## Hydration: The Foundation of Performance

Proper hydration is essential for athletic performance, recovery, focus, and overall health. Athletes never want to start competition dehydrated. Despite what it may feel like, the body needs fluids every day, even if you aren't sweating profusely from the hot sun. Providing the body with proper hydration allows it to function properly, both at baseline and for athletic performance. Water plays several important roles, impacting thermoregulation, immunity and recovering from infection, and athletic performance. The body provides a few easy-to-spot warning signs if it isn't getting the water it needs. These include:

- **Dark yellow urine:** the color of urine can quickly display a lot about hydration status. The lighter and clearer urine is, the more hydrated the body is.
- **Dry skin and lips:** skin needs fluids to stay hydrated, just like the rest of the body. Overly dry skin or lips may be a sign of dehydration.
- **Constipation**: water is necessary for proper bowel movements, so dehydration can make it harder to go.
- **Low blood pressure:** while this one may be harder to identify, it is crucial to performance. When the body is dehydrated, blood pressure may decrease, and the heart rate and rate of breathing may increase. This can be a warning sign as tissues may struggle to get the necessary oxygen and nutrients.
- **Muscle Cramping:** caused by rapid loss of fluid and electrolyte imbalance, muscle cramping can disrupt performance. Athletes should never start competition dehydrated or skip water breaks.
- **Lack of focus and coordination:** even slight dehydration impairs brain function causing lack of focus and coordination and increased confusion. The brain is 75% water so every move you make relies on proper hydration.

Dehydration has been shown to decrease performance outcomes across the sport world, from endurance sports to strength and power metrics. When the body is dehydrated, there is an extra force placed on the cardiovascular system, meaning the heart must work harder to get the same amount of work done. This can manifest as fatigue which can decrease performance endurance and peak performance outputs. Research has shown that strength, power, and endurance performance all decreases once the body is more than 2% dehydrated. The 2% dehydration percentage is based on the athlete's weight. Losing more than 2% of their body weight puts the athlete at a greater risk of dehydration. To operate at a peak performance level, it is imperative to stay hydrated before participation, during the event, and to rehydrate afterwards.

Water is the most basic form of hydration, and certainly the least expensive. Sometimes, plain water is not always the best. Drinking too much water can dilute electrolytes, as it does not replace electrolytes lost through sweat. The goal is to maintain balance. Along with water, eating your hydration is important. Fruit, such as pineapple or watermelon, combined with sports drinks or water infused with electrolytes and water-soluble vitamins such as C and Bs.

Electrolytes can be found in sweat. Potassium, sodium, chloride, and magnesium are all examples of electrolytes. Sweat is personalized to you and can vary depending on intensity and duration of exercise, temperature and humidity. The body cannot produce electrolytes and must be obtained through food and drink. If you sweat a lot, you may need more electrolytes.

Running low on water and electrolytes can affect:

- **Athletic performance** - Water cushions the joints, and being dehydrated can affect your flexibility and speed.
- **Endurance** - Hydration is essential for proper muscle function (including the heart and muscles), and it helps you avoid cramps.
- **Breathing** - When you inhale, body fluids are needed to moisten the air so it's easier to absorb oxygen through your lungs.
- **Mood** - The brain needs water to work. Dehydration can affect mood and concentration and cause headaches and irritability.

Imagine electrolytes and water molecules as being bound together; they go everywhere together. When the body has the proper level of electrolytes, proper nerve conduction and muscle contraction are optimal, making this state favorable for athletic performance. Depending on activity and sweat levels, the athlete may need to supplement their electrolyte intake with electrolyte packets to maintain this balance. Each brand and product has a different level and combination of electrolytes. Gatorade Thirst Quencher and Nuun tablets have lower amounts of sodium whereas Liquid IV and LMNT have higher amounts of sodium.

If you are constantly drinking water but still experiencing one or more dehydration symptoms, you may want to add extra electrolytes into your intra-workout and post-workout routines. However, it is important to remember that these are not always necessary. Keep the electrolyte drinks for hot and humid practices or if an athlete is a heavy sweater.

Adequate hydration is important to support optimal sports performance and avoid health complications. Sweating is a normal and essential bodily function to cool the body via evaporation, but in turn it increases the risk of dehydration during exercise. So many factors influence sweat rate, such as genetics, biological maturation status, body composition, fitness level, training intensity, and environmental conditions. Young athletes who properly hydrate leading up to training—and rehydrate during, between, and following competition¬—are more likely to secure optimal sports performance. Getting enough to drink before, during, and after a sport or activity is essential. Hydration during a game, tournament or workout — not just before and after — can fall below the radar, but performance depends on it. Ways to ensure an athlete is properly fueled for peak performance:

- **Always have a water bottle -** To stay properly hydrated, it is important to constantly have access to water. This is made easier by always having a water bottle.
- **Incorporate electrolytes when necessary -** For a heavy sweater, electrolytes may need to be included. You can add electrolyte replacements to add to water, have a sports drink, or incorporate foods high in sodium. Pickles, pretzels, deli meats, and cheeses are good sources of sodium to aid in electrolyte balance.
- **Consume caffeine in moderation -** Limit intake of caffeine, whether it be from an energy drink or a coffee drink to prevent dehydration.
- **Pay attention to the warning signs** - If the body is dehydrated, it will make it known through the symptoms discussed earlier. If you notice any of these things chronically happen, hydration practices may need to be changed to see if there are any changes.

The following hydration schedule is just a guide and can be easily personalized to fit your needs.

- **Before Activity** - Drink fluids consistently throughout the day leading up to practice or competition.
- **During Activity** – Consume approximately **8 ounces (1 cup) of water or sports drink every 15-20 minutes**, depending on sweat rate and exercise intensity.
- **After the workout** – Rehydrate to replace fluid losses and support recovery.

Many athletes turn to energy drinks for a quick boost before training or competition. While they may provide short-term stimulation, they often contain high levels of caffeine, added sugars, and artificial ingredients that can negatively impact performance, recovery, and long-term health. The American Academy of Pediatrics has concluded that energy drinks are "not appropriate for children and adolescents and should never be consumed." These products are not designed for adolescent athletes, and long-term effects are not well studied. Reasons athletes should avoid energy drinks include:

**Excessive caffeine disrupts developing systems** - Energy drinks often contain high doses of caffeine that overstimulate the nervous system, especially in youth athletes. This can lead to:

- Increased heart rate and blood pressure
- Anxiety, jitters, and poor focus
- Dependency on stimulants for performance

**Sleep disruption = poor performance and recovery** - Caffeine can stay in the body for 6–8+ hours, interfering with sleep quality. Poor sleep impacts:

- Muscle recovery
- Hormonal balance (growth, testosterone, cortisol)
- Reaction time and performance
- No recovery = no progress

**Increased risk of dehydration** - Energy drinks are often used instead of water, not alongside it. For athletes, this can:

- Worsen hydration status
- Increase cramping risk
- Reduce endurance and output
- Hydration is foundational—not optional

**Hidden ingredients with little regulation** - Many energy drinks include:

- Stimulants like guarana and taurine
- Added sugars or artificial sweeteners
- Proprietary blends with unclear dosing

**The fundamentals for fueling athletic performance include:**

- Consistent nutrition habits
- Proper pre-training fueling
- Discipline and confidence
- Quality sleep routines

# HYDRATION

Everything to know for optimal athletic performance

## Symptoms of Dehydration

Extreme Thirst | Dry Mouth | Low Urine Output | Headaches | muscle cramps | Fatigue

| | |
|---|---|
| 1 | HYDRATED |
| 2 | HYDRATED |
| 3 | HYDRATED |
| 4 | DEHYDRATED |
| 5 | DEHYDRATED |
| 6 | DEHYDRATED |
| 7 | SEVERELY DEHYDRATED |
| 8 | SEVERELY DEHYDRATED |

## How to Tell You're Dehydrated

The easiest way to tell if you are dehydrated is to look at the color of your urine. You want your urine to be light straw color to clear.

The darker your urine the more water you need to drink! Look at how much urine you are putting out and how often you are going to the bathroom.

## Why it is important

Water makes up more than half of your body weight.

It helps lubricate your joints and improves connective tissue plasticity, which helps your mobility.

Also it helps transport oxygen to the muscles to help breakdown energy stores for fuel.

## How much to drink?

### Entire Day

94-125 oz

### Before Activity

16-20 oz
2 hours
before

8-16 oz
15 min
before

### During Activity

5-10 oz
every 10-15 minutes

(1 gulp is 1 oz)

### After Activity

20-24 oz per lb of
body weight lost after
exercise

**This is Baseline. Adjust for activity, sweat rate, gender, and age.**

# Hydration & Recovery for Student-Athletes

Simple habits that keep you performing strong, in practice and in games

## BEFORE

- **16–24 oz of water** in the 2 hours before practice/competition
- Another **7–10 oz** about 10–20 minutes before you start
- Don't wait until you're thirsty — start hydrated

## DURING

- **6–12 oz every 10–20 minutes** throughout activity
- **Water** is enough for sessions under 60 minutes
- Going **60+ minutes**, or hot/humid conditions? Add a **sports drink** for electrolytes and carbs

## AFTER (RECOVERY)

- Replace **every 1 lb lost** with 16–24 oz of fluid
- Drink most of it within **2 hours**, the rest within 6
- Pair fluids with a snack that has **carbs + protein** to refuel muscles

## BEST DRINKS, BY SITUATION

| SITUATION | GO-TO DRINK | WHY |
|---|---|---|
| Everyday hydration, practice under 1 hr | **Water** | No added sugar needed — covers routine fluid loss |
| Long, hot, or high-intensity sessions (60+ min) | **Sports drink** (e.g. Gatorade, Powerade) | Replaces sodium & carbs lost in sweat |
| Right after practice/games | **Low-fat chocolate milk** or a protein+carb shake | ~3:1 carb-to-protein ratio speeds muscle recovery |
| All day, every day | **Water** with meals and between classes | Builds the baseline hydration everything else depends on |

## SKIP THESE

- **Energy drinks** (caffeine/stimulants) — not built to hydrate, and risky for a developing heart & brain
- **Soda & heavy juice** — too much sugar, no electrolyte benefit
- **Sports drinks for short/light workouts** — extra sugar you don't need

## QUICK HYDRATION CHECK

- **Pale yellow** — well hydrated, good to go
- **Yellow** — drink some water now
- **Dark yellow/amber** — dehydrated, hydrate before activity
- **Very dark / little urine** — tell your coach or athletic trainer

## WEIGH-IN RULE OF THUMB

Weigh yourself before and after long or hot-weather practices.

**For every 1 lb lost during activity, drink 16–24 oz of fluid to rehydrate.**

Losing more than 2% of body weight in a session is a sign you need to drink more during activity, not just after.

**Bottom line: drink water all day, add a sports drink only for long or hot workouts, and refuel with carbs + protein afterward.**

Sources: National Athletic Trainers' Association (NATA) Hydration Guidelines & Healthy Hydration for Young Athletes · American Academy of Pediatrics / Nationwide Children's Hospital, Sports & Energy Drinks for Young Athletes · Peer-reviewed research on chocolate milk as a post-exercise recovery beverage

STUDENT ATHLETE HEALTH & SAFETY

# 24-Hour Hydration Schedule

*A sample day in the life of a well-hydrated student athlete*

Hydration isn't just a pre-game routine — it's a full-day habit. This sample timeline (built around a typical school day + afternoon practice) shows when to drink, how much, and why. Shift the clock to match your own schedule; the order stays the same.

| AGES 9–13 | AGES 14–18 |
|---|---|
| ~71–81 oz / day | ~78–112 oz / day |

**6:30 AM — Wake Up — Rehydrate First**
You lose fluid overnight just from breathing and sweat. Start the day with **16 oz of water** before anything else. Quick check: pale, lemonade-colored urine means you're on track.

**7:00 AM — Breakfast**
Pair the meal with **about 2 cups (16 oz) of water** or milk.

**8 AM – 2 PM — School Day — Sip, Don't Chug**
**Carry a water bottle** and refill it between classes. Steady sipping beats trying to catch up all at once at lunch.

**12:00 PM — Lunch**
Another **2 cups (16 oz) of water** with the meal, plus water-rich foods like fruit if you can.

**3:30 PM — 2 Hours Before Practice**
**16–24 oz of water.**

**3:50 PM — 10–20 Minutes Before**
**7–10 oz of water.**

**4:00–6:00 PM — Practice or Game**
**6–12 oz every 10–20 minutes.** Switch to an electrolyte drink if the session runs past 60 minutes, or it's hot and humid.

**6:00 PM — Right After Practice**
Weigh in if you can — **replace every pound lost with ~3 cups (24 oz)** of fluid, finishing within 2 hours.

**7:00 PM — Dinner**
Water or milk alongside the meal finishes the recovery job.

**8:00 PM — Caffeine Curfew**
Nothing caffeinated from here on — caffeine can linger in your system for **8+ hours** and cut into sleep. Herbal tea or water is fine.

**9:30 PM — 2 Hours Before Bed — Taper Off**
**Switch to small sips only.** Tapering off large amounts of fluid now means a full bladder won't wake you up overnight.

**10:00 PM — Lights Out**
A consistent bedtime is part of the hydration routine too — good sleep helps your body manage fluid balance overnight, ready to start again at 6:30.

> **Adjust the clock, not the order.** Morning practice? Two-a-days? Shift these steps to match your schedule — the sequence (rehydrate on waking → steady sipping → practice bracket → recovery → taper before bed) stays the same either way.

*Sources: NATA Hydration Guidelines & Healthy Hydration for Young Athletes; Northwestern University Sports Medicine Hydration Fact Sheet; Sleep Foundation. This handout is for general education and is not medical advice — individual fluid needs vary with body size, sweat rate, and climate.*

# Make-Your-Own Electrolyte Drinks

Four easy recipes for student-athletes — cheaper than store-bought, and built for real training days

THE CLASSIC

## Lemon-Orange Sports Drink

**INGREDIENTS (4 SERVINGS)**

- ¼ cup hot water
- ¼ cup sugar
- ¼ tsp salt
- 3½ cups cold water
- ¼ cup orange juice
- 2 tbsp lemon juice

**DIRECTIONS**

1. Dissolve sugar & salt in hot water
2. Stir in cold water
3. Add orange & lemon juice
4. Chill and serve

*~7% carb, ~155 mg sodium per 8 oz — matches the sports-drink range for 60+ minute practices.*

BLENDED

## Watermelon-Lime Refresher

**INGREDIENTS (2 SERVINGS)**

- 2 cups cubed watermelon
- 1 tbsp lemon or lime juice
- ¼ tsp salt
- Ice, optional

**DIRECTIONS**

1. Blend all ingredients until smooth
2. Strain if you don't want pulp
3. Add ice and blend again for a slushie

*Watermelon brings natural sugars and potassium along with water — a good hot-day, high-sweat option.*

POTASSIUM BOOST

## Coconut-Lime Electrolyte Water

**INGREDIENTS (1–2 SERVINGS)**

- 11 oz coconut water
- 1 oz lime juice
- 1 tbsp honey
- Pinch of salt, if needed

**DIRECTIONS**

1. Stir all ingredients together
2. Taste and add a pinch of salt if your coconut water brand is low-sodium
3. Chill and serve

*Coconut water is naturally rich in potassium; check the label — sodium varies a lot by brand.*

EVERYDAY / LIGHT DAYS

## Berry Citrus Electrolyte Water

**INGREDIENTS (3 SERVINGS)**

- ½ cup fresh lime juice
- 2½ cups water
- ½ cup strawberries
- 2 tbsp honey

**DIRECTIONS**

1. Blend all ingredients until honey dissolves
2. Serve over ice

*Lighter and less sweet — a good match for shorter, everyday practices where you don't need full sports-drink carbs.*

## BEFORE YOU MIX A BATCH

- Taste and adjust — homemade batches vary, so check saltiness/sweetness before a big batch for the team
- Use these for 60+ minute, hot, or high-sweat sessions; plain water covers shorter/light practices
- Refrigerate and use within 24 hours — no preservatives means it doesn't keep like store-bought
- Skip added salt for athletes on a sodium-restricted diet; check with a doctor or athletic trainer first

Recipes adapted from Colorado State University Extension, Utah State University Extension, and registered-dietitian-reviewed sources · See the companion "Hydration & Recovery for Student-Athletes" handout for when to use water vs. a sports drink vs. a recovery drink.

STUDENT ATHLETE HEALTH & SAFETY

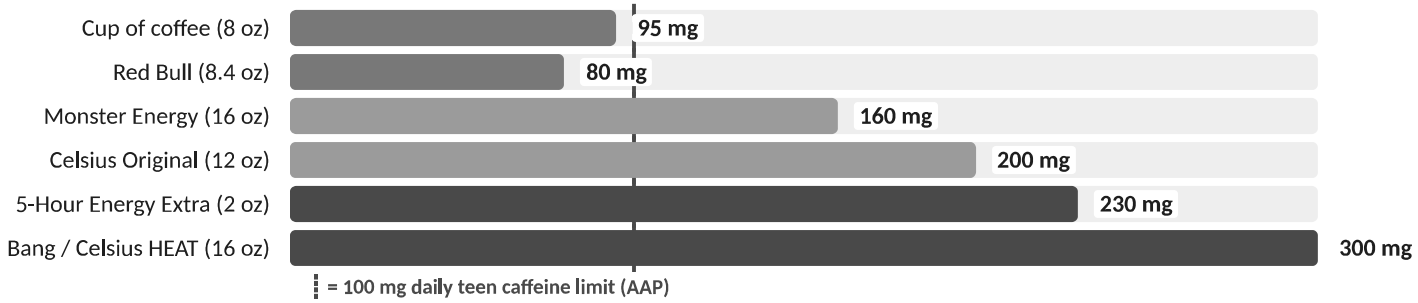
# The Hidden Risks of Energy Drinks

*What every student athlete should know before cracking one open*

Energy drinks are marketed as performance boosters, but for a still-developing athlete the research tells a different story. Here's what's actually in the can — and what it can do to your body, your recovery, and your eligibility.

## Caffeine Overload, By the Numbers

The American Academy of Pediatrics recommends teens (12–18) get no more than 100 mg of caffeine a day — and none at all under age 12. Most energy drinks blow past that in a single can.




## What It Does to a Developing Body

### Heart & Blood Pressure

Energy drinks have been linked to heart arrhythmia, high blood pressure, and even heart attacks in adolescents and young adults — a risk that compounds when stacked on top of intense exercise.

### Works Against Hydration

Caffeine is a diuretic and the high sugar/carb load slows gastric emptying — the opposite of what your body needs to rehydrate mid-practice or mid-game.

### Sleep & Recovery

Stimulant effects can disrupt sleep for hours after the can is empty, and both muscle repair and reaction time depend on that sleep.

### The Sugar Crash

Up to 54 g of sugar per can (13+ teaspoons) causes a blood sugar spike followed by a crash — fatigue, jitteriness, and mood swings right when focus matters most.

## Beyond the Body: Other Risks Worth Knowing

- **Eligibility risk:** the NCAA tests for caffeine — a heavy energy-drink habit can push levels high enough to flag a drug test or mask other substances.
- **Not a substitute for a sports drink:** energy drinks aren't formulated to rehydrate you, and mixing up the two on game day can backfire.
- **Medication interactions:** combining energy drinks with certain prescriptions or supplements can be dangerous — check with a doctor first.

## What the Experts Say

"Children and adolescents should *never* consume energy drinks."

AMERICAN ACADEMY OF PEDIATRICS

Energy drinks "should NOT be used before, during, or after physical activity" — water and sports drinks only.

NFHS SPORTS MEDICINE ADVISORY COMMITTEE

## What to Reach for Instead

| Craving… | Reach for instead |
|---|---|
| **An energy boost** | A balanced snack and a consistent sleep schedule — the two biggest levers for real energy, no crash attached. |
| **Hydration** | Water for most sessions; an electrolyte drink for practices or games over 60 minutes. |
| **Focus** | Regular meals, hydration, and sleep consistently outperform stimulants for a still-developing athlete. |

*Sources: NFHS Sports Medicine Advisory Committee Position Statement on Energy Drinks; American Academy of Pediatrics, "Sports Drinks and Energy Drinks for Children and Adolescents"; Seattle Children's Hospital. This handout is for general education and is not medical advice — talk to a doctor or athletic trainer about individual questions.*