

NUTRITION

FOR BASKETBALL STUDENT-ATHLETES

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> "I've trained hard this offseason and I'm stronger and faster than last year. But since practice resumed, I can't find my "fast" gear in full-court play, and I don't feel quick on "D." I mostly drink water now, yet my legs still feel heavy out there. Should I be eating or drinking something else?"

The sport's mix of speed, power, agility and endurance, combined with technical skill and mental stamina, makes basketball intensely demanding. Players repeatedly stop, start and change direction. Although an average possession or play may last about 12 to 20 seconds, players have been recorded covering up to five miles in a game.

Game studies show that basketball players change movement up to 1,000 times per game, averaging once every two seconds. Meeting these endurance and agility demands takes large amounts of energy. Managing carbohydrate intake, drinking fluids consistently and maintaining body weight are key nutrition goals for getting the most from training, performing well in games and staying durable all season.

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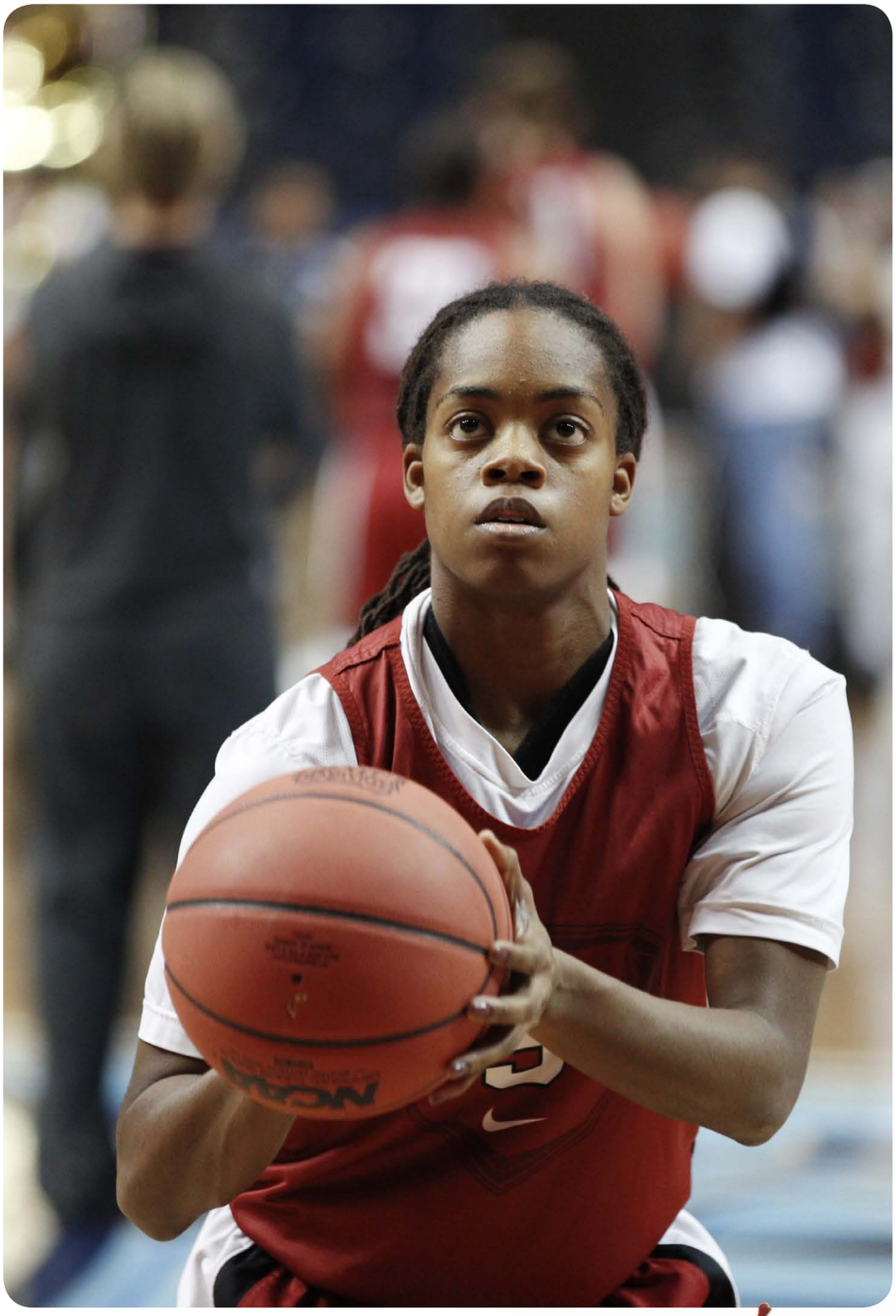
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SUGGESTED EATING TIMES

7 a.m.	Breakfast
10 a.m.	Mid-morning snack
Noon	Lunch
1:30 p.m.	Snack before practice
2:30 p.m.	Practice
3:30 p.m.	Rehydrate; strength and conditioning
5 p.m.	Shake or snack for recovery
6 p.m.	Dinner
9:30 p.m.	Evening snack



PRESEASON

The preseason brings changing demands that can make each day a challenge. Use this time to establish eating habits you can carry into the season.

Fueling needs. Build an eating routine around your classes and practices. Missing meals drains energy and harms performance. Breakfast or a morning snack before early workouts matters because most people deplete most of their liver carbohydrate stores while sleeping. Replenishing them helps keep your body from drawing too much energy from muscle during the day, leaving it available for practice.

Hydration needs. Use the preseason to practice meeting daily fluid needs and learn your sweat rate. Begin practice well hydrated, drink enough during workouts to avoid a 2 percent body-water deficit, and replace fluid losses adequately afterward. Carry a bottle so fluids are available all day. Refill it between meals as needed and keep checking your hydration. Further fluid guidance:

- Drink four to eight ounces every 15 to 20 minutes during workouts. For most people, a "gulp" is about one ounce. For example, aim for about 32 to 64 ounces during a two-hour practice.
- Estimate your sweat rate by weighing yourself before and after practice and calculating the weight lost. Drink 16 ounces for each pound lost. If practice reduced your total body weight by 2 percent or more, drink more during the next practice. Ask your athletic trainer to help track your sweat rate.
- Choose a drink containing sodium to replace sodium lost in sweat, encourage thirst and help retain fluid.

Learning your needs and rehearsing fueling habits helps train your body to take in what it requires, so you can focus on basketball when the season begins.

COMPETITION

From October through March, the long, demanding season taxes mind and body with practices, strength training, film study and the academic shift from fall to spring semester.

Game-day fueling now matters. Many teams schedule a pregame meal three or four hours before tipoff. This key meal should supply plenty of carbohydrates. Breads, potatoes, rice, pasta, fruit,

CHOOSING MEALS OUT

Choose These	Limit These
Baked	Fried
Grilled	Crispy
Steamed	Stuffed
Broiled	Creamy
Roasted	Oversized



and starchy vegetables such as carrots, corn and peas make good pregame choices. Fill the rest of your plate with lean, low-fat protein and low-fat dairy. Include fluids with the meal to begin hydrating for the game. Good choices are at least two cups (16 ounces) of water, sports drink or 100 percent juice. If you tend to cramp, season foods with salt and include salty items such as pretzels, soups, crackers, soy sauce and ketchup.

Game day fueling. Substitutions, timeouts, media breaks and halftime provide frequent chances to eat and drink. Fatigue is a tough opponent. Your performance nutrition plan should limit both mental and physical fatigue during games. Remember:

- Players logging many minutes should eat small portions of solid food at halftime to replenish energy for the second half.
- To sustain performance, take in the recommended 30 to 60 grams of carbohydrate per hour. Options include sports drinks, energy bars, orange wedges, fig bars, and sport gels or chews.
- Choose what served you well during the preseason, or test other strategies in practice so you know which energy sources to rely on during games.
- Make a deliberate effort to drink during breaks. Research shows that players who do not consciously replace fluids often become dehydrated.

CHAMPIONSHIP

Recovery nutrition takes priority now to avoid drained energy and heavy legs. Immediately after practices and games, about 0.5 grams of carbohydrate per pound of body weight (or half your body weight in grams), plus about 20 grams of protein, can restore muscle energy stores and help prevent muscle breakdown. Daily hydration also remains essential to prevent dehydration from building over consecutive days of play and travel.

Postseason Carb Needs

Body Weight	Carbohydrate (grams)
130 lbs.	65 g
160 lbs.	80 g
190 lbs.	95 g
220 lbs.	110 g
250 lbs.	125 g

OFFSEASON

The offseason lets you concentrate on individual progress and any needed changes in body composition. Training again centers on strength, power and speed. Muscle mass depends on the balance between protein building and breakdown. Athletes who are fasted or under-fueled cannot build muscle mass or size, so nutrition still matters in the offseason.

Keep a regular eating schedule and choose high-quality, lean proteins to support offseason progress. Meal plans and training tables may be less available than during the academic year, making it especially important to plan, shop for and prepare meals and snacks, and choose wisely when dining out. Get the grill going, find quick and easy recipes, shop for groceries at least weekly, and bring friends and teammates into the fun!

CARBS FOR ENERGY

Carbohydrates supply most of the fuel for intense practice, sprinting and jumping. At full speed, you are already using carbohydrate energy. When you



Game essentials

launch into a sudden sprint, your body needs even more carbohydrates at that moment.

Carbohydrates from food are stored in muscle and liver as glycogen. Full muscle glycogen stores provide about 90 minutes of fuel for high-intensity activity. Once depleted, they can leave you fatigued with "heavy legs." Good carbohydrate sources mainly include fruits, vegetables, grains and dairy. Because this fuel is so important, avoid low-carb diet fads that restrict carbohydrate intake.

DAILY HYDRATION

The second key is a steady daily hydration routine before, during and after practices and games. Dehydration may develop before you notice it. Thirst, fatigue, headaches and cramps often appear after it has already set in. Sweat losses can be large, especially in practices or games lasting two hours or longer. When you drink less fluid than you lose in sweat, dehydration results.

Dehydration may:

- Slow sprints and side-to-side movements;
- Reduce shooting percentage and the total number of shots made; and
- Impair balance, reaction time and mental readiness.

Hydration is vital to basketball skills. Monitor it by drinking enough to prevent thirst and checking urine color. Pale, odorless urine indicates adequate hydration. Dark urine with a strong odor may mean you need to pay more attention to fluids. For details, read the Performance Hydration fact sheet.

PLAYING WEIGHT GOAL

Many basketball players find it hard to keep weight stable and preserve muscle throughout a long season. Weekly weight changes can help show whether you are eating enough to meet energy needs. A drop in total body weight may signal under-fueling and an energy deficit. Aim for a structured eating routine that provides enough food all day to reach your target playing weight and remain close to it.


A HYDRATION GUIDE FOR STUDENT-ATHLETES

CHECK YOUR HYDRATION LEVEL

Step 1: Compare your urine color with the chart.
Step 2: Find your hydration level. Lower numbers mean better hydration.
Step 3: Read the result for your matching color:

1
2
3
4
5
6
7
8

* Numbers 1, 2 or 3 mean you are hydrated.
* Numbers 4, 5 or 6 mean mild to moderate dehydration.
* Number 7 or darker indicates dehydration.
* Athletes should drink water throughout the day. Do not wait until you feel thirsty.
* To prevent dehydration, drink water and/or sports drinks before, during and after workouts or exercise. Be cautious with "energy drinks."
* In general, replace 20 ounces of fluid for each pound lost during that exercise session.
* Some foods, medicines and vitamins can change urine color. Large amounts may make this chart unreliable. Tell your sports medicine staff about all medicines, vitamins and supplements you take.
* Report any signs of heat illness or other medical illness to your sports medicine staff as soon as possible.

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Sources:
• Armstrong, L.E., Maresh, C.M., Castellani, J.W., Bergeron, M.F., Kenefick, R.W., LaGasse, K.E., Riebe, D. (2012). Urinary indices of hydration status. Int. J. Sport Nutr., 4, 265-279.
• Armstrong, L.E., Herrera Soto, J.A., Hacker, F.T., Casa, D.J., Kavouras, S.A., Maresh, C.M. (1998). Urinary indices during dehydration, exercise, and rehydration. Int. J. Sport Nutr., 8, 345-355.

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Written by SCAN/CPSDA Registered Dietitians (RDs). For advice on customizing a fueling plan, consult an RD who specializes in sports, particularly a Board-Certified Specialist in Sports Dietetics (CSSD). Find a qualified RD at www.scandpg.org or www.sportsRD.org.