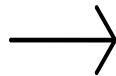


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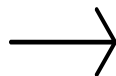
Nutrition Concerns for Gymnasts

Nutrition Concerns

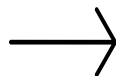
1. Inadequate energy to meet energy demands.



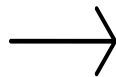
2. Inadequate macronutrient intakes, carbohydrate, protein and essential fats, to meet the demands of various training phases for optimal performance, maintenance of lean mass and bone, and support for the immune system and brain health.



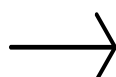
3. Inappropriate timing of food intake and types of foods around exercise and competition that hamper performance and recovery.



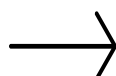
4. Dieting for weight loss to achieve and maintain a competitive body size and composition, while maintaining a high level of fitness and performance.



5. Elimination of food groups that can reduce energy intake and the important nutrients derived from these foods.



6. Inadequate micronutrient intakes to support bone health (calcium, vitamin D), red cell production (zinc, iron, folate, vitamin B-12), energy production (B-vitamins), and maintain overall health.



Nutrition Recommendations

1. Fuel properly by consuming enough calories based on exercise intensity and duration.

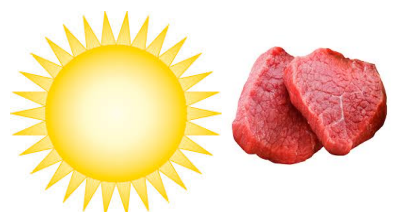
2. It is important to consume a variety of nutrient-dense carbohydrates (whole grains, fruits, vegetables, and dairy), lean proteins (chicken breast, sirloin steak, pork tenderloin) or plant-based proteins (tofu, tempeh, and beans/lentils), and healthy fats like mono -or polyunsaturated fats - omega 3 fatty acids (avocados, nuts, seeds, olive oil, fatty fish, and eggs).

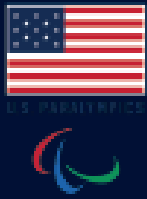
3. Eat an easily digestible energy-dense snack (banana or applesauce) 30 minutes before exercise to fuel training. Once training has surpassed 60 minutes consider eating a snack every 15-30 minutes. Don't forget to have a snack after practice with protein and carbohydrates like a 8-oz chocolate milk, yogurt and berries or a protein bar to help with recovery.

4. It is difficult to train at a high level, recover quickly, sleep effectively and focus clearly when your body is not being fueled properly. Remember low body composition or a smaller body mass doesn't necessarily always translate to better performance.

5. Remember food is fuel so eliminating one food group may cause you to miss out on specific vitamins or minerals that you wouldn't ordinarily get from other foods (ex: whole grains provide most of your B vitamins).

6. Consuming a variety of foods within 3 meals and 3 snacks a day can reduce the risk of micronutrient deficiency. It may also help to optimize performance and recovery.





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Nutrition Concerns for Gymnasts

Relative Energy Deficiency (RED-S)

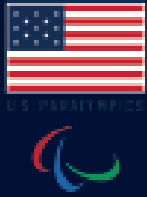
If the RED-S syndrome is present in an athlete, either inadvertently or through purposeful dieting or disordered eating, athletes can experience increased fatigue, injuries or illness, nutrient deficiencies, menstrual dysfunction, poor bone health, and lack of improvement in performance. In addition, athletes can experience impairments in metabolic rate, immunity, protein synthesis and cardiovascular health.



Figure 2

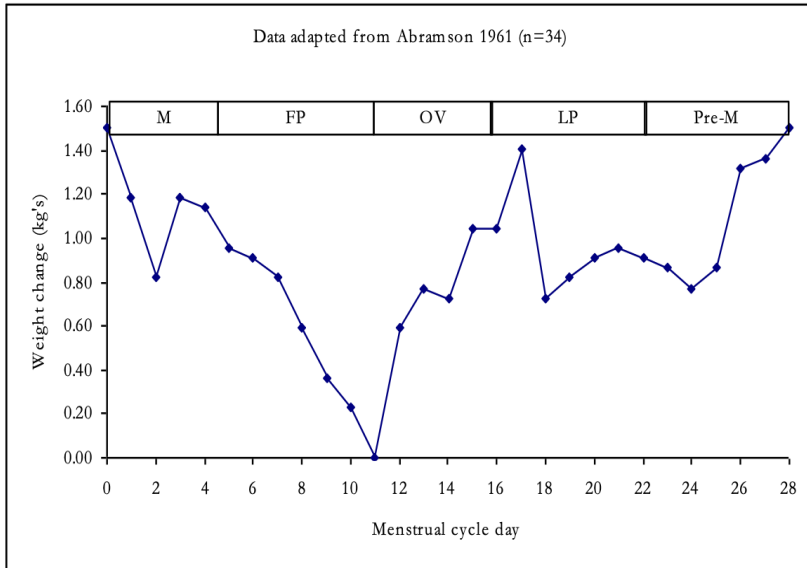
Signs & Symptoms

- **Exercises associated menstrual dysfunction:** When energy intake does not cover the demands of energy expenditure it may be manifested as oligomenorrhea (irregular periods) or amenorrhea (no period \geq 3 months), especially during the training and competitive season.
- **Weight loss:** Once other health issues are eliminated, weight loss while training hard is a clear sign of inadequate energy intake.
- **Poor growth:** For young athletes, if growth is below the recommended levels, it may be due to inadequate energy to fuel both exercise and growth.
- **Frequent injuries/illnesses:** Repeated muscle or bone injuries that heal slowly may also be a sign of overtraining and under fueling.
- **Fatigue/irritability:** If the athlete is finding it difficult to concentrate during exercise, or is shaky or lightheaded while training, it may be due to inadequate energy intake.



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Nutrition Concerns for Gymnasts



Weight Fluctuations with Menstrual Cycle

Menstruation (M): elimination of the thickened lining of the uterus (endometrium) from the body through the vagina. Menstrual fluid contains blood, cells from the lining of the uterus and mucus. Timeframe: 1st -7th day.

Follicular Phase (FP): starts on first day of menstruation and ends with ovulation. Timeframe: 4th -10th day.

Ovulation (OV): release of mature egg from surface of the ovary. Timeframe: 11th - 17th day.

Luteal phase (LP): The egg bursts during ovulation and the follicle transforms into a structure known as the corpus luteum. Timeframe: ~17th - 22nd days.

Largest percent weight increase is at day 16 of 28 days with a weight gain of approximately 1.5 pounds.

Important Micronutrients

Consuming a balanced meal plan is extremely important for athletes, and particularly for females who may be at increased risk for micronutrient (vitamins and minerals) deficiencies. Female athletes are more susceptible to iron deficiency than males due to blood loss through menstruation. Iron deficiency can lead to a decrease in performance and an increase in fatigue. When the body is lacking iron, it makes less hemoglobin and fewer RBCs, so the blood delivers less oxygen. Consult with a dietitian to discuss your individualized nutrition plan to ensure you're getting the right amounts of micronutrients to enhance performance.

