

# The Results!

## Tufts Healthy Snacking Soccer Study

examined the effects of three different pre-exercise snacks on exercise intensity, fatigue, blood sugar and stress levels in children playing an indoor soccer match.

### THE PARTICIPANTS

- ★ 115 children
- ★ 36 boys, 79 girls
- ★ Average age: 9.1 years

### THE SNACKS

- ★ Three snacks were created for the study:
  - Raisin oatmeal bar (Raisin)
  - Peanut butter graham bar (PB)
  - Rice treat bar (RK)
- ★ Each child ate 1 of the 3 snacks before playing a soccer game

## Nutrition Information For The Study Snacks

Snack	Calories	Protein (%kcal)	Fat (%kcal)	Carbs (%kcal)	Na (mg)	K (mg)	Fiber (gm)	Ca (mg)	Mg (mg)	ANTIOXIDANTS				
										Vit C (mg)	Vit E (IU)	Se (mg)	Car (mg)	Flav (mg)
Raisin	170	7.3%	26.6%	70.7%	54	176	1.54	29	23.0	0.60	1.0	5.00	15.0	13.9
PB	172	6.1%	30.3%	67.0%	182	87	0.70	10	20.0	0.10	1.0	4.20	2.0	1.30
RK	168	2.8%	5.0%	92.9%	153	28	0.30	34	8.0	2.65	1.0	1.84	47.0	trace

Na=sodium, K=potassium, Ca=calcium, Mg=magnesium, Se=selenium, Car=carotenoids, Flav=flavonoids

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## The Results

### ACTIVITY AND CALORIES BURNED

- ★ On average, the soccer players burned 122 calories during their 50-minute game, with no difference between boys and girls.
- ★ The snack eaten did not have an effect on the amount of time children spent in sedentary, light, moderate, or vigorous activity.
- ★ Children were moderately or vigorously active for 17 minutes, or 34% of a 50-minute game. That leaves 66% of the game when children were only lightly active or were sedentary.
- ★ Children were most active when the games ended in a tie. They spent an extra 4-5 minutes in moderate or vigorous activity compared to children who won or lost games.

### BLOOD SUGAR AND SALIVA TESTS

- ★ Blood sugar levels were higher after the soccer game compared to before, but were maintained within a normal range.
- ★ The disease fighting immune marker, IgA, was lower after exercise and the stress hormone, cortisol, increased after playing soccer.
- ★ The different snacks had no effect on the blood sugar or saliva tests.

### FEELINGS OF FATIGUE

- ★ The different snacks did not change the soccer players' feelings of fatigue after playing a soccer game.
- ★ Children who ate the rice treat bar were more likely to report that they felt sick, had a cramp, had weak legs, and that their chest or lungs hurt after playing soccer.

## Final Messages

- ★ 60 minutes of moderate to vigorous activity is recommended for children each day. Since soccer-playing kids are only spending 17 minutes per game in moderate to vigorous activity, they should seek out other enjoyable daily physical activities to meet recommendations.
- ★ Children burn only ~ 120 calories (this is ~ 80 calories more than they would burn at rest) during each game so extra snacks and sports drinks are likely not needed on top of regular healthy meals and snacks.
- ★ For a short time after exercise, children (and adults) have increased stress levels and decreased disease fighting immunity. This is a time that parents should caution children not to share water bottles or food with other children as they may be more susceptible to catching colds and other illnesses. But remember, overall, being physically active decreases stress levels and boosts the immune system!
- ★ Pre-game snacks that are high in sugar and low in nutrients may not affect a child's performance in a soccer game, BUT could affect how a child feels during and after the game.

Approximately 120 calories burned in a soccer game is equal to eating or drinking the following:

- ★ 2/3 of a granola bar
- ★ 2 Tbsp trail mix
- ★ 1 large apple or banana
- ★ 1-2 cups of a sports drink

## Healthy Snacking Tips

- ★ Focus on making healthy eating choices. Enjoy whole grains, fruits and vegetables, protein (lean meats, fish, and beans), and low fat dairy products (milk, yogurt, and cheese) most often.
- ★ Eat a normal sized meal 3-4 hours before activity or a smaller snack 1-2 hours before. Pre-exercise snack ideas could include trail mix, fruit, whole grain pretzels, half a wheat bagel with jam, or whole wheat crackers.
- ★ Aim for 7.5 cups of fluid each day for 7-8 year-olds and 10 cups each day for 9-10 year-olds. Add 3-5 cups more per day for an exercising child especially if it is hot and humid.
- ★ Drink every 15-20 minutes during exercise, but keep sports drinks and sugar-sweetened beverages to a minimum. Save sports drinks for activities lasting longer than 60 minutes.

### Estimated Daily Calorie Needs for Children

#### Female:

- ~ 1400 calories for 4-8 year olds
- ~ 1800 calories for 9-13 year olds

#### Male:

- ~ 1600 calories for 4-8 year olds
- ~ 2000 calories for 9-13 year olds

- ★ After exercise, hydrate and choose a high carbohydrate snack with some protein such as a bagel with low-fat cream cheese and jelly, an apple with peanut butter, applesauce and string cheese, or low-fat yogurt with granola or fruit. Follow the snack 1-2 hours later with a healthy meal.

