NATIONAL DEFENSE UNIVERSITY

EXECUTIVE PHYSIOLOGY & STRENGTH TRAINING

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Executive Physiology: Learning Objectives

- Design and implement strategies to enhance food intake for sustainable energy
- Understand nutrition needs change across lifespan and activity levels
- Learn about supplements that may assist with mental health, bone health and physical health
- Apply suggested exercises to your workout routine while on travel or away from your home gym.

Executive Physiology: Strategic Fueling

Assessment Activity

- Fuel Assessment
  - 24-hour recall

Typical Client

- Skips breakfast
- Restricts energy
- Skimps on protein
- Overeats in evening
- Exercises under fueled or fasted
- Performs workouts without a purpose or potential
- Neglects sleep

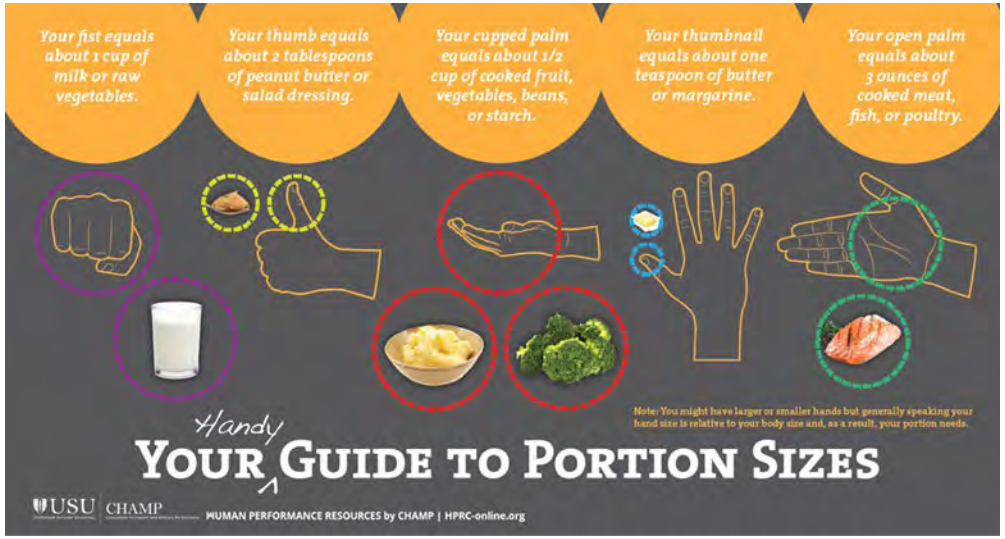
Executive Physiology: Science

Low Energy Availability (LEA)

Executive Physiology: Strategic Fueling

Power up your Plate: Fuel with a Purpose

- Fruits and Vegetables — *Half*
- Carbohydrate — *Quarter*
- Protein — *Quarter*
- Healthy fats — *Need to have <u>some</u>!*



Executive Physiology: Gut Microbiome

How to Build a Robust Belly

- Food
- Exercise
- Sleep

Behaviors Destroy and Cause Havoc in Your Belly

- Antibiotics
- Artificial sweeteners
- Processed foods
- High sugar and saturated fats

Executive Physiology: Gut Microbiome

How to Better Your Belly

- **Unprocessed foods**
  - Foods in their whole form, most natural state, at time of purchase
    - Fruits, vegetables, seeds, fresh lean meats, fish, legumes and nuts
- **Processed foods**
  - Foods that have undergone changes that alter the natural state of the food – heating, freezing, dicing and juicing
    - Frozen fruits/vegetables, pre sliced fruits and vegetables, fresh juices, instant brown rice, nut butter, tofu, whole wheat break, extra virgin olive oil, plain yogurt and dried fruits
- **Ultra processed foods**
  - Foods to created mostly or entirely from substances extracted from foods or derived from food constituents with little intact
    - Snacks, drinks and ready-made meals

Executive Physiology: Gut Microbiome

"Plant Eating Challenge"

Eating a wide variety of plants improves our gut microbiome, provides many essential ingredients, improves your mood, reduces the risk of chronic disease/inflammation and keeps you fuller for longer (think fiber). Additionally plant-based foods use less water and land and greenhouse gas emissions than animal –based foods, which means it's better for the environment.

How it Works

Commit to tracking your intake of plant-based food for one week. The goal is to eat 30 **DIFFERENT** plant sources in one week. Portions do not count in this challenge; a large and small banana counts both count as one point. You don't need a specific amount or serving size to count – if you have a couple of grapes or a bite of an apple, you can count it as part of your total.

What foods count as points (one point)

Whole grains: Oats, whole wheat pasta/crackers/cereal/quinoa, red rice, farro, buckwheat, brown rice, spelt
Nuts & seeds: Walnuts, cashews, peanuts, almonds, chia/flax, pumpkin, sunflower and hemp
Legumes: Lentils, chickpeas, kidney beans, black-eyed beans, butter beans, cannellini beans, garbanzo beans
Fruits and vegetables: Fresh, dried or canned (natural juices, no sugar)
Non-dairy yogurt: Plant-based yogurt (soy, almond, oat milk)

What foods count as points (¼ point)

Turmeric, cayenne pepper, paprika, cumin, thyme, rosemary, black pepper, cinnamon, ginger, coffee, tea, dark chocolate, olive oil

Executive Physiology: Supplements

Supplements

Not regulated for legality, efficacy and safety

- What to look for in a supplement
  - Third-party organizations to review products quality
  - If certified, will have label and listed on company's website
  - Supplement label and no 3rd party certification = move on
- Use caution
  - Propriety blends
  - Herbal ingredients

Executive Physiology: Supplements

Supplements

The Department of Defense Dietary Supplement Resource

- Operation Supplement Safety
  - DOD Prohibited Dietary Supplement Ingredients
    - https://www.opss.org/dod-prohibited-dietary-supplement-ingredients

Executive Physiology: Supplements

Supplementation

- Creatine
- Omega-3
- Vitamin D
- Magnesium
- Creatine
- Protein

Executive Physiology: Supplements

Supplements

Manage Mental Health

- Creatine
  - Body makes; obtain from protein-rich foods
  - Supplies energy to muscles
  - Improves mood and severity of depressive episodes
  - Reduces mental fatigue and improves cognition
  - Helps slow the decline in skeletal muscle and bone mineraly density
- Sources
  - Beef, pork, chicken, turkey, fish, daily
- Supplementation
  - Creatine monohydrate
  - 3-5 grams / day

Executive Physiology: Supplements

Supplements

Bone Health

- Vitamin D
  - Obtained from food and body makes it
  - Absorbs and retains calcium and phosphorous
  - Essential for immune function, heart health and muscle function
  - Consume with the presence of fat in a meal to enhance absorption
- Sources
  - Fatty fish (tuna, salmon, mackerel), egg yolks, fortified milk & cheese, ready-to-eat cereal, fruit juices and SUNSHINE
- Supplementation – Vitamin D3
  - 2,000 – 4,000 IU

Executive Physiology: Supplements

Supplements

Bone Health

- Calcium
  - Decrease in bone mass (estrogen protects) at 30 years
  - Small decline until menopause; decline is more dramatic

Institute of Medicine

- 1,200 mg calcium / day over 50 - through food
- 1,000 mg calcium / day under 50 – through food

- Sources of Calcium
  - Leafy greens, salmon, canned sardines with bones, yogurt, string cheese, milk, fortified cereals/grains, tofu, bok choy, fortified cereals/orange juice
- Supplementation
  - 500 – 600 mg/day; Calcium Citrate or Malate

Executive Physiology: Supplements

Supplements

Bone Health

- Magnesium
  - Maintains blood pressure, muscle/nerve function
  - Regulates blood sugar
  - Protects of bone health
- Sources
  - Leafy greens, black beans, bananas, brown rice, legumes, nuts, seeds, spinach whole grains, fish, poultry and beef
- Supplementation
  - 310-320 mg /day Magnesium glycinate (sleep)

Executive Physiology: Supplements

Supplements

- Protein
  - Provides amino acids your body needs to build / repair muscles and cells
  - Supports immune functions; facilitate chemical reactions
- Sources
  - Whey protein (more bioavailable)
  - Plant-based (pea, soy)
  - Recommendations increase for plant-based diets
- Supplement Dose
  - 10-60 grams (newest research) Whey protein

Executive Physiology: Strategic Fueling

Supplements

- Omega 3-Fatty Acid
  - Decreases inflammation / assist with good cholesterol reduces risk of cardiovascular disease, reduces depression and anxiety

- Supplement Dose
  - 1-2 g/day but not more than 3 grams a day
  - TG based fish oil = increased bioavailability

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