.S. Army, you have to be physically fit and lean. However, the cost of these demands can be dangerous and even deadly when soldiers resort to using dietary supplements to help them reach their fitness goals. Reported in the Fall 2000 *Soldier's Magazine* insert: *Hot Topics-Current Issues for Army Leaders*, a male soldier suffered from severe heat stroke and muscle damage during a unit road march, a female soldier was diagnosed with an irregular heart beat after she collapsed during a run at Airborne School, and another male soldier died during a physical fitness test. All three of these cases occurred after the soldiers took a dietary supplement that contained ephedra.

Ephedra, also known by the Chinese name Ma Huang, is the herbal form of ephedrine. Historically, the ephedra plant has been used for centuries in China and Russia as an herbal remedy for asthma and arthritis and in Germany as a decongestant. In the U.S., ephedra is sold in over 200 dietary supplements, with claims of boosting energy, enhancing weight loss, building muscle, and improving athletic performance. It is sold in the form of tablets, teas, powders, and energy drinks at health food stores, grocery stores, gas stations, and gyms across the country.

The makers of these supplements insist that the herb is safe, claiming millions are using it without problems. But what is not brought up is how many have had problems. In fact, since 1994, the FDA has cited over 800 reports of adverse side effects caused by ephedra use, including 44 deaths. The exact number of Army soldiers affected is unknown due to the lack of Federal reporting guidelines. However, there have been 18 cases of service members, reported by the FDA, who have suffered from adverse side effects due to supplement use.

It seems that soldiers and consumers are unaware that ephedra can cause major illness and even death. Many people assume that supplements are safe and effective simply because they are sold over the counter and labeled as "natural" or "herbal". In reality, under current law, herbal products can be sold without any testing for their safety and effectiveness. They also are not required to have a warning label listing adverse side effects. Labeling would seem to be important, given that a supplement containing ephedra can cause anxiety, increased blood pressure, trouble breathing, confusion, insomnia, headaches, rapid and irregular heart beat, nerve damage, muscle tremors, seizures, stroke, coma, heart attack, and death.

For Army soldiers, a diagnosis of some of these symptoms can mean the end of their military careers. Army Regulation 40-501, "Standards of Medical Fitness," states that soldiers who develop a certain medical diagnosis while on active duty must be referred to a medical and physical evaluation board to determine if they are fit for duty. Even if their condition is a side effect resulting from the use of a dietary supplement taken for weight loss or improved performance, a diagnosis like heat stroke could result in medical retirement.

Despite reports of its potentially harmful effects, ephedra use has been growing since 1995. Makers of supplements report 3 billion servings were sold last year and estimate that anywhere from 4 to 15 million Americans currently take ephedra products. In response to these reports, the FDA proposed several federal regulations in an attempt to limit its use.

These included limiting ephedra dosages to 8 mg per serving and warning consumers to take only 24 mg daily for up to seven days. Unfortunately, the FDA had to withdraw these proposed restrictions last March after the Congress' General Accounting Office said that while ephedra did seem risky to some people, there was not enough sound evidence to support restrictions.

Army leaders are also concerned over the growing use of ephedra products by soldiers. In fact, the dangers are so prevalent that the Army Chief of Staff, GEN Erik K. Shineseki, released a worldwide message to soldiers last August stressing the need for caution when using supplements. Until more research is done allowing the FDA to put stricter limitations on the use of ephedra, soldiers need to be warned and educated about the dangers of its use. As stated by LTC Joan M.G. Lyon, Chief of Fitness and Nutrition for the U.S. Army Center for Health Promotion and Preventive Medicine: "Soldiers are the Army. Their health should be our highest priority."

It is important that any problems with dietary supplements be reported to the FDA's MedWatch. Forms are available at www.fda.gov/medwatch. Reports can also be made by calling the FDA's Office of Emergency Operations at (301) 443-1240, or the FDA Consumer Hotline at (800) 322-4010.

Fats and Heart Disease: What's the connection?

By Kristin Hart, 2LT, SP
Dietetic Intern, Nutrition Care Directorate

True or False: The best heart-smart goal is a fat-free eating plan.

With all the attention towards fat, you're likely to think you should avoid fat like an office mate with the flu. Well, as it turns out, fat is needed in the human body and we should not try to get rid of all fat in our diet. However, Americans in general get more than their share of fat each day. The American Heart Association recommends no more than 30% of calories come from fat, yet most Americans consume about 37% of calories from fat.

Research suggests that there is a link between high fat diets and cardiovascular disease. So there is truth to reducing fat intake for a healthier heart, and studies show that different types of fat have different effects on atherosclerosis or plaque build-up in blood vessels.

There are three main types of fat: saturated fat, polyunsaturated fat, and monounsaturated fat. No food contains just one type of fat, but foods usually have a greater part of one type. Foods may also contain cholesterol a further dietary factor associated with atherosclerosis. Knowing how fat and cholesterol affects cardiovascular disease can help us reduce our risk for it.

Saturated Fat

Saturated fat is found in fats from animals. It's the fat that is solid at room temperature or when cooled. Butter, milk, lard, meat fat, and poultry skin are among some of the foods highest in saturated fat. This is the fat that is most related to increasing your risk of cardiovascular disease. In fact, saturated fat increases blood cholesterol levels more than any other dietary factor, even cholesterol in food. It increases blood cholesterol levels by increasing the low density lipoprotein (LDL) cholesterol. LDL cholesterol increases plaque build-up in blood vessels. The American Heart Association recommends eating 7-10% of calories from saturated fat (*See Know Your Numbers*). How can you cut back on saturated fat? Remove skin from poultry, drink skim milk, and choose vegetable oil instead of butter.

Cholesterol

Cholesterol is found naturally in the human body and is necessary to make hormones. It is also found in any food that comes from an animal. Cholesterol in the foods you eat has less effect on blood cholesterol levels than saturated fats that you eat. Some people are more sensitive to dietary cholesterol, and it causes a rise in blood levels when they eat too much cholesterol in foods. Most health experts and the American Heart Association recommend limiting cholesterol intake to an average of 300 mg or less per day. Egg yolks and organ meats are high in cholesterol. Shrimp and crayfish are somewhat high, and all other meats contain about the same amount of cholesterol.

Monounsaturated fat

Just the opposite of saturated fat and cholesterol, studies show diets high in monounsaturated fats tend to decrease the risk of cardiovascular disease by

raising the good cholesterol or HDL-cholesterol and decreasing the bad subcomponent, LDL-cholesterol. These changes in blood cholesterol may help reduce plaque build-up in vessel walls. Monounsaturated fats are found mostly in oils of plant origin specifically olive oil, canola oil, and peanut oil. Nuts such as walnuts, peanuts, and pecans are also high in monounsaturated fats. The American Heart Association suggests a diet with up to 15% calories from monounsaturated fat (See *Know Your Numbers*). Using olive oil for all cooking and snacking on nuts instead of high fat crackers and chips can help increase monounsaturated fats in your diet.

Polyunsaturated fat

Polyunsaturated fats are found to have little effect on blood cholesterol levels. They do not raise LDL-cholesterol, but they also don't help reduce the risk of heart disease. So substituting polyunsaturated fat for saturated fat is a good idea, but a better plan is to use a monounsaturated fat. Polyunsaturated fats are mostly found in foods of plant origin such as corn, soybean, and sunflower oils or seeds and margarine made from these. They are also found in certain fish like tuna and salmon. The American Heart Association suggests a polyunsaturated fat intake of less than 10% of calories.

Trans fatty acids

Hydrogenation is the process used to make solid fats like margarine and shortening from vegetable oils. This process causes trans fatty acids to form in polyunsaturated fats. Trans fatty acids are associated with an increased risk of heart disease. Research suggests that trans fatty acids act similar to saturated fats and increase LDL-cholesterol levels. In addition, trans fatty acids reduce HDL-cholesterol levels, the healthy cholesterol. These changes may lead to increased plaque build-up in vessel walls. Harder margarines like stick margarine contain more trans fatty acids than soft tub margarines. Snack foods like crackers, chips and cookies also contain trans fatty acids. Any food made with partially hydrogenated oil contains some trans fatty acids. Dairy and beef fat contain low levels of trans fatty acids. The food and drug administration (FDA) plans to include trans fatty acid content on the Nutrition Label in the near future to

help all consumers watch their intake. In the mean time, when shopping for margarine look for those with less than two grams saturated fat per tablespoon and with liquid vegetable oil as the first ingredient.

With all these different types of fat, how can you manage your fat intake to help reduce the risk of cardiovascular disease? Reading food labels can help. The food label lists total fat, saturated fat, and cholesterol for all foods. Many foods also list polyunsaturated and monounsaturated fat. The ingredient list can help you identify possible sources of trans fatty acids by looking for the words partially hydrogenated vegetable oil, and trans fatty acids will soon be added to the Nutrition Label for easier identification. To help decrease your risk of heart disease reduce total fat, saturated fat, trans fatty acids, and cholesterol in your diet. Replace these fats by choosing monounsaturated and polyunsaturated fats. For more heart healthy tips visit the American Heart Association's nutrition website at www.deliciousdecisions.org and click on supermarket. And for overall healthier eating, remember to include whole grains, vegetables, and fruits at every meal!

Know Your Numbers			
Reading food labels can help you determine how much of each fat you consume each day. Add up your intake and see if you meet the heart-healthy goals below.			
	1600 calories about right for: sedentary women, young children, and some older adults	2000 calories about right for: most children, active women, and sedentary men	2400 calories about right for: teenage boys, active men, and very active women
Total Fat (<30% cal)	53 grams/day	67 grams/day	80 grams/day
Saturated Fat (7-10% cal)	12-18 grams/day	16-22 grams/day	19-27 grams/day
Monounsaturated fat (up to 15% cal)	Up to 27 grams/day	Up to 33 grams/day	Up to 40 grams/day
Cholesterol	<300 mg/day	<300 mg/day	<300 mg/day

Fruit and Vegetable Power: Get the “Whole” Benefit

By: 1LT Hillary Harper, Nutrition Care Division

Why do we need to bother eating fruits and vegetables? Supermarkets, drugstores, multi-level marketers and infomercials all tempt us to take an easy one-a-day pill instead of preparing a nutritious meal. Do we get the highest health benefits from the magic pills? Not according to the latest research.

Research on the ever-popular vitamin C highlights this issue, challenging supplement adherents to acknowledge that pills may not be the answer. Advocates of the megadose supplements have touted vitamin C's ability to reduce the risk of maladies ranging from common cold to cancer. But the human body can only absorb and utilize a limited amount of vitamin C each day – a principle incorporated in National Institutes of Health research. This study found that the large doses of vitamin C found in the convenient pills provide no additional benefit when compared to a balanced diet containing natural sources of the vitamin. Other research suggests the vitamin excess may actually be harmful.

Most sources agree that a diet rich in vitamin C may decrease the risk of a number of deadly illnesses including heart disease and cancer. But how much is enough? A diet incorporating the five recommended daily servings of fruits and vegetables can easily provide up to 200 mg of vitamin C, enough to saturate most of the body's tissues. A typical supplement provides 500 mg or more.

However, only a third of Americans eat five or more servings of fruits and vegetables every day – less than the number of people who take a vitamin pill or some other dietary supplement.

Fruits and vegetables offer the concept of synergy, in which the effects of a whole food are much stronger than the effects of its individual components. They are packed with nutrients that supplements lack, each of which may be linked to reducing risk of cancer, heart disease and stroke. Some of these compounds, known as antioxidants, help prevent molecular damage to body tissues. While vitamin C and beta-carotene are probably the most publicized of these compounds, they account for only 15 percent of the antioxidants found in the average fruit or vegetable. A mix of plant “phytochemicals”

that includes 100 carotenoids other than beta-carotene account for the remaining 85 percent. Beyond antioxidants, fruits and vegetables offer other potential disease fighters, like fiber, minerals, and other vitamins.

The only way to realize the potential benefit is to consume plenty of fruits and vegetables. Evidence to date on most of the individual phytochemicals shows that at least five servings of fruits and vegetables a day provide maximum protective effect.

In one trial, Harvard researchers followed 44,000 men for six years. Those who ate five to seven servings of fruit and vegetables each day were 27 percent less likely to have a heart attack than those who ate less produce. Other researchers in the Framingham Heart Study followed 830 men for 20 years and found the risk of stroke dropped about 22 percent for every three servings of fruit and vegetables that people ate. These findings stayed the same after adjusting for other risk factors, such as obesity, smoking, and a sedentary lifestyle.

There is, of course, one other simple reason to get your nutrients from fruits and vegetables: Most produce is naturally a low-fat and low-calorie food choice. So, the more produce you eat, the less room you have for high fat choices which increase the risk of certain diseases.

Eating five to nine servings of fruit and vegetables each day is your best bet to get the host of potentially protective substances. Since serving sizes are usually smaller than actual portions we eat, it is easy to get five a day.

For tips on how to include more fruit and vegetables in your diet, visit www.5aday.com.

Fruit and Vegetable Serving Sizes: 1/2 cup raw, canned, or cooked fruit or vegetables

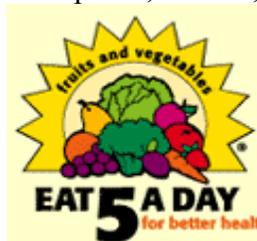
3/4 cup fruit or vegetable juice

1 cup raw leafy vegetables

1 medium fruit

1/4 cantaloupe

1/2 grapefruit



Healthy Bodies, Healthy Minds

CPT Stephanie Meyer, SP, RD, LD

How do your child's eating habits stack up? Does your child eat a variety of foods, to include fruits and vegetables? Does your child limit fats and sweets in his/her diet? These are important questions to consider. The habits your child develops now will likely be his/her lifelong habits. Just like adults, a child's diet should follow the Food Guide Pyramid to ensure proper nutrition is being provided. Naturally children go through phases or food jags, periods of time when they don't want to eat certain foods or try new things. These periods are not a big concern as long as they don't carry on for too long. However, when a pattern emerges where your child is choosing soft drinks over milk, french fries as a vegetable and snack foods over fruit, it's time to evaluate your child's eating habits. These foods and beverages in moderation are fine, but should not be staples in a child's diet.

Childhood obesity is on the rise in this country; approximately 25% of children are overweight or obese, partly because of the high-fat, high-sugar diets they consume. These foods not only provide a lot of fat and calories, but also tend to be low in the vitamins and minerals your child needs for growth and development. Helping your child make more healthy food choices most of the time, and being an example for him/her by doing the same yourself, will promote a healthy weight and proper nutrition for good health.

The other part of the equation is exercise. Exercise keeps the heart (a very important muscle) strong, helps develop strong bones and helps us control our weight. Many children are spending more time in front of the television or computer and less time moving around, leading to increased risk of heart disease, diabetes and high blood pressure at younger ages. It is recommended that children not spend more than 1-2 hours a day watching television or playing on the computer.

Following a balanced diet and keeping up an exercise routine is a lifelong commitment, but one that pays high dividends. It generally means fewer illnesses, reduced risk of disease and an overall feeling of well-being. Your children can reap the same benefits. For them good nutrition and exercise will help keep their bodies and minds in shape as they develop and grow.

For more information on proper nutrition for your children, or the whole family, call the Nutrition Care Division at McDonald Army Community Hospital at 314-7873.

“Hey Easter bunny, don’t forget me”

How to fit chocolate into your diet

By 2LT Tamrin E. Olson, Dietetic Intern

Now that Valentine’s Day has passed by you might not think of chocolate as a threat any longer. However, with Easter just around the corner you can expect some chocolate goodies from the Easter Bunny. It’s time to face your chocolate fears. Many studies propose that chocolate has good effects on the human body. So let the Easter Bunny know not to forget about you this year.

Overview of chocolate. Chocolate has a rich history of uses over the years. Chocolate discovery dates back to the Aztecs. The Aztecs used chocolate for a high class drink and also traded the cocoa beans as money. The smooth and creamy chocolate we know today dates back to 1878 when milk was added during processing.

Chocolate, derived from the cocoa bean, contains 31% fat, 14% carbohydrate, and 9% protein. Chocolate also contains many amino acids and flavonoids that contribute to its psychological and cardiovascular effects.

Most of us are familiar with the unique mouth-feel of chocolate. The creamy, melt-in-your-mouth sensation probably constitutes the biggest reason for chocolate to be the most commonly craved food in the United States. Americans consume over 4 pounds of chocolate per person every year. Most Americans eat chocolate as a snack especially from 8 P.M. to 12 A.M.

Health benefits of chocolate. As mentioned earlier, chocolate contains flavonoids, which are antioxidants. Antioxidants are powerful compounds that neutralize free radicals that can ultimately result in blood vessel wall damage. The flavonoids limit low-density lipoprotein (LDL) or the “bad” cholesterol oxidation. The oxidation of LDLs is an essential step in creating artery-clogging plaque. Studies suggest that flavonoids also decrease platelet aggregation, a factor believed to mark progression of heart disease. All these proposed effects of flavonoids render chocolate a heart healthy food.

Chocolate’s fat content is comprised mostly of cocoa butter, a saturated fat. The unique aspect of chocolate’s fatty acid makeup is the high ratio of stearic acid. Unlike other saturated fats, stearic acid may have a neutral effect on blood cholesterol, which is important when maintaining cardiovascular health. Some studies suggest that stearic acid may decrease levels of “bad” cholesterol while increasing the levels of “good” cholesterol. Controversy over the proposed “neutral” fat in chocolate and its health benefits still exist.

Including chocolate in your diet. It is important for people to realize that a healthy diet can include chocolate. The key is moderation of chocolate intake and counting chocolate’s calories into your daily intake.

There are ways to include chocolate without contributing to higher caloric intake. Trying different lower fat chocolate products, such as chocolate syrup and cocoa powder, provide the desired chocolate flavor without the added fat. Remember that just because it is labeled low in fat doesn’t mean that the product is low in calories. Some of the low fat chocolate substitutions may not please your craving in one serving ultimately leading to an increased consumption. By eating a smaller amount of the full fat chocolate, you may satisfy your chocolate craving and avoid excess calories.

Another option to allow chocolate in your daily intake might be to consider skipping other foods. If you decide to eat a small chocolate bar, omit the mayo on your sandwich or use a fat-free dressing on your salad.

What to look for in the future. There is plenty of ongoing research that evaluates the health benefits of chocolate, so get ready for an ambush of information on how chocolate might be good for you. Over the course of this year Mars company (the maker of M&Ms, Snickers, and Milky Ways) rolls out a new logo. Cocapuro, the new logo name,

implies that the cocoa beans are specially handled to preserve their “natural goodness”. This natural goodness refers to the flavonoids that may offer certain health benefits as previously discussed.

The bottom line. Debates on chocolate’s proposed health benefits still exist, but beyond a doubt chocolate can be a part of your healthy diet. So, if you crave chocolate, don’t be afraid this year when the Easter Bunny delivers chocolate goodies in your basket. Just remember to reward yourself and not overindulge.

Nutrition in the New Millennium:

The More Things Change, The More They Stay the Same

By Major Bonnie Eilat, RD, LD, MHR
Chief, Nutrition Care Division
Ft. Rucker, Alabama

“Is there consumer backlash against diet messages?” The American Dietetic Association asked this question in a recent article. The concern is that when the media puts out conflicting, and sometimes alarming, messages about nutrition, the public might tend to ignore the messages entirely and eat a less healthful diet. After all, if *everything* is bad for you, what are you supposed to eat? You might as well just eat what you want!

Why do many Americans choose to disregard dietary recommendations? In this day and age, it is reasonable to assume that most people have a pretty good idea as to what healthy eating entails. They know what it takes to lose weight and get in shape. They recognize that it takes discipline, commitment and sacrifice, and decide it’s too much work. Then they try to find an easier way to get results.

Diets come and diets go, but the basics remain the same: to lose weight, one must take in less energy than one expends. This means one needs to eat less, move more, or do both. Weight loss cannot occur unless this scenario exists, despite what the latest diet books and pills tout. Eating less is not fun. Fried chicken tastes better than baked chicken. Watching movies is easier than huffing and puffing on a treadmill. But any doctor, nutritionist or movie star that promises you can eat all you want, not exercise and lose weight is delivering a false promise. While most people suspect this, the fact that the diet industry generates billions of dollars a year is proof that we still hope there’s a way around the old diet-and-exercise routine to achieve the body we want. We thought that fat-free foods were the answer to being able to eat huge quantities of food and still lose weight. Sadly, many Americans realized that eating 20 grams of fat a day but 5,000 calories in fat-free snacks made them heavier still. On the other hand, stuffing oneself with bacon and eggs while avoiding carbohydrates may lead to temporary weight loss, but also to high cholesterol, kidney stones, bad breath, lack of energy and eventual weight gain.

The media loves to tout the latest health fads, be they fish oil capsules for cholesterol reduction, St. John’s Wort for depression, melatonin for jet lag or echinacea to prevent colds. Whether or not these supplements work, the importance of eating a balanced diet remains the same. There is no one food or supplement that will provide all the nutrients we need on a daily basis, nor will a supplement negate the effects of a poor diet. If your cholesterol is high, don’t think that taking fish oil capsules will compensate for a diet high in cheeseburgers.

Nutrition messages in the media tend to be extreme and focus on the negative aspects of a particular food or supplement. All foods can fit into a healthy diet if eaten in moderation, even “heart-attack-on-a-plate” fettuccine Alfredo. Eating does not have to be black or white, feast or

famine. There's a lot of gray area that allows you to have your cake (a small piece) and eat it too. It's called moderation.

If you want to lose weight, the next time you're at a party, enjoy yourself but don't go overboard. When you drive to Wal-Mart, don't circle the parking lot for 20 minutes searching for the closest spot to the entrance. Eat a little less, move a little more, enjoy your food and lead an active life. Use the principles of balance, discipline and moderation, and you are sure to enjoy a healthy, productive life.

Plant Sterols in LDL-Cholesterol Reduction

LT Kim Zuzelski
U.S. Navy

In September 2000, the FDA approved early use of a heart-health claim regarding the role of plant esters in reducing the risk of coronary heart disease. This health claim states:

Foods containing at least 0.65 gram per serving of plant sterol esters, eaten twice a day with meals for a daily total intake of at least 1.3 grams, as part of a diet low in saturated fat and cholesterol, may reduce the risk of heart disease.

New guidelines issued by the National Cholesterol Education Program (NCEP) in May 2001 also recognized this benefit. In addition to previous recommendations for those with elevated LDL cholesterol to make lifestyle changes, such as cutting back on saturated fat and cholesterol while increasing physical activity, the NCEP now recommends products that include plant sterols, plant stanols, and soluble fiber.

What are plant sterols?

Plant sterols have a similar role in plants as cholesterol has in humans. They maintain cell membrane structure and function. They are also structurally similar to cholesterol. They occur naturally in foods such as vegetable oils, fruits, nuts, vegetables, seeds, and legumes (garbanzo beans, dried beans, kidney beans, etc.). However, the amount needed to provide the reduction of LDL cholesterol is a challenge without a concerted effort. Intake of plant sterols in enriched spreads is 5-to 15- fold higher compared with other food sources. The two products currently on the market are Benechol and Take Control.

How do they work?

Plant sterols inhibit absorption of cholesterol in the small intestine by entering the micelles, which are needed for cholesterol transport in the bloodstream. As a result, endogenous and dietary cholesterol remain insoluble and are excreted in the feces. Only .5% -1.0percent of plant sterols are absorbed and the rest is excreted as well. The liver also increases the amount of LDL cholesterol that it clears from the bloodstream. Eating 2-3 grams per day of plant sterol/stanol derivatives can lower LDL- cholesterol by 6%-15%.

Is it safe?

The FDA has determined the amounts of plant sterols in enriched spreads (up to 20%) to be generally regarded as safe (GRAS) and multiple long-term clinical studies have been done involving men, women, and children. Enriched spreads do not significantly affect the absorption of fat-soluble vitamins A, D, E, and K. Blood levels of some carotenoids were reduced but stayed in the normal range. However, Children less than 5 years of age, and women who are pregnant or breast-feeding, are not normally at high-risk for heart disease. Therefore, they should consult with their providers if they wish to lower cholesterol levels with these products.

For more information on the NCEP recommendations, please refer to the Executive Summary of the Third Report of the National Cholesterol Education Program (NCEP) Expert Panel on Detection, Evaluation and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel III). JAMA 2001; 285:2486-2498

Staying Hydrated when it's HOT!

LT Julie A. Hess, MS, RD
Martin Army Community Hospital
Fort Benning, Georgia

The importance for athletes to drink enough water, especially during the hot summer months, cannot be emphasized enough.

Have you ever experienced that awful feeling of dizziness, fatigue and/or nausea in the middle of a long or hard workout, or had that post-exercise headache that just doesn't want to go away? You might think this is due to muscle fatigue, lack of sleep or over-training, yet an often overlooked issue is that of hydration.

Your body needs water. It helps deliver oxygen to the working muscles and helps you to stay cool. As you lose water through sweat, you become dehydrated and the volume of blood circulating in your body decreases. This causes your heart to pump harder and harder in order to circulate the blood through your veins and arteries. In fact, you can lose up to a liter of water per hour during a hard workout, and **double** that if you are training in hot or humid weather. Additionally, when you have less fluid in your body, there is decreased sweat production, which causes heat to build-up. The end result: you suffer from fatigue, headaches, nausea and cramping. Ultimately your performance will suffer.

So what should you do to prevent dehydration?

The American College of Sports Medicine makes the following recommendations on the amount and composition of fluid that should be ingested in preparation for, during, and after exercise or athletic competition:

1. Eat a high carbohydrate, low fat diet & drink plenty of fluids between exercise sessions. (Plain water or fluids WITHOUT sugar, caffeine or alcohol are the best).
2. Prehydrate! Drink 17 oz (2+ Cups) of fluid 2 hours before exercise.
3. Drink ½ to 1 cup of fluid every 15-20 minutes during exercise.
4. Keep drinks cooler than air temperature (between 59 degrees and 72 degrees F) & close at hand.
5. If you exercise for more than 60 minutes, you may benefit from a sports drink containing carbohydrate (not greater than 8% concentration, though).

6. During intense exercise lasting longer than 1 hour, it is recommended that carbohydrates be ingested at a rate of 30-60g per hour to delay fatigue & fuel muscle contractions.
7. Inclusion of sodium (0.5-0.7 g/L of water) ingested during exercise lasting longer than an hour may enhance palatability, and therefore encourage athletes to drink enough.

Some more hydration tips...

Believe it or not, you can drink too much. Over-hydration can lead to *hyponatremia* (low blood sodium concentration) causing seizures in athletes who over-replace sweat losses with water alone. This is most likely to occur during longer events. If you are going to be exercising for over 5 or 6 hours, you will want to add a complex sports drink with sodium and electrolytes.

Also, your stomach can only hold so much, and for most athletes this is around 800 ml (approximately 1 quart). If larger volumes are forced at once, nausea and abdominal distention may result. This can be a significant problem if you are at the upper limits of your aerobic capacity, because gastric emptying diminishes as exercise approaches 100% VO₂ max. To avoid this, drink small amounts every 10 minutes or so. A regular water bottle is 16 ounces or 480ml so you should be able to drink at least 2 bottles every hour.

Don't wait until you're thirsty to start drinking. The sensation of thirst is triggered by the hypothalamus in the brain. It measures the concentration of salts in your blood. As blood volume decreases due to sweating, your concentration of salts goes up, and the hypothalamus sends the signal to start drinking. By the time you feel thirsty, you are already dehydrated.

So how do you know if you are drinking enough? Weigh yourself before and after a workout. For each pound of weight loss, you need to drink two cups of water.

Bottom line:

Drink, drink, drink.....Drink fluids before exercise, Drink during exercise, and Drink after exercise!!

Valerian Root: A Sleeping Potion for Shakespeare?
By 2LT Michael Trust, Clinical Dietitian, DDEAMC

"To Eat, Perchance to Sleep..." No, Shakespeare never wrote this verse, but the *Washington Post* did as a headline for a recent column touting some of today's most effective methods for enhancing sleep quality. Included among them is one remedy that the playwright might have used 400 years ago: valerian root.

Because of its relaxing effect on the body, many people the world over continue to use the herb as a sedative as they have been for more than 1,000 years. Greek physicians once treated their patients with valerian for digestive upset, nausea, liver problems, and even urinary tract disorders. Technically known as *Valeriana officinalis*, its modern application for insomnia relief did not gain popularity until the 16th century. By the 1800s, western physicians, including those in the United States, still recognized the herb as an effective medicine to treat nervous and digestive disorders, and

regarded valerian as a legitimate pharmaceutical until the 1940s, before the development of modern sedatives.

Today, scientific literature explaining the mechanisms of valerian root provides us with sophisticated jargon that would make Shakespeare cringe. For example, a 1999 study reported in the *Journal of Pharmacol Pharmacology* indicated that hydroxypinoresinal found in valerian binds to benzodiazepine receptors in the amygdaloid body of the cerebrum.

"Such madness in this method," you say?

Explained more simply, another report in last March's *Pharmacopsychiatry* concluded that valerian acts the same way that some benzodiazepine drugs, to include Valium and Xanax, do. While this action helps explain valerian's ability to act as a sedative, the study also noted valerian's weaker action as a relaxant compared to these other medications.

In light of recent pharmaceutical advances, one might wonder if valerian can still be used to induce a mid-summer night's dream. Why, yes, according to Dr. Varro Tyler, Professor of Pharmacognosy at the Purdue University School of Pharmacy and Pharmacal Sciences. Dr. Tyler concludes in his widely published guide to botanicals, *The Honest Herbal*, that "valerian is a safe, gentle herb to try if you need help easing occasional insomnia."

Despite its reputed ability to tame the most restless of shrews, other experts caution against the long-term use of valerian. For instance, Dr. Harmony Garges, MD, of Duke University Medical Center, recently described in the *Journal of the American Medical Association* withdrawal symptoms associated with discontinued use of valerian root in one of his patients. Citing the same link between the herb and benzodiazepines, he and his associates observed several complications, similar to those seen in Valium usage, manifested in a cardiac patient who had used the herb regularly for years prior to heart surgery.

And in another warning posted on the WebMD website, Dr. William Collinge, MD, of the School of Public Health at the University of California, Berkeley, advises against using valerian and other herbs two to three weeks prior to any surgery due to adverse interactions they may have with narcotics and anesthetics. The 1998 *Physicians' Desk Reference for Herbal Medications* also cautions that long-term administration of valerian may induce headaches, restlessness, pupil dilation, cardiac dysfunction, and even sleeplessness. The reference manual also does not recommend valerian for use by women when pregnant or lactating.

However, all this caution may be much ado about nothing for the casual consumer of valerian. Dr. Tyler recommends in his book, *Herbs of Choice: The Therapeutic Use of Phytomedicinals*, brewing 2 to 3 grams of the herb in a cup of hot tea, consumed 2 to 3 times a day and once before bedtime. The *PDR for Herbal Medications* also suggests using valerian as a tincture: $\frac{1}{2}$ to 1 teaspoon, one to several times per day.

Although widely available in Europe, American shoppers of the herb need not bother a merchant in Venice, but may purchase a bottle of valerian tablets at almost any local nutrition store or pharmacy. A 30-softgel capsule bottle of valerian currently sells for \$7.99 at any health food shop or organic grocery store. A popular 90-capsule brand name bottle and a box of 30 softgel capsules each retail for \$11.98. Other varieties that sell for about the same price vary in doses, ranging from 250 to 1000 mg per pill. The suppliers recommend about 1000 mg per day.

After more than 1,000 years of use, the predominant consensus still remains that valerian root is hardly the poison of Shakespearian tragedies, but instead an effective remedy for the occasional user about which the playwright might have written: *Not to die, but to sleep - And to sleep, perchance to dream - ay, there's the herb!*

The Benefits of Breakfast

LT Julie A. Hess, MS, RD
Martin Army Community Hospital
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You've heard it before: "*Breakfast is the most important meal of the day.*" Ever wonder why? Breakfast is important for refueling your body after a night's sleep. The eight or more hour time span between dinner and breakfast is the longest span between any of three meals of the day. While you are sleeping, the body needs fuel to keep your heart beating, nerves transmitting, and cells dividing, just to name a few. Much of that fuel comes from the readily available stores of glucose in the blood, liver and muscles. By sunrise, the body is essentially in a fasting mode. That first meal of the day literally breaks the fast. That's why breakfast is so important, especially if you exercise in the morning.

If you skip breakfast, blood sugar levels drop, fatigue, poor concentration, irritability and lethargy results. During intense or long duration exercise, your muscles need the fast-burning energy that comes from carbohydrates. Without it, your performance will suffer because of low blood sugars and depleted energy stores. A quick high-carbohydrate breakfast that includes a low-fat protein source may be all it takes to boost your morning workouts and keep your energy levels high throughout the day.

Some good breakfast choices include:

- ✓ Whole-grain cereal, a banana and skim milk
- ✓ Egg substitute, whole-wheat toast and ½ a grapefruit.
- ✓ A whole-wheat toaster waffle topped with fat-free sour cream and fresh blueberries
- ✓ A flour tortilla or pita pocket filled with cottage cheese and fresh fruit.
- ✓ A low-fat whole-wheat bran muffin topped with applesauce and yogurt
- ✓ An English muffin topped with an ounce of low-fat melted cheese and a glass of orange juice.
- ✓ A cinnamon-raisin bagel topped with peanut butter and banana slices.

Other good reasons to eat breakfast:

- By eating a nutritious breakfast, one that includes at least one serving of fruit, you have better chances of reaching the recommended five servings of fruits and vegetables a day. Dozens of studies have shown that people who eat plenty of fruit and vegetables have a lower risk of heart disease, cancer, and other chronic diseases.
- Start your day with a bowl of breakfast cereal, and you're more likely to get all the nutrients you need. That's because most cereals these days are fortified with many of the important vitamins and minerals your body needs to stay healthy.
- The best breakfast cereals are rich in fiber, something most of us don't get enough of. Experts say we need 25 to 30 grams of fiber a day to be our healthiest. In a study published in the *American Journal of Clinical Nutrition* in September 1999, Harvard

University scientists found that women who ate 23 grams of fiber a day, mostly from cereal, were 23% less likely to have heart attacks than those who consumed only 11 grams.

- If you're trying to drop a few pounds, sitting down to a healthy, high-fiber breakfast could be the key to success. One reason may be that high-fiber foods fill you up on fewer calories. Fiber also slows the digestive process, which in turn wards off hunger pangs later. That's especially important in the morning.

Finally, the key to a healthy start to your day is to follow these simple rules: If you're a seasoned breakfast skipper, consider changing your ways and start eating breakfast, even if you aren't hungry. It takes two to three weeks to reset the appetite clock. After that, you should notice a boost in energy and fewer problems with overeating later in the day. Make sure breakfast includes at least one, preferably two, servings of fruit. Lastly, make sure your breakfast includes high-fiber foods like toasted whole grain bread, high-fiber cereal, or oatmeal. That's all you need to be well on your way to a daily helping of energy and good health!

The Creatine Craze: Weighing in the facts about this muscle-building supplement By 2LT Michael Trust, WRAMC Dietetic Intern

In the world of jocks and weight-lifters, one would be hard-pressed to find an athlete who hasn't heard of creatine - that muscle-building diet supplement that promises to transform the scrawniest of sticks into the most Herculean of hunks.

In fact, a recent awareness assessment survey conducted by the Nutrition Care Directorate showed that one in twelve active duty personnel at Walter Reed Army Medical Center consumes creatine supplements on a regular basis, making it the most popular sports product among WRAMC soldiers. So what's the skinny on creatine?

Well, here's how the facts weigh in.

If you've put more effort into your PhD than into your biceps, then you probably already know that the body uses creatine phosphate, or CP, from creatine-rich meats and phosphorus sources to synthesize adenosine triphosphate, or ATP. As an energy-rich compound used in muscle contraction, continual production of ATP occurs during normal activity and intense exercise. Used-up ATP becomes adenosine diphosphate, or ADP, which becomes ATP again when phosphorus is added from creatine phosphate. The ADP-CP combination that produces ATP quickly restores muscular energy.

In the 1990s the nutrition supplement industry seized upon this early knowledge about creatine and, based on theoretical premises, successfully produced a high-dose creatine delivery product. However, because of current laws that allow a food substance classified as a "dietary supplement" to forego testing by the Food and Drug Administration,

many of these products went on the market without any verification by the scientific community of the product's claims.

Until quite recently, that is. For instance, last August the *American Journal of Clinical Nutrition* found that the ingestion of creatine monohydrate - the edible form of creatine - at a rate of 20 grams per day for 5 to 6 days improves performance during repeated bouts of maximal exercise. Another study published in *Medicine and Science in Sports and Exercise* last March concluded that creatine supplementation significantly improved power output in weight-lifting routines, accompanied by increases in lean body mass after just one week of creatine supplementation. The same journal reported in February that the benefits were greater for men than for women, but just as significant.

Now, before you go out and guzzle a jug of creatine for your next marathon run you may want to consider some other findings. A recent report in the *Clinical Journal of Sports Medicine* warned that, because of its weight-gaining effects, creatine should not be used for endurance training. Also, high levels of creatine in muscle tissue from supplementation increases the prevalence of dehydration.

In other words, this supplement is not the miraculous power potion some may think it is. Bottom line: creatine will slow you down if you're into any sport that relies on speed and long-term endurance. Additional problems may occur when excess creatine in the muscle converts to creatinine which gets purged into the blood stream and filtered in the kidneys. Current theories that have yet to be tested speculate on whether the additional stress on the kidneys causes long-term damage. So far, only isolated case studies cite possible links between creatine usage and kidney dysfunction.

A March 1999 letter to the *New England Journal of Medicine* described an otherwise healthy 20-year-old patient who suffered from kidney inflammation due to elevated creatinine levels in his blood after consuming a creatine supplement. Another column printed by *Lancet* in April 1999 discussed a 25-year-old patient who suffered a deterioration in kidney function after ingesting supplemental creatine for seven weeks. In both these cases, after stopping creatine consumption, kidney function returned to normal. Neither of these cases developed into long-term kidney damage. So how do we know how much creatine is safe to consume?

A 1999 study in the *Journal of the American Pharmaceutical Association* showed that an initial week-long "loading period" with no more than 20 to 30 grams of creatine per day was necessary to show performance and muscle gains. To maintain a maximum level of creatine in the muscle, only 2 grams per day after the initial loading period were needed.

If you're already part of the one in twelve soldiers who uses creatine, check your labels to make sure you're not consuming - and wasting - too much. If creatine continues to live up to its promises, You may be able to maximize your physical results with less effort and time. And after you're done with your biceps, perhaps then you can work on that PhD.

Trim the Fat

By Lt Michelle Sevy

Holidays are traditionally a time of festivities and great food. Because of the abundance of food, it is common to put on a few extra pounds during the season. This article focuses on how to cut back on calories by reducing fat.

Fat in the correct type and amount does not make a person fat, extra calories do. Fat has more calories than other foods, so it is easy to eat more calories than your body needs if you eat high fat foods.

What foods are high in fat? Fat is found in animal products such as meat, milk, cheese, and butter. It is abundant in desserts due to butter, margarine, and oil used in baking.

Despite the added fats in holiday goodies, you may not need to completely avoid them to maintain your weight. However, you will need to compensate for the extra calories you eat. You can compensate with more physical activity, fewer calories at meals, or both.

Some easy ways to reduce fat and calories are to avoid buttered potatoes, cut back

on gravy and sauces such as salad dressing. Buy low-fat or non-fat varieties of sauces, and ask for light mayo (or add only mustard instead) on a sandwich.

Eat smaller portions of meat and larger portions of vegetables. Buy lean cuts of meat and trim the fat before you cook it. Eat fried food sparingly, or not at all, if you plan to eat dessert. Use low-fat margarine or try a low-calorie margarine spray.

Food can be magnificently tasty, even without the added fat. Season your foods with spices instead of margarine or butter. Use cooking sprays instead of oil.

When attempting to decrease fat and calories, remember to eat from all the different food groups. It is not healthy to avoid grains and eat fudge instead.

Choose plenty of low fat foods from all the food groups each day, such as whole grain cereal, low-fat milk, and a banana. Fill up on grains, fruits, vegetables, and dairy products first. You will feel too satisfied to eat that pan of fudge, and you will find that you can enjoy holiday eating without worrying about your waistline.

Add Color to your Day

By Lt Michelle Sevy

Colorful fruits and vegetables are loaded with good-for-you nutrients and are important for weight maintenance, especially during the holidays. People who eat at least five servings of fruits and vegetables a day have less weight gain than those who do not eat “5 A Day”.

Why? Fruits and vegetables are low in calories and high in fiber. Fiber helps you feel satisfied after eating. If you want to maintain or lose weight, strive to create colorful meals and snacks with red, purple, orange, green, and yellow fruits and vegetables.

Some simple ideas that can help you add fruits and vegetables to your day:

- Start your day with a glass of 100% fruit juice
- Add banana slices, blueberries, or raisins to hot or cold cereal
- Keep fresh or dried fruit at work
- Snack on applesauce or fruit cups
- Load up at salad bars with fresh fruits and vegetables and go easy on the dressing!
- Choose 100% fruit or vegetable juice instead of soda
- Munch on baby carrots or bell pepper slices for a crunchy snack
- Add dried fruit to trail mix
- Serve yourself an extra spoonful of vegetables at meals
- Create a stir-fry loaded with vegetables, using low-fat vegetable oil spray
- Serve vegetable or bean soup
- Add tomato slices and lettuce to your sandwich
- Create a refreshing fruit smoothie using low-fat yogurt or skim milk.
- Add blueberries to pancakes
- Top cottage cheese or yogurt with fresh or canned fruit

Choosing a variety of fruits and vegetables daily will allow enjoyable holiday eating without expanding your waistline.

Lose Weight the Healthy Way!

LT Julie A. Hess, MS, RD
Martin Army Community Hospital
Fort Benning, Georgia

Still trying to lose those few extra pounds you put on over the holidays? Along with the over-indulgence of holiday treats, many of us take a break from exercising during the holiday season, resulting in weight gain. When January comes around again, it is not uncommon for some to resort to drastic, extremely restrictive fad-diets that can be potentially dangerous. Losing weight doesn't, however, have to compromise your health if you follow these smart, healthy, weight-loss tips:

1. **Never skip meals.** Make sure you eat every 3-4 hours to keep energy levels up and to prevent from getting so hungry you stuff yourself when you do get around to eating.
2. **Eat lots of fruits and vegetables.** Try to get *at least 5* a day. Fruits and veggies are generally low in fat and low in calories. They have a high water content, which will make you feel fuller. They are also loaded with vitamins, minerals and disease fighting antioxidants and phytochemicals, which protect our cells from damage and boost the immune system.
3. **Eat more beans, oats, and whole grains.** These foods are high in soluble fiber, which will mix with liquids in your stomach to form a gelatinous mass, reducing appetite by making you feel fuller and staying in your stomach longer.
4. **Stay hydrated!** We sometimes mistake hunger for thirst. Aim for 8-10 non-caffeinated beverages a day.
5. **Learn to listen to your body.** Eat when you are hungry and stop when you are full. It takes your brain 20 minutes to register that you have eaten enough, so slow down, enjoy your food, and wait 5 or 10 minutes before going back for seconds.
6. **Watch your portion sizes.** Especially when it comes to meat. A serving is only 3 oz., which is equal to a piece of meat approximately the size of a deck of cards. Eat leaner meats like fish and poultry, or try healthy meat alternatives like dried beans, nuts, egg whites, tofu, and peanut butter.
7. **Stay away from diet pills.** Especially ones that contain ephedra or ma huang. This popular herb is found in many sports supplements and weight loss pills and is not regulated by the FDA. It has many dangerous side effects, including nausea, vomiting, headaches, seizures, insomnia, irregular heart beat, coma, and death. It can also cause dehydration and have a negative effect on your performance.
8. **Avoid anything drastic.** Set small goals, and stay away from fad diets that eliminate major food groups or require you to eat any single type of food. Your body needs a wide range of nutrients to function properly. If you eliminate major food groups, your diet may be deficient in important vitamins, minerals, and nutrients, which can ultimately have a negative effect on your health.

Remember...the key to healthy weight loss is balance. Eating a healthy, balanced diet will not only help you lose weight and boost your performance, it will also make you a healthier person and reduce your risk for disease. For more nutrition information, or to make an appointment, call the Nutrition Clinic at Martin Army Community Hospital @ 544-3858 between 0730 and 1600.

What to Eat *Before* You Compete

LT Julie A. Hess, MS, RD
Martin Army Community Hospital
Fort Benning, Georgia

“What should I eat before a race or competition?” This is one of the most common questions I am asked by competitive endurance athletes (i.e. runners, cyclists, and triathletes). I’ll tell you what I advise...but first and foremost I want to stress that this is a very individualized decision. It’s going to depend on what your food preferences are, what upsets your stomach and what doesn’t, and any previous experiences you have had, good and/or bad. If you once got sick after eating a bagel with cream cheese before a race, chances are you won’t eat this again! No one can tell you what will work best for you, but I can give you some recommendations and guidelines for good choices.

The American College of Sports Medicine, the American Dietetic Association, and the Dietitians of Canada recommended that 3-4 hours before a race, athletes eat 200-300 grams of carbohydrate. This translates into a meal that contains 800-1200 calories of carbohydrate. If your race is early in the morning, this means either getting up early to eat (and going back to sleep) or eating a hearty dinner the night before then eating a light snack before your race. Research suggests that performance is improved in athletes who consume a sports drink or other high carbohydrate energy source (60-200 calories) 1 hour before race time. This is especially important for morning races that follow an overnight fast. Again, the foods you choose to eat depend on what works best for you. However, good rules of thumb to follow include:

- To speed digestion and avoid a belly-ache, stay away foods high in fat and fiber. Avoid things like beans, broccoli, cabbage and other gas-causing foods, especially if they normally cause problems.
- Always eat familiar foods. Never experiment with new things before a race. You should try new things only while you are training to ensure they won’t cause any “GI distress.”
- Carbohydrates are the best pre-race foods because they digest quickly to give you the energy you need to perform. Good high-carb foods include pasta, rice, potatoes, fruits, juices, pancakes and oatmeal.
- When you are traveling it is a good idea to take emergency food with you. Ideal foods to pack are granola bars, trail mix, dry cereal, muffins, dried fruit, fresh fruit, PB&J sandwiches and animal crackers.
- Stocking-up a cooler and taking food with you is also a great idea for long road trips. It will keep you from eating the unfamiliar or greasy foods you typically find off of highway exits. This way you can be worry-free about stopping for food and better able to focus on your up-coming race.
- Eating well before a race isn’t going to help at all if you eat poorly while you are training. Consequently, you need to eat a high-carb, healthy diet *every day* to ensure optimal glycogen stores.

Remember, no one food works best for everyone. Experiment with some of my suggestions or try some of your own. Find out what works best for you to go out and win those races!

Nutrition Education Article
25 January 2002

Childhood Obesity...How to Halt a Growing Problem

By Amy J. Baker, 2LT, SP, Dietetic Intern

Joseph, a ten year old fourth grader, has a daily routine. He gets up in the morning, typically skips breakfast because he is running late, and his mom drives him to school, which is five blocks away. His friend's mother drops him off after school and Joseph proceeds straight to fridge and cupboards. It is always the same thing: one can of regular soda (the first of three), the economy sized bag of chips, and a handful of cookies. He immediately heads into the family room where he does one of two things, turns on the video games or boots up the computer. He plays or surfs for two and a half hours, until Mom rings the dinner bell for the evening meal of something quick and easy. One more tidbit of information...Joseph is 4 feet ten inches tall and weighs nearly 175 pounds.

This scenario is not at all uncommon in the United States. The incidence of childhood obesity is on a steep incline. We are now a country where children as young as ten years old are being diagnosed with type 2 diabetes. According to the American Medical Association, the number of overweight children has increased from 6% to 12% over the last two decades.

Why is this happening? The sedentary lifestyles and supersized fast food meals add up over the course of time. And where do the kids get the idea to lead lives like this? Well, it's often the behavior modeled by their own parents. Our busy lives often cause us to neglect our health by skipping daily exercise and reaching for fast, unhealthy foods.

What many people do not realize is that the "snacks" they eat often contain as many calories or even more than a regular meal would. If you couple that with non-calorie-expendng behavior of sitting and watching TV for a couple hours, that equals weight gain after repeating this time and time again. Of course, if an individual does this once in a while it won't hurt. Nor will it hurt if you have a light, low-fat snack and watch T.V. for a half hour and lead a moderately active lifestyle.

Today's society is so full of technologies that children don't remember the days when your mother booted you out of the house until supper to play tag with the neighbor kids. Food is also so abundant in this country that it wouldn't be difficult to eat too many calories with the amount of snack foods commonly kept in the pantry. It makes sense that kids who are not very physically active and are snacking too often are at high risk for becoming overweight or obese.

We can change this trend by making smarter choices and getting out and moving! If not for our own health, then for the health of our children. If Mom and Dad have started keeping healthier choices in the house, spend less time in front of the television, and make fitness a family event, then the children are likely to follow these healthy lifestyle patterns.

Tips for the parent with an overweight or obese child:

- Do not overly restrict food or encourage strict dieting as this can lead to eating disorders
- Encourage more exercise for the whole family, such as bike rides, basketball games, camping trips with plenty of hiking, frisby in the yard, dog walking...
- You are the parent...limit television, video games, and mindless Internet surfing.
- Keep many healthy snack options in the house, but do not eliminate all "junk foods". Instead, encourage moderate portions of these items as well as for all foods.
- If possible, have after-school snacks ready to go. For example, a pre-portioned bowl of potato chips and an apple, or celery sticks spread with a small amount of peanut butter and quarter cup of raisins.
- Discourage children from taking the whole bag, box or container of any food in front of the television. Have them put a serving on a plate or in a bowl.
- Have a list of chores for your child to do after school.

- Do not allow your child to skip breakfast. Have cut-up fresh fruit, hard-boiled eggs, English muffins, or a serving of Carnation Instant Breakfast made with skim milk ready for them to grab on rushed mornings.
- Prepare healthier meals for the entire family. Never make one serving of a "diet food" for your overweight child while the rest of the family eats the "regular" dish.

Do you have an overweight child or any nutritional concerns? If so, please contact the BAMC Nutrition Care Division at 916-5525, so that we may try to answer your questions or to schedule an appointment with a registered dietitian. We can also provide you information on the newest fitness program for kids, "Kid Fit".

NUTRITION ARTICLE

Liquid Energy & Optimal Performance

2LT Johnna J. Turner
Dietetic Intern

“Boost your energy”, “Revitalize your endurance”, “Increase your adrenaline.” These are just a few of the claims made by various sports/energy drinks. Do these say it all! Not quite. Finally, answers to those often asked questions regarding fluids and optimal performance!

What is the key to optimal performance?

Hydration is the key to optimal performance. If you do not drink water before, during, and after exercise, performance can actually become impaired. Dehydration results, which can lead to loss of appetite, nausea, dizziness, impatience, sleepiness, difficulty concentrating, increased pulse rate, heat stroke, and even death. So it's very important to make sure you get enough fluids to replace what's lost during exercise.

How much fluid should I drink to stay hydrated?

Before exercise, drink 16-20 ounces of fluid at least two hours prior to exercising. Additionally, drink 14-16 ounces fifteen minutes before exercise. This will help maintain your level of hydration throughout exercise and help you perform best.

During exercise, drink enough to replace at least 50% of fluid losses. You can accomplish this by drinking 4-6 ounces of cool liquid every ten to fifteen minutes.

After exercise, replace fluid losses by drinking 16 ounces of liquid for every pound of weight lost.

What are the benefits of water?

Water is the appropriate fluid of choice to rehydrate you and help keep you performing your best. It is inexpensive and almost always readily available.

Water is most beneficial during exercise lasting less than 60 to 90 minutes including football, hockey, basketball, and track. At this point you have plenty of energy stores in your liver and muscle to provide energy during the event so a sports drink with additional carbohydrates and calories is not necessary.

When are sports drinks beneficial?

During situations of continuous exercise lasting longer than 90 minutes such as a marathon or long-distance cross-country skiing, a sports drink would be beneficial. As you exercise, your body uses carbohydrate stored in the liver and muscle for energy therefore exercising for extended periods of time may deplete these stores. You may have heard this referred to as “hitting the wall.” Sports drinks are used to supplement carbohydrates and electrolyte needs during prolonged exercise. This is important to help you concentrate and remain focused. There are several commercial sports drinks available that provide anywhere from 4-17% carbohydrate concentration.

Helpful tips to choosing a sports drink

- Choose a sports drink with 4% to 8% of carbohydrates and electrolytes. The more concentrated drinks can actually restrict or delay fluid absorption. You can determine % carbohydrate concentration by reading the nutrition label on the back of most commercial sports drinks.

- Avoid sports drinks that contain fructose as the only source of carbohydrate because fructose is not used as quickly as other carbohydrates for energy. Fructose may also cause delayed stomach emptying and an upset stomach.
- When using fruit juices as a sports drink, dilute the juice with an equal amount of water. This is recommended because most juices have a high carbohydrate content, which slows absorption and can lead to stomach cramps.
- Most sports drinks provide several servings per container. This disguises how many excess calories you're actually drinking. The amount of sugar found in these drinks often equal or exceed amounts found in sodas and fruit drinks. Be sure that you read labels and know what your sports drink is made of.
- Don't confuse "sports" drinks with "energy" drinks. Energy drinks often contain up to 100 to 160 calories per cup, which is about twice that of a sports drink. Beware of energy drinks containing stimulants such as guarana and caffeine as they act as diuretics that increase your risk of dehydration and may also lead to an increased heart rate and high blood pressure.

Keep these tips in mind when you're playing softball this spring or you are out running the Combat Medic Run in July! Whether you choose water or a sports drink, be sure that you get plenty of fluids.

Ephedra
By 2LT Nicole Snyder
Dietetic Intern, Nutrition Care Division

Ephedra has been used as a medicinal herb for several centuries. The Chinese started using it 5,000 years ago to relieve symptoms associated with nasal congestion, asthma, and coughing. Today ephedrine, a synthetic form of ephedra, is used in over the counter cold and asthma medications. Some manufactures claim that the naturally occurring ephedra can speed up metabolism resulting in weight loss, reduce asthma symptoms, act as a nasal decongestant, provide a quick boost of energy, and even bring one to a form of herbal ecstasy.

While studies do indicate ephedra increases weight loss over a placebo, none of the other claims have yet to be validated by science.

In 1996 the Food and Drug Administration (FDA) warned against taking ephedra due to potentially harmful side effects including rapid heart beat, hypertension, nervousness, headache, insomnia, and dizziness. Ephedra is directly linked to detrimental health effects in 800 people and 17 deaths in otherwise healthy individuals as of 1997. In the weight loss mentioned above participants receiving ephedra reported feeling tremors, insomnia, and dizzy for up to two months after the conclusion of the study.

The FDA does not regulate the content of supplements so the manufactures are not held under any labeling standards. In fact, in one study of nine supplements researchers found nine different levels of ephedra including one product with absolutely no ephedra in it! Currently the FDA is trying to regulate the amount of ephedra in one dose to 8 mg which is the highest level with no adverse side effects. Individuals with hypertension, cardiovascular disease, thyroid disease, diabetes, and neurological disorders are strongly encouraged to avoid ephedra completely.

Individuals who use ephedra for weight loss may want to reconsider the quick fix approach for a slower, yet healthier and potentially safer weight loss method. Weight loss techniques include consuming smaller portions, drinking water instead of regular soda, exchanging chips and sweets for fruit and vegetables, and eating high fiber foods. Exercise is the second half to losing weight effectively. Try to workout a minimum of 20 minutes three times a week and adding activity to your day. For example, park in the furthest spot from the door and walk, take the stairs instead of the elevator, or walk the corridors of your building during breaks instead of eating a snack. If you have tried all of these techniques and still have not lost weight, contact your local registered dietitian for additional tips and weight loss plans.

Finally, if you currently take natural ephedra to relieve asthma symptoms, congestion or fatigue, contact your doctor to make sure your illness is not serious. Remember, the quickest fix is not always the safest way to go.

National Nutrition Month-Start Today for a Healthy Tomorrow

Laura Hubbard, 2LT, Dietetic Intern

Crystal balls, star charts and tea leaves are several ways people have struggled to see into the future and control their destiny. However, you can predict your own future better than the neighborhood fortune teller and you don't even need a crystal ball! One of the greatest impacts on your future quality of life, is your overall current lifestyle. Overall lifestyle is made up of your eating and exercise habits.

Adventure in exercise

Exercise doesn't have to be a chore. It also doesn't have to be in a fancy gym or on expensive equipment. Playing a game of basketball, soccer or any sport with friends is a fun way to get exercise. A simple walk or a planned hike in the forest or mountains also counts as exercise.

Exercise can lead to a new adventure or hobby. Several people have found the thrill of mountain biking or rock climbing as a way to get exercise. Swimming or dancing is another option. With some hot music and a few friends you can have a great time and dance your way to better fitness. Whether it is a simple walk or a weekend backpacking trip, there exist countless new and exciting ways for people of all ages to get exercise. Just experiment; it doesn't matter what you do as long as you find an activity that that you like and will give you the daily exercise your body needs.

Find a new flavor

A healthy eating plan often gets a bad rap as something boring or as hard work, but even small changes can make a big impact. Something as simple as adding more vegetables to your diet can make all the difference, especially if they replace other higher fat foods. Trying a new vegetable recipe is a great way to add a new interesting twist to your meal. Recipes are available in books, magazines and even for free at certain Internet sites and in the produce section of the grocery store. If preparing and storing vegetables is difficult, try frozen mixes. Many vegetables freeze well and when not over cooked, keep their flavor and texture. A variety of fruits and vegetables gives your body the nutrients it needs for peak performance and it is also good for healthy skin and hair.

Individualized nutrition- your own personal guide

It doesn't take a complicated equation or diet to find the foods that are best for your individual needs. The food guide pyramid can be your own personal road map. If your goal were to lose weight then you would eat on the lower end of the servings range in each pyramid group. For example, choose the minimum of six servings of grains and cereals and two servings of meats. Since you are eating less meat and starches you can avoid feeling hungry by filling up on extra vegetables. If the goal were to gain weight then a person would eat on the higher end of the pyramid serving range, around 9-11 servings of grains.

Not only is the number of servings important, but also the types of foods we eat. For a healthy heart and good weight control, choose lean meats such as fish or poultry. Beef can also be lean if you use round, sirloin, tenderloin or very lean hamburger. When preparing meats, remember to take off the skin, broil or bake. By using lean meats and healthy cooking methods, you can drastically cut down on fat without feeling deprived.

Dairy products also contain protein and are a great source of calcium. They are also available in low fat or fat free option. Skim milk and 1% are low in fat but still high in overall nutrients. Yogurt and low fat cottage cheeses can add a refreshing boost to any meal or snack.

Portion power instead of will power

The main area where people go astray is in the fats, oils, and sweets group. This is the group typically labeled the "bad" foods. A few sweets will not ruin your life. It is the overall diet and lifestyle that is important. Even a diet of pure carrots is unhealthy because it does not have all nutrients your body needs. The overall message to

remember is portion control. Too much food will cause extra weight gain. Also, too much of one type of food makes an unbalanced diet. The healthiest and most interesting eating pattern is one with variety and color-- color that comes from filling your plate with a combination of foods, especially crisp juicy vegetables.

Determine your destiny

The greatest influence on your future quality of life is the choice you make today. March is National Nutrition Month where people of all ages can learn that the power to determine their future lies in their own hands. Let each of us celebrate the theme of this month by starting today for a healthier tomorrow.

NUTRITION ARTICLE

Holiday Eating

2LT Jennifer L. Rodriguez

The holidays are near. The scene is set: a giant table decorated with the colors of fall, a cornucopia sits center stage, surrounded by a succulent turkey filled with steaming stuffing, a giant bowl of buttered, mashed potatoes and sweet potatoes with melting marshmallows dotting the top. Across the table sits pumpkin pie, pecan pie, and to top it off creamy,

homemade eggnog. The family gathers around the table as mom says the prayer and dad carves the turkey.

It's an all too familiar scene. Most of us remember the events following the feast, where we all sit around the television for football with the top button of our pants open and grandpa saying, "Great meal Margaret!"

Unfortunately most of us continue this "holiday spirit" and eat this way throughout the season until the New Year rolls around and we have to choose "weight loss" as our resolution! Why not prevent the inevitable and stop the madness at the pass? Making healthy decisions now, can keep you from feeling guilty and unhappy come New Year 's Eve.

So, how do we get that same great feeling and still remain nutritionally healthy? Here are a few tips and a recipe to get you through the holidays healthy, happy, and ready for the New Year!

- ◆ Alter recipes for fat, sugar, and salt content by decreasing the amount of butter or margarine called for, eliminating the salt, or using sugar substitute if possible.
- ◆ Start with a salad before the main meal. It's a great way to get in your vegetables and it can help you eat less.
- ◆ Eat lots of brightly colored, steamed vegetables to reap the benefits of all the wonderful vitamins and minerals to include those cancer fighting antioxidants!
- ◆ Reduce those portion sizes and avoid seconds by eating slowly and savoring the flavors.
- ◆ Choose white meat, it's lower in fat!
- ◆ Don't add extra butter to recipes or at the dinner table.
- ◆ Use lots of herbs instead of salt for flavor. Try adding herb blends with sage and/or thyme to your turkey.

- ◆ Exercise the morning before the big meal. Take the family for a walk after the meal instead of plopping down on the sofa for a nap.
- ◆ Most importantly, enjoy the time with family and friends!

Here's a great healthy recipe for a holiday favorite - Stuffing...ENJOY!

Savory Fruited Stuffing

The stuffing can be refrigerated for up to 24 hours before baking to allow the broth to soak in.

Ingredients:

- 3 ½ cups fat-free, less sodium chicken broth
- 1 cup dried mixed fruit bits
- 1 tbsp olive oil
- 2 cups finely chopped onion
- ½ cup thinly sliced celery
- 1 (14 oz) package cubed country style stuffing mix (such as Pepperidge Farm)

Instructions:

1. Preheat oven to 350°.
2. Combine broth and dried fruit in a small microwave safe bowl; microwave at high for 2 minutes or until hot. Cover and let stand 10 minutes.
3. Heat the olive oil in a large saucepan over medium heat. Add onion and celery; cook 8 minutes or until tender, stirring occasionally. Add broth mixture, and bring to a simmer. Remove from heat; stir in stuffing mix, toss well.
4. Spoon stuffing into a 13 x 9 inch baking dish; cover and refrigerate for 2 hours. Cover and bake at 350° for 30 minutes. Yield 10 servings (serving size: 1 cup).

Nutritional Information:

CALORIES 224 (16% from fat); FAT 4g (sat 1.5g, mono 1.8g, poly 0.1g); PROTEIN 7.2g; CARB 41g; FIBER 3.9g; CHOL 6mg; IRON 2mg; SODIUM 597mg; CALC 58mg

Reference: www.cookinglight.com

Heart Healthy Hints

By 2LT Paula S. Wedel, Dietetic Intern, Nutrition Care Division, BAMC

Fourteen million Americans are affected by Coronary Heart Disease (CHD). Will you be one? CHD is the leading cause of death for American men and women. You can control this disease by making simple choices to protect yourself. Physical activity and eating habits have a huge affect on your chance of getting CHD. By implementing small changes into your lifestyle you can keep your heart healthy and happy for many years to come.

The first step is determining if your weight is helping or hurting your heart. The best way to determine your body composition is to calculate your body mass index (BMI). You can do this by taking your weight in pounds divided by your height in inches squared and multiply the answer by 705. If your

score is between 20-25 you are at the least risk for early death. If the result is 26 or above you are considered to have a higher risk of developing disease earlier in life. Once you understand where your ideal heart-healthy weight is, you can begin making goals to reach or maintain that weight.

Next, determine if your blood lipid levels are acceptable or increasing your risk for future disease. Desirable levels for total cholesterol fall below 200 mg/dL; LDL cholesterol should be below 130 mg/dL; HDL cholesterol should be greater than 40 mg/dL; and triglycerides should be less than 150 mg/dL. These levels are used for individuals who do not have additional risk factors for CHD. Factors that further increase risk for CHD include cigarette smoking, family history, blood pressure greater than 140/90 mmHg and an age greater than 45 for men and 55 for women. Check with your doctor or registered dietitian for more complete details about the levels you should be at to protect your heart from future disease.

Now that you know about your risk, how do you protect yourself? The first step is limiting the amount of fat that you consume each day to no more than 30% of your total calorie intake. Saturated fat can raise blood cholesterol and should be kept below 10% of your total energy intake. For example, a 180 pound, lightly active male needs approximately 2,800 calories per day. To get less than 30% of his total calories as fat he needs to consume no more than 93 grams of total fat. He should limit his intake of saturated fat to 10% of total calories, so this individual should consume approximately 31 grams of saturated fat per day. These numbers may sound high but your body really does need fat to carry out essential processes every day.

An additional way to decrease cholesterol includes the intake of plant sterols. Plants assist by lowering total and LDL cholesterol levels. It is the stanols and sterols in plants that can keep you healthy. You may be wondering what exactly stanols and sterols are and how they can help you. Stanols and sterols are actually similar in structure to cholesterol, but their small difference does not allow them to be absorbed as easily into the body. Because they are similar they compete with cholesterol to reduce absorption of cholesterol, causing a reduction in your blood cholesterol levels. Studies showing decreases in blood cholesterol by eating plant sterols began in the 1950's and current researchers found ways to include plant sterols and stanols in some margarines and mayonnaises. Not all margarine and mayonnaise include stanols and sterols. Check the ingredient label to be sure. These special products are typically more expensive than regular margarine and mayonnaise, but the protective benefit may be worth the additional

cost. You should use 3 servings of one spread each day for the cholesterol lowering benefits. Are you thinking that anything that good for you cannot taste good? Well, I tried them and they taste just like regular margarine—very tasty.

Increasing fiber also helps to lower cholesterol and keep your heart healthy. There are two important types of fiber, soluble and insoluble. Soluble fiber can help to lower blood cholesterol and is found in oat products, dried peas and beans, and certain fruits like prunes. Insoluble fiber keeps your digestive tract healthy and is found in whole grain breads and cereals, fruits and vegetables. Look for bread products that have at least 3 grams of fiber per serving.

Exercise also does a body good. Physical activity helps to control your cholesterol levels and assists in maintaining a healthy body weight. Find fun activities to add to your life and grab a buddy for motivation. Everything is more fun when you include someone else. By implementing exercise and healthy eating into your diet you can have a happy, healthy heart and protect yourself from CHD for many years to come. If you are interested in learning more about a heart healthy eating plan or need additional help with nutrition, call a Brooke Army Medical Center Registered Dietitian at 916-3372.

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