

# Sports Medicine Monthly

Editor: Darren H. Lunow, M.Ed, ATC, LAT • Certified Athletic Trainer

## COMMON MEDICAL ILLNESSES IN ATHLETICS: DIABETES

*As it seemed appropriate to once again discuss diabetes and its effect on athletic competition during our focus series on common medical illnesses, the information contained herein is a reproduction of our April 2010 Newsletter.*

According to the American Diabetes Association, there are 23.6 million individuals in the United States who have Diabetes Mellitus. Diabetes, as it is commonly called, is a disease in which the body does not produce or properly use insulin. Insulin is a hormone that is normally produced by the pancreas and it is required by the body for the uptake of sugar from the blood-stream. In individuals without diabetes, insulin is secreted by the pancreas during periods of increased sugar levels, such as after meals or snacks, to aid in sugar absorption. For individuals with diabetes, their bodies either do not produce insulin, do not produce enough, or they resist the insulin that is produced. Subsequently, those who are challenged by this disease must diligently monitor their eating habits, their blood sugar levels, and provide their bodies with an additional source of insulin.



**Type 1:** Occurs when the body fails to produce insulin and thereby renders the body insulin dependant. As this is the most common form of diabetes noted in children and adolescents, this type of diabetes is commonly called juvenile diabetes.

**Type 2:** Occurs when the body does not produce enough insulin or when the body is resistant to the insulin it does produce. This form of diabetes usually presents sometime after childhood and is usually seen in individuals who have a family history of diabetes, those who are obese, and/or those who are inactive. Characteristically, this form of diabetes is usually referred to as adult onset diabetes.

Volume 4, Issue 8, March 2013

## Nutrition 101

**1.5 hours prior to activity, begin monitoring your blood sugar levels every 30 minutes.**

<100mg/dl = increase your blood sugar levels by ingesting 15 grams of carbohydrates  
15grams of carbs =

- 1/2 Gatorade
- 3 glucose tablets
- 1/2 cup of fruit juice
- 5-6 pieces of hard candy
- 6 oz of non-diet soda



\*15 grams of carbs will raise blood sugar levels 30-50 points in 15-30 minutes

100-180mg/dl = optimal for exercise, but realize that either extreme can predispose you to complications during exercise

180-250mg/dl = decrease your blood sugar levels with a non-carbohydrate drink, a very light exercise, or both.

>250mg/dl = decrease your blood sugar levels to a safer level with a non-carbohydrate drink prior to participating in any exercise

### **How Many Carbs Should I Eat?**

1 hr of activity per day =  
5 -6g carbs/kg of body weight

2 hrs of activity per day =  
8g carbs/kg of body weight

2+hrs of activity per day =  
10g carbs/kg of body weight

*continued on page 2*



R. Clio Robertson, MD  
 Don L. Hawkins, MD  
 David R. Hicks, MD  
 James D. Cash, MD  
 David E. Nonweiler, MD  
 Randall L. Hendricks, MD

David K. Wong, MD  
 Bryan J. Hawkins, MD  
 Perry D. Inhofe, MD  
 Thomas G. Craven, MD  
 Jeffrey R. Morris, DO  
 Ronald S. LaButti, DO

Jeff A. Fox, MD  
 Kathleen M. Sisler, MD  
 Troy A. Glaser, DO  
 Bradley J. Lawson, MD  
 Blake E. Shockley, MD

**Diabetic Emergencies**

**Hypoglycemia:** Occurs when the body's blood sugar levels fall below 70 mg/dl

*Why:* Too much exercise, too much insulin, or not enough carbohydrates

*Signs and Symptoms:* Shakes, dizzy, sweating, hungry, pale skin, headache, and/or tingling

*Treatment:* Steadily increase blood sugar levels

**Hyperglycemia:** Occurs when the body's blood sugar levels rise above 250 mg/dl

*Why:* Eating too much, not enough insulin, etc...

*Signs and Symptoms:*

*If:* Dry mouth, exceedingly thirsty, and/or frequent urination

*Treatment:* decrease blood sugar levels to a safer level with a non-carbohydrate based drink and very light exercise

*If:* Nausea, vomiting, confusion, and/or acetone ('fruity' smelling) breath

*Treatment:* Contact your local emergency medical services. These individuals will require a dosage of insulin and may not be able to deliver it for themselves.



**Information gathered from:**

"The Daily Management of Athletes with Diabetes" by MacKnight et. al published in the July 2009 edition of Clinics in Sports Medicine  
 "Hyperglycemic Emergencies in Athletics" by Chansky et. al published in the July 2009 edition of Clinics in Sports Medicine.  
 "Hypoglycemia in Athletes with Diabetes" by Susan E. Kirk published in the 2009 edition of Clinics in Sports Medicine  
 The American Diabetes Association: [www.diabetes.org](http://www.diabetes.org)

**Nutrition 101: cont. from page 1**

**Pre-Game Meal:**

- \* 4g of carbs/kg of body weight 3-6 hours prior
- \* 1g of carbs/kg of body weight 1 hour prior
- \* 15g of carbs 15-30 minutes prior



**Pre-Game Hydration:**

- \* Activity <90min per day = water
- \* Activity >90min per day = carb. based drink

**Post-Game Meal:**

- \* Within 30 minutes of activity:

<90 minutes of activity →→→  
 1g carb/kg body weight

>90 minutes of activity →→→  
 1.5g carb/kg body weight



**What About Insulin Dosage for the Type 1 Diabetic?**

- \* For minor to moderate intense exercise... decrease your insulin intake by 30-50% prior to exercise

\*If you have an insulin pump, remove the pump 30 minutes prior to any contact activity, but supplement with 50% of your regular insulin dosages every hour

**A Note to the Reader.....**

Central States Orthopedic Specialists does not endorse any of the organizations or research groups whose information has been published herein. Furthermore, information in this publication is provided for informational purposes only and not as medical advice, or as a substitute for the advice provided by your physician or other health-care professional, or for diagnosing or treating a health problem or disease. This publication is designed to provide you, the reader with information only. It is your choice in how you apply the information given herein, and not a directive from Central States Orthopedic Specialists. It is simply an informative resource for you, the reader. As always, if you have specific questions regarding specific injuries, illnesses, policies, procedures, etc... speak with your Certified Athletic Trainer, or contact your physician.



Tulsa: 918.481.CSOS (2767) • Statewide: 888.269.CSOS (2767) • [www.csosortho.com](http://www.csosortho.com)

**Tulsa • Owasso • Vinita • Grove • Bixby • Jenks • Okmulgee • South Tulsa**

R. Clio Robertson, MD  
 Don L. Hawkins, MD  
 David R. Hicks, MD  
 James D. Cash, MD  
 David E. Nonweiler, MD  
 Randall L. Hendricks, MD

David K. Wong, MD  
 Bryan J. Hawkins, MD  
 Perry D. Inhofe, MD  
 Thomas G. Craven, MD  
 Jeffrey R. Morris, DO  
 Ronald S. LaButti, DO

Jeff A. Fox, MD  
 Kathleen M. Sisler, MD  
 Troy A. Glaser, DO  
 Bradley J. Lawson, MD  
 Blake E. Shockley, MD