



Sports Nutrition



Carla B.Sottovia, PhD

RunOn- The Cooper Fitness
Center



Types of Fuel for Physical Activity

- Carbohydrates: glucose; glycogen
- Fats: fatty acids (triglycerides).
- Protein: (only in extreme cases of starvation).





Carbohydrates



- Main energy fuel at rest and during activity.
- It uses less oxygen to be metabolized than fat.
- It is stored in the liver, muscle (glycogen), and blood.
- If CHO stores are totally depleted, one cannot continue to perform "hitting the wall".



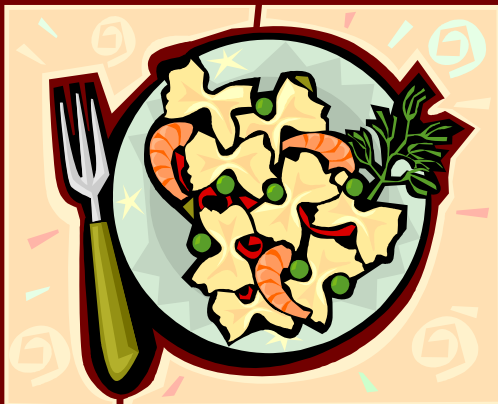
How Much CHO Do We Need ?

- 55 to 60% of total calorie intake (10% refined sugars).
- Endurance exercise enhances CHO storage provided there is enough CHO present in the diet.
- 1 gram of CHO = 4 kcals.



CHO

- Calorie Requirement = BW in lbs x 20 cal.
- Total Cal. X .60 to 70% (CHO) = Total Cal. For CHO.
- Grams: Total CHO cal. / 4 grams = total grams.



When is the Best Time to Consume CHO?

- If fasting for more than 3 to 4 hours prior to activity: 40 to 50 grams (i.e., power bar).
- If activity lasts more than 90 minutes...6-8 ounces of a sports- drink.
- Post Activity: First two hours the best time to replenish glycogen stores. 0.75 grams of CHO per hour for every pound of body weight.



FATS



- 25 to 30% of total calorie intake.
- 1 gram of FAT = 9 calories
- Approximately 1 gram of fat per every kilogram of body weight (LBS / 2.2).
- High Fat intake prior or during activity will affect performance.



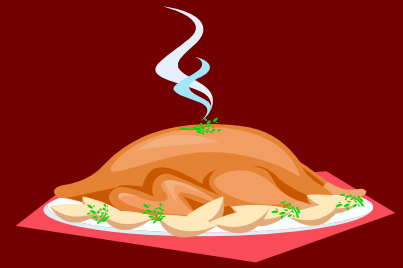
Total Fat Intake

- $BW \text{ (lbs) } \times 20 \text{ cal} = \text{total calories}$
- $\text{Total Calories} \times 20 \text{ to } 25\% \text{ fat} = \text{total fat intake.}$
- $\text{Total Fat calories} / 9 \text{ calories} = \text{total fat grams.}$





Protein



- Assists with growth, maintenance, and muscle repair.
- It is only used as fuel for energy when CHO and FAT stores are depleted. Detrimental side effects (i.e., ketone bodies).
- 1 gram of protein = 4 calories
- Daily requirement = 15% of total calorie //
- 0.8 grams per kg of BW / 1.0 to 1.5 grams intense exercise.
- Excess protein is stored as fat.





Hydration



- Ideally one should be fully hydrated prior to exercise.
- Daily needs : 10 – 12 cups or 80 – 96 ounces.
- Dehydration can limit performance and cause serious side effects.
- Acute signs: nausea, poor concentration, flushed skin, light-headness (within 1 hour).
- Chronic Signs: loss of appetite, dark yellow urine, little or no urination, muscle cramps (over hours or the day).
- A loss of as little as 1% body weight due to dehydration cause strain in your Cardiovascular system. 2 to 3% will greatly affect performance.



Fluid Replacement Guidelines

- BEFORE (2 hours) : 2 cups of fluid (16 ounces). Ice cold.
- DURING: 5 to 10 ounces every 15 to 20 minutes (1 H2O bottle per hour).
- Activities longer than 90 minutes then sports drink (i.e., gatorade/ water).
- AFTER: 2 cups (16 ounces) per 1 lb. of BW lost.



Sports Drink

- 4 to 8 % of CHO (9.5 to 19 grams per 8 ounces).
- 10% concentration of NA and K (electrolytes promote fluid retention).
- Chart.



References

- www.gatorade.com
- www.acsm.org/sporsmed

Contact

- www.dr-carlasottovia.com