Applying current nutritional concepts to return to play performance

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Conflict of Interest Disclosure

- I have no conflicts of interest to disclose.

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Learning Objectives

- Describe how nutrition contributes to improved recovery and return to play.
- Identify nutrients and supplements that will assist in improved recovery and recovery times.
- Apply concepts learned to answer questions on nutrition for injury and rehabilitation.

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- Nutrition and physical activity are intricately linked and must be considered together:
  - changes in physical activity result in changes in nutritional needs
  - changes in nutrition are reflected in changes in physical activity

- Nutrition during an injury or rehabilitation has multiple phases that tie to the phases of treatment.
  - Phase 1 – Injury and immobilization
    - Most muscle loss occurs during this phase.
  - Phase 2 – Rehabilitation
    - Exercise is re-introduced in the form of therapy and athletes are advanced to full practice as cleared.

Phase 1

- Nutrition goals
  - Minimize inflammation and muscle mass loss through intake of high-quality protein and foods that lower inflammation.
  - Manage weight by eating enough calories to aid in healing but prevent weight gain.
  - Wound healing after surgery, walking on crutches and physical therapy all require a lot of energy but needs may be decreased from what the athlete needs during sport participation.

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Nutrition Recommendations

- Energy (calories)
  - Needs are slightly higher to assist with the healing process.
  - Small weight gain may be beneficial to prevent muscle loss and limitation of muscle growth.
- Protein
  - Needs are higher to prevent lose of muscle mass and strength loss.

Nutrition Recommendations

- Carbohydrate
  - Main source for of energy for physical activity
  - Can be slightly lowered to prevent excessive weight gain
- Fat
  - Essential for healing
  - Type is critical – Omega-3s

Nutrition Recommendations

- Vitamins & Minerals
  - Vitamin C
    - Assists in wound healing, tissue repair and optimal immune function
  - Vitamin A
    - Assists with cell growth and development and immune function
  - Zinc
    - Assists with wound healing, protein synthesis and immune function
  - Vitamin D
    - Important for bone health and immune function
  - Fluids
    - Supports the delivery of nutrients to organs & tissues

Foods That Lower Inflammation

- Fruits & Vegetables
- Legumes
- Whole grains
- Fish rich in Omega-3s
- Plant foods rich in Omega-3s

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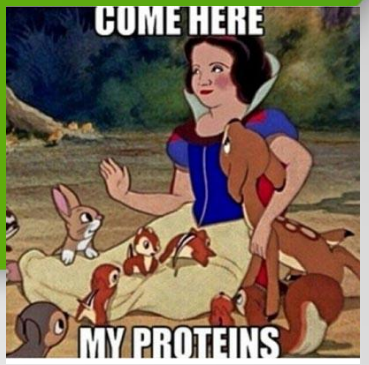
High Quality Proteins

- Assist in
  - Wound healing
  - Repairing broken bones
  - Building healthy blood cells
  - Supporting a strong immune system
  - Supporting muscle protein growth and strength
- Aim to spread intake throughout the day.
- Always pair with a carbohydrate to assure fuel is present so protein can be used.

High Quality Protein



- Eggs, egg whites and egg substitutes
- Low-fat cheese, cottage cheese, yogurt (regular and greek) and milk/milk alternatives
- Lean meats (beef, pork, chicken, turkey, lamb, bison) and fish
- Soy foods (tofu, tempeh, miso, soy nuts, soy vegetable protein)

Phase 2

- Nutrition goals
  - Regain muscle mass by continuing to enjoy high protein foods.
  - Continue to heal by including foods that are high in vitamins C and D, zinc and calcium.
  - Ease side effects of pain medications by adding good sources of fiber to your diet.

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Nutrition Recommendations

- Energy (calories)
  - Needs are slightly higher to support strength training.
  - Based on frequency, duration and intensity of rehab
- Protein
  - Needs are higher to support tissue recovery, repair and encourage muscle growth.

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Nutrition Recommendations

- Carbohydrate
  - May to need to increase during this stage based on rehab intensity and duration as well as weight goals
- Anti-inflammatories
  - Omega-3s
  - Vitamins & minerals
- Fluids

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Vitamin C and Zinc

- Superstar nutrients for their roles in healing
  - Vitamin C
    - Helps make collagen, repair tendons and ligaments and heals surgical wounds.
    - Found in highest concentrations in citrus fruits, strawberries, kiwi, baked potatoes, broccoli and bell peppers.
  - Zinc
    - Found primarily in animal foods but can also be found in whole grain breads and cereals, legumes and nuts.
    - Be cautious of high-dose supplements which can cause nausea and vomiting.

Calcium and Vitamin D

- Associated with healthy bones and are beneficial in healing bone or stress fractures.
- Best sources are low-fat dairy products and sunshine exposure without SPF.

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Fiber

- Prevents constipation from pain medications prescribed after injury or surgery.
- Good sources
  - Prunes and prune juice
  - Fruits and vegetables
  - High fiber whole grain cereals and breads
  - Legumes

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Factors That May Interfere with Recovery

- For optimal recovery avoid:
  - Fried/fatty foods
  - Added sugars and concentrated sweets
  - Alcohol
  - Less than optimal sleep

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Supplements & Nutritional Considerations

- Appropriate for weeks 0-8 of treatment.
- Whole foods are preferable.
- Beneficial if needs cannot be met through food alone.

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Healing Through Food

- High quality omega-3 fatty acids
  - From cold water fish
- Branched chain amino acids (BCAAs)
  - 3gm of leucine every 3-4 hours (found in 25-30g of whey protein, 140g of chicken or 170g of fish)
- Casein
  - 20-25g prior to bed (protein powder, 1c low-fat cottage cheese or 1.5c greek yogurt)
- Tart cherry juice
  - 12-24oz/d
  - Anti-inflammatory and antioxidant support
- Gelatin or gelatin-based foods
  - May support collagen synthesis

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Research Based Supplements

- Creatine monohydrate
  - Anabolic properties
  - 10g/d for 2 weeks, then 5g/d
  - Loading not required outside of injury/surgical treatment.
- β-hydroxyl-β-methylbutyrate (HMB)
  - Anabolic and anti-catabolic properties on lean body mass
  - 3gm/d
- Fish oil
  - Anti-inflammatory
  - 3-4g/d DHA+EPA

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QUESTIONS?

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Sources

- SCAN – Sports, Cardiovascular & Wellness Nutrition DPG
- CPSDA –Collegiate & Professional Sports Dietitians Association
- NATA – National Athletics Trainers Association

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