Rest and recovery are critical for athletes of all ages from students to pros to older adults

By: Susan Cunningham, for UCHealth (https://www.uchealth.org/today/author/scunningham/)
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A critical but sometimes overlooked part of any training regimen is rest and recovery. Photo: Getty Images.

By Susan Cunningham and Rick Ansorge

Many athletes are laser-focused on their training regimens, incorporating a range of workouts to build strength and maximize performance.

A critical but sometimes overlooked part of any training regimen is rest and recovery.

"Recovery is about getting back to that baseline and maximizing not only performance but also our health," said Jessica Yeaton, a physical therapist at **UCHealth SportsMed Clinic in Steamboat Springs. (https://www.uchealth.org/locations/uchealth-sportsmed-clinic-steamboat-springs/)**

Training stresses the body in various ways, but it's far from the only stress athletes face. Work, school, relationships and the busy pace of modern life can all exacerbate stress, which has a cascade of effects on the body. Stay in a stress state long enough, and there are negative impacts on health.

"If you're exercising and operating in this stressful, high-cortisol state all of the time, you aren't getting back to the rest and digest state, and your body isn't able to heal," Yeaton said. "That has implications on injury, illness, strength production – everything."

Rest and recovery are important for everyone who is active, from student athletes to older adults. Yeaton and other UCHealth experts share some key tips for elevating your fitness levels while also incorporating rest and recovery.

Prioritize Sleep

During sleep, an athlete's body is actively working to repair and grow muscles. Sleep is also helpful for regulating hormones, boosting the immune system and strengthening overall mood.

Yeaton encourages athletes to take steps to foster good sleep, such as keeping a cool, dark bedroom that is free from screens.

While everyone needs sleep, Yeaton stresses that there isn't necessarily a magic number of hours to hit.

"Ultimately, it is a really individual thing," Yeaton said.

Practice dynamic stretching

Research has shown that dynamic stretching, in which athletes conduct a full range of motions to warm up before training, can improve performance by activating the neuromuscular system and increasing blood flow to muscles.

“It can help decrease injury risk by preparing our muscles for the movements they will perform during training, which ultimately aids in recovery,” Yeaton said.

Yeaton also encourages athletes to skip the couch after a hard workout and go for a gentle walk instead. The dynamic compression created by activating the muscles helps remove waste byproducts that can build up in tissues after intense exercise.

Cold plunging, in which athletes immerse themselves in ice-water baths after a workout, hasn’t been clearly linked to improved performance but can help reduce the lactic acid that builds up after a workout.

Skip static stretching, unless you like it

While static stretching and foam rolling may help decrease muscle soreness, research hasn’t revealed a clear benefit to performance.

But, if people feel better and respond well to it, Yeaton lets them know that it doesn’t hurt.

“A lot of people love stretching, and there is a decreased perception of pain,” Yeaton said. “At the end of the day, it’s about doing whatever feels good and works for you.”

Build rest days into training

Designated rest days help athletes recover and heal after training and competitions. Some find that periodization – a process in which periods of training are alternated with periods of rest – improves performance and helps decrease injury. For instance, an athlete may train for three weeks and then take one week off for recovery.

“It gives the immune system a chance to recover,” Yeaton said. Maintaining a strong immune system is key to warding off illnesses, which is especially important when competing.

Focus on fueling

To maximize your workout and boost recovery, make sure you fuel properly. For instance, eating carbohydrates before, after and even during long workouts can help **replenish energy stores (https://www.uchealth.org/today/performance-plates-boosting-performance-with-balanced-nutrition/)** and encourage faster recovery.

Find what works for you: “Everyone is different,” Yeaton said. “Some people can operate on different amounts of stress and sleep. Ultimately, it’s about finding out what works for each athlete.”

But everyone needs some level of recovery.

“No one can function without getting adequate recovery,” Yeaton said. “It can be almost as important as the actual training you’re putting in, because if you’re not recovering from training, you’re not getting a boost from it.”

What does ‘rest and recovery’ really mean?

Rest and recovery is all about giving the body time to repair, rebuild, and strengthen itself between workouts.

Dr. Karin VanBaak (https://www.uchealth.org/provider/karin-vanbaak/) of the **CU Sports Medicine & Performance Center (https://cusportsmedcenter.com/staff-directory/)**, **UCHealth Family Medicine – Boulder (https://www.uchealth.org/locations/uchealth-family-medicine-boulder/)**, and assistant professor in the **Department of Family Medicine and Department of Orthopedics at the University of Colorado Anschutz Medical Campus (https://medschool.cuanschutz.edu/family-medicine)** explains why rest and recovery are critical for an athlete’s physiological and psychological well-being.

“There’s not a one-size-fits-all answer about what rest and recovery mean for athletes,” VanBaak said. “The nuances are going to be a little bit different for everyone depending on their age, sport, and level of participation and development.”

But there’s one general principle that applies to all athletes, she said.

“If you’re participating in sports, you’re breaking down your body. You’re taxing yourself and pushing yourself beyond your current level of fitness.”

Exercise — especially intense exercise — creates tiny tears in the muscles. Over time, as muscles heal, they eventually grow bigger and stronger. It’s important to remember that this process occurs during rest and recovery, not during the exercise session itself.

"In order to see gains in fitness, in order for the body to keep doing what you want it to do, you have to give it enough rest to repair itself," VanBaak said. "If you're an athlete, it means taking time out from your usual sport."

Athletic trainers talk about two types of recovery: short-term or active recovery and long-term recovery. What's involved with active recovery?

Short-term or active recovery occurs in the hours soon after intense exercise. Research shows that low-intensity exercise during the cool-down phase of your workout is associated with performance benefits.

"I tend to think of short-term recovery as what you are doing that day," VanBaak said. "So if I go out for a six-mile run in the morning, what do I do afterward to make sure that my body and mind can recover from that single bout of exercise?"

Active recovery increases blood circulation, which helps remove waste products from soft tissue that have been broken down by intense exercise. Fresh blood flow then delivers nutrients that help repair and rebuild muscles, tendons, and ligaments.

During active recovery, athletes should engage in light physical activity that raises the heart rate above a resting rate. But they should avoid the same repetitive movements they performed during training or an event.

"It's good for athletes to do something else," VanBaak said. "It's good to do an activity with a different movement pattern, to do something just for fun."

Examples of active recovery exercises include walking, brisk walking and jogging; swimming or other aquatic activities; cycling or stationary cycling; elliptical or rowing machine; and light weightlifting (30%-40% less weight than usual).

Active recovery is an ideal time to incorporate stretching and massage because the muscles are already warm. This provides more effective stretches to increase range of motion. It also reduces the risk of injury.

"That could involve some foam rolling or other kinds of recovery practices like yoga," VanBaak said.

"Nutrition is also important for short-term recovery," she added. "That includes getting the right amount of calories and a good balance of macronutrients to replenish your protein and carbohydrate stores."

What's involved with long-term recovery?

Long-term recovery involves rest and recovery periods that are built into a seasonal training schedule. It also may include days or weeks of rest and recovery incorporated into an annual athletic program.

"I take care of a lot of runners," Van Baak said. "Where we see people get into trouble is when they're going from one big training block to another big training block to yet another big training block without taking several weeks off in between."

How long should a recovery period last?

It's essential to give your body enough time spent not training to replenish your energy (glycogen) stores and allow your damaged muscles to recover. Otherwise, your performance will be compromised and you may experience chronic muscle soreness and pain.

The duration of a recovery period depends on factors such as your age, sport, and training regimen.

"For me, a summer recreational trail runner, taking time off in the fall looks a lot different than it does for my friend who runs two marathons over the summer," VanBaak said. "So a lot of it has to do with the level of intensity and the volume of what you're doing for training."

The American Council on Exercise (ACE) suggests that athletes who engage in high-intensity exercise should schedule a rest day every seven to 10 days. But that's not a hard and fast rule. Some athletes may need more frequent rest days, such as two per week.

Timing your rest and recovery is also going to help prevent what is called overtraining syndrome. Photo: Getty Images

Athletes who follow a seasonal training program may need to adopt a process called periodization, which incorporates pre-scheduled recovery days and even recovery weeks throughout the year. Periodization requires changes in training programs that include modifying workout types, adding cross-training, and changing exercise intensity, time, and distance.

"On a long-term scale, rest and recovery is important for injury prevention," Van Baak said. "These include acute injuries that occur in people who are fatigued and deconditioned, especially those who play basketball or soccer. They also include overuse injuries such as chronic soft tissue injury, chronic tendon injury, and bone stress injury."

"Timing your rest and recovery is also going to help prevent what we call overtraining syndrome, which is basically a state where your whole body can't keep up with what you're asking it to do," she added.

What are the signs of overtraining syndrome?

Studies suggest that overtraining syndrome affects roughly 60% of elite athletes and 30% of non-elite endurance athletes. The ill-effects of overtraining syndrome include increased body fat, a higher **risk of dehydration (https://www.uchealth.org/today/optimal-hydration-and-nutrition-improves-athlete-performance/)**, lower libido, and mood disturbances.

Once overtraining syndrome sets in, it can be difficult to reverse.

"People who over-train often have trouble with performance," Van Baak said. "Maybe they're getting a lot more fatigued from sports activity that used to be easy for them. They may even be getting more tired in their regular lives outside of sports."

"They may be dealing with mental burnout or a lack of interest in a sport they used to enjoy."

What are the signs that athletes need a rest day, as in immediately?

If you listen closely to your body, it will tell you when you need to skip your usual workout and take a rest day.

When researchers surveyed 605 competitive athletes, they found that these were the top reasons to take a rest day:

- General feelings of fatigue.
- An unexplained decrease in performance (generally lasting between one week and one month).
- Musculoskeletal aches and pains.

Other indicators of overdue rest and recovery included agitation, moodiness, sleeplessness, poor appetite, increased illness, and feelings of stress and depression.

"Athletes may notice that their sport takes more effort. Their perceived exertion is a lot higher," VanBaak said. "Some people may even notice an increase in their resting or exertional heart rate."

"When we see these later signs of overtraining in people, it not only means we need to make sure that they are taking their few weeks of rest a few times a year. They may need to take even longer to catch up on some of the recovery that they've missed." (javascript:void(0))(javascri

What's your opinion of 'passive' recovery (i.e., doing nothing)?

"I think days of doing nothing are really important," VanBaak said. "I want almost all of the athletes I take care of to take a full rest day every week."

"There are a lot of misconceptions about passive recovery," she added. "I often ask people how many rest days they're taking or when is that last time they took two weeks off. They'll tell me, 'Oh, at the end of August, after a big trail race, I took two weeks of just easy running.'

"That's consistent with an 'active' recovery. But it's also really important to just give the body some time off."

How important is sleep?

"Sleep is super-important," VanBaak said, because most muscle repair and growth occurs during sleep.

In athletes, sleep deprivation is linked with decreased aerobic endurance and other measures of performance. It's also associated with adverse changes in hormone balance, including higher levels of the stress hormone cortisol and lower levels of human growth hormone, which is active during tissue repair,

When sleep deprivation results in fatigue, low energy, and poor focus, it can increase the risk of serious injury.

To promote optimal health, the American Academy of Pediatrics Childhood Sleep Guidelines recommend children ages of 6-12 should get 9-12 hours of sleep and teenagers 13-18 should sleep 8-10 hours every night.

"Sleep duration is only part of the equation," VanBaak said. "You also need to have good sleep quality. You don't want to have an inconsistent sleep routine. You don't want to be waking up a lot at night."

"Sleep hygiene is really important for athletes as well. That means not being on your phone right before you go to bed, not doing work or watching television in bed. It means establishing good habits and routines that prepare the mind as well as the body for sleep."

What are the benefits of optimal rest and recovery?

"For a lot of my patients, what matters most is improved athletic performance," Van Baak said. "Their fitness gains – in strength, endurance or both — are going to come easier. They are really going to maximize their effort to improve their fitness."

"But for most of us, the biggest benefit is that we're able to keep doing things that we like to do. We know that varied, regular strength and endurance exercise has benefits on all the systems in the body: the cardiovascular system, muscles and bone, the immune system."

"People who exercise regularly live longer and have better mental health parameters. They also have better relationships."

"So to keep up with 'exercise as medicine' regimen, it's important to make sure that we're doing it in a healthy way," she said.

Do older athletes need more rest and recovery?

"I want to say the answer is yes, that the older people get, the more time they need for rest and recovery. But our younger athletes need to be cognizant of their rest and recovery time in very specific ways as well."

"In the world of pediatric sports medicine, we see more and more kids and young athletes dive full time into one sport at an early age," VanBaak said. "There is a lot of good data showing that committing full time to a single sport increases the risk of burnout and injury while decreasing people's performance. Research shows that young athletes who compete in multiple sports and take off a good amount of time multiple times a year are healthier, happier and more successful."

"There's less data about that in adults," she added. "But I think people in our practice, especially here in Colorado where our patient population is so active, would tell you that the athletes who are the happiest and least likely to experience injury or burnout are those who do multiple sports throughout the year."

"It's better for the body to be doing multiple different motions. And it's also good for the mind to switch things up," she said.

What is an often overlooked aspect of rest and recovery?

"Something I see a lot in my practice is that many people under-appreciate how important overall nutritional healing is to support recovery," VanBaak said.

During short-term recovery, consuming the right foods and drinks after exercise helps replenish your glycogen stores in muscles and optimizes protein synthesis.

"I see a lot of people who really increase their running mileage during the spring and increase their calorie intake by just a little bit. They end up with a mismatch between how much energy they're expending and not making up for it by increasing their calorie intake."

“That kind of chronic under-fueling can look a lot like overtraining syndrome,” she said.

Should athletes keep a daily training log to track their progress or lack thereof?

“For most people, keeping a log is a good idea,” Van Baak said. “Especially for those who are training for something specific, it’s a good idea to keep track of what you’re doing, what recovery looks like, anything special about nutrition, and how did you feel.”

“Keeping a log is also useful to ensure that you don’t let things slip, that you remember to take your rest days, and engage in proper fueling and rest habits.”

Some everyday recreational athletes may not need to keep a log. “I mostly base my athletic activities on what I feel like doing on any given day, seeing what the weather is good for, seeing if conditions are right to go the mountains,” she said.

But other recreational athletes may find it essential.

“In the sports medicine clinic, we frequently see people who accidentally get into overtraining syndrome because they like to do so many things,” VanBaak said. “They’re almost forgetting to give themselves any rest days. So it can definitely help people be more intentional and mindful about what they’re doing.”

Writer Susan Cunningham contributed to this article.

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About the author

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Susan Cunningham, for UCHealth (https://www.uchealth.org/today/author/scunningham/)

Susan Cunningham lives in the Colorado Rocky Mountains with her husband and two daughters. She enjoys science nearly as much as writing: she’s traveled to the bottom of the ocean via submarine to observe life at hydrothermal vents, camped out on an island of birds to study tern behavior, and now spends time in an office writing and analyzing data. She blogs about writing and science at susancunninghambooks.com.

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