WELLNESS UPDATE 2001, #7

REPLENISHING ENERGY FOLLOWING EXERCISE

In the past few years, nutritionists have written a great deal about the importance of replenishing energy supplies following exercise. Eating the proper foods within specified time frames after exercise is the key to quickly replenishing energy supplies. What athletes eat following exercise has a definite impact on their ability to perform well at the next exercise session and reduce their risk of injury. Athletes who perform with low energy levels and/or while dehydrated increase their risk of injury and do not perform as well as when their energy and fluid levels are high.

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An athlete's first nutritional priority following exercise should be to replace the fluids lost through sweating. To accomplish this, athletes must drink more than enough to quench their thirst as this will only replace about one-half to two-thirds of the fluid they've lost. **Athletes should drink at least 24 ounces of non-caffeinated fluids for each pound lost during exercise within 6 hours after exercise.** If an athlete does not drink this amount of fluid, they will be performing in a dehydrated state during their next exercise bout which decreases performance and increases the risk of injury. ***The best replacement fluids are water, fruit juices, sports drinks, and non-caffeinated, regular (not diet) pop.*** Water-filled foods such as grapes, watermelon, and soup are also excellent. Beverages containing caffeine should be avoided as the body retains only about 50% of those drinks. The remainder will be lost when the athlete urinates.

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Athletes also need to replace the electrolytes (especially potassium and sodium) lost during exercise. This can be accomplished by drinking the right fluids and eating the right foods after exercise. An athlete can lose 200 - 500 milligrams of potassium during a practice or contest and 1200 - 3500 milligrams of sodium. While

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Examples of foods and drinks containing large amounts of potassium and sodium are shown in Tables 1 and 2.

TABLE 1: POTASSIUM CONTENT OF VARIOUS FOODS & DRINKS

Food	Amount	Approximate Potassium Content
Banana	1 medium	450 mg
Grapefruit juice	8-ounces	405 mg
Orange	1 medium	233 mg
Orange Juice	8-ounces	475 mg
Pineapple juice	8-ounces	330 mg
Potato	1 large (7 ounces)	840 mg
Raisins	1/4 cup	300 mg
Sports drink	8-ounces	30 - 100 mg
Yogurt, low-fat	8-ounces	530 mg

TABLE 2: SODIUM CONTENT OF VARIOUS FOODS & DRINKS

Food	Amount	Approximate Sodium Content
American cheese	1 slice	260 mg
Bagel	1 small	320 mg
Cheese pizza	1/8 of 12"	330 mg
Chicken noodle soup	1 cup	830 mg
Potato chips	20 chips	140 mg
Pretzels	1 small handful	475 mg
Saltine crackers	5 small squares	220 mg
Spaghetti sauce	½ cup	800 mg
Sports drink	8-ounces	50 - 110 mg
Vegetable juice	8-ounces	620 mg

It usually takes at least 20 hours for the muscles to replace the glycogen (energy) lost through exercise. If athletes consume carbohydrate-rich foods and beverages within 15-minutes after exercising, it is possible to reduce the time it takes to replace muscle energy to about 12 hours. ***For athletes who have less than 20 hours between exercise sessions (practices or competitions) eating carbohydrate-rich foods within 15-minutes after exercising is essential to top performance.*** The goal is to eat or drink about 200 calories of carbohydrate within 15-minutes after exercise.

If an athlete consumes carbohydrate-rich foods and beverages within 15-minutes after exercising, it is possible to reduce the time it takes to replace muscle energy to about 12 hours.

Examples of carbohydrate-rich foods and drinks that can help replenish muscle energy are shown in Table 3.

TABLE 3: EXAMPLES OF FOODS & DRINKS TO CONSUME WITHIN 15-MINUTES OF EXERCISE

These foods have a high carbohydrate content to help replenish the energy supplies in the muscles.

Food	Amount	Approximate Carbohydrate Content
Apple juice	8-ounces	120 calories
Banana	1 medium	100 calories
Fig Newtons	4	160 calories
Orange juice	8-ounces	100 calories
Pop tart	1	120 calories
Pudding cup (chocolate)	1 cup (low-fat)	80 calories
Raisins	1/4 cup	120 calories
Sports drink	8-ounces	90 calories
Sports bar	1	200 calories
Sweetened cereals	1 cup	100 calories
Yogurt with fruit	1 cup	200 calories
½ Bagel with jelly	small w/ 1 TBSP	200 calories

To replace muscle energy quickly, athletes should also eat a high carbohydrate, low fat, medium protein meal about two hours after exercise. ***A few examples of these foods are:*** breads, bagels, muffins, rolls, pancakes, waffles, pasta, rice, baked or boiled potatoes (not fried), cereals (hot or cold), fruit (fresh or canned), vegetables

(cooked or raw), baked or broiled fish, low-fat beef or pork, chicken or turkey (especially white meat), low-fat milk, and fruit or vegetable juices.

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Questions and/or comments about heat illness or other areas dealing with student-athlete's wellness are welcome and encouraged. They should be directed to Alan Beste, ATC, Administrative Assistant, Iowa High School Athletic Association, PO Box 10, Boone, IA 50036. (515) 432-2011. <abeste@iahsaa.org>

SOURCES: Bonci, Leslie, MPH, RD. "Refueling for Recovery," Training and Conditioning, September 2000; Clark, Nancy, MS, RD. SportsMedicine Brookline, Brookline, MA, Sports Nutrition Guidebook, 2nd Edition, 1997, Human Kinetics; Hamre, Robin, Rd, LD. Sports Nutrition: Eat to Fuel Performance, Iowa Beef Industry Council, PO Box 451, Ames, IA, 1988; Volpe, Stella, Ph.D., RD. University of Massachusetts, Department of Nutrition, Chenoweth Building, PO Box 31420, Amherst, MA, Teaming Up for Peak Performance "Athletes Win with Sports Nutrition," 2001.