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Ice, Ice, Maybe?

Some athletes and experts swear by ice baths, while others say they're useless or even detrimental. Hilary Achauer investigates the potential end of the Ice Age.

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Maybe CrossFit athletes have a thing for pain.

The event is over, they've survived whatever crushing test was put before them, and instead of finding the nearest chair, many competitive CrossFit athletes decide to prolong the agony by submerging themselves in a tub filled with ice water.

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But why do they do this to themselves? Are ice baths helping recovery or hindering it? Is jumping into the tub just an old habit or the habit of smart athletes? Most importantly, what does the latest research say about subjecting the body to extreme cold after competition?

Dr. Bill Porath, a sports-injury specialist who treats CrossFit athletes, thinks ice baths should only be used in the case of overheating.

Porath says ice baths made sense in Pomona, the site of the 2012 SoCal Regional competition, where athletes competed outside on a black surface. Many competitors overheated, and ice baths helped bring down their core temperatures. However, in 2013, the SoCal Regional competition was held in a covered venue in breezy, coastal Del Mar.

“There was no need for ice baths there,” Porath said.

But not everyone is ready to give up the icy plunge.

“(The players) use ice and hot-water submersion every single day,” said Ron Porterfield, head athletic trainer for the Tampa Bay Rays of Major League Baseball. He estimates about 70 to 75 percent of the players on his team use a combination of hot- and cold-water therapy, with many of them taking the plunge both before and after games and practice.

The Case for Ice

Porterfield has been in his current position with the Rays for 11 seasons. He’s been involved in professional baseball for 27 seasons, including time with the Houston Astros. As far as recovery, Porterfield said the biggest challenge for professional baseball players is the unforgiving playing surface.

“With the Astros, it was the old, synthetic turf. The Rays have the new turf, but no matter what the turf is made of, there’s concrete under it. Day in, day out, it’s intense on their legs,” he said.



Competitors will go to great lengths to recover in time for the next event, but many now question whether an ice bath is anything but a placebo.

Once in season, baseball players compete almost continuously. During spring training, the Rays play 30 games in 42 days. In the regular season they play 162 games in 180 days. Quick recovery is essential, and icing has been a part of baseball lore since [Sandy Koufax](#) soaked his left arm in an ice bath after each game.

Modern athletes use a combination of hot- and cold-water tubs to combat muscle fatigue and improve recovery, Porterfield said.

"We have two dunk tanks," he said. "The hot one is 106 degrees (F), and the cold one is 55 degrees. We also have small whirlpools we can raise up and down so they can put their elbows in."

This means players don't have to submerge the entire body if they are only experiencing pain or soreness in an arm or elbow.

"Now we do (water immersion) before and after a game," he said.

If an athlete is using the tanks before a game, Porterfield has him start in the hot water and end in the hot water, alternating about two minutes in the hot tank and one minute in the cold tank, about four or five times in each. Following a game, the athletes begin and end in the cold water but spend two minutes in the cold and one minute in the hot tank, again using each tank about four or five times.

In addition to the physiological benefits, there may also be a psychological advantage to an ice bath.

Porterfield thinks much of the benefit of cold-water immersion comes from the pressure of the water.

Think about diving deep under water and the feeling of pressure that builds in the head. The same thing is happening in a water tank, to a lesser degree. Porterfield thinks even minor water pressure aids recovery.



Effective or not, ice baths are assuredly uncomfortable until you go numb.

"When you get into water, you get pressure," he said. "It's pushing blood to the extremities. The contrast (between the hot and cold water) is good for pumping. The hot water creates new flow, and the cold shuts everything down."

On top of the water pressure, Porterfield feels the ripple effect of the water on the skin helps fire the lymphatic system.

"It's like a real light massage," he said.

A number of studies have tried to prove the efficacy of using ice baths for recovery. In the study [Effect of Post-exercise Hydrotherapy Water Temperature on Subsequent Exhaustive Running Performance in Normothermic Conditions](#), by the department of physiology at Trinity College in Dublin, Ireland, nine endurance-trained men completed two submaximal exhaustive running bouts and then immersed themselves in cold water for 15 minutes between exercising.

"Intestinal temperature, blood lactate and heart rate were recorded throughout and VO₂, running economy and exercise times were recorded during the running sessions.



Aja Barto uses ice baths for recovery, even though his coach advises against it.

“These data indicate that ... cold water immersion applied between repeated exhaustive exercise bouts significantly reduces intestinal temperature and enhances post-immersion running performance in normothermic conditions,” the study reported.

In another study, [Influence of Postexercise Cooling on Muscle Oxygenation and Blood Volume Changes](#), nine participants put one leg in a cold-water bath, while the other leg remained outside the bath. They did this after 30 minutes of continuous running at 70 percent of their maximal treadmill velocity followed by 10 bouts of interval sprints.

According to the study, the total hemoglobin volume was significantly lower in the leg that was immersed in the cold water. Tissue oxygenation index was also higher in the cold-water leg. The lower hemoglobin volume is not an improvement on its own, but the increased tissue oxygenation index resulting from cold-water immersion is a positive sign for improved recovery. Oxygen is required



Masters competitor Bryan Wadkins decided to forgo ice baths during the CrossFit Games in 2013, using other recovery methods instead.

to metabolize lactic acid and replenish ATP, both of which are produced during strenuous exercise.

The study reported that, "Postexercise cooling decreased microvascular perfusion (the process of delivery of blood to a capillary bed in the biological tissue) and muscle metabolic activity. These findings are consistent with the suggested mechanisms by which CWI (cold water immersion) is hypothesized to improve local muscle recovery."

In addition to the physiological benefits, there may also be a psychological advantage to an ice bath.

For baseball players, the psychological aspect is extremely important. Once a baseball player feels something works, he's loath to change.

"Baseball players are creatures of habit," Porterfield said. "They are both traditional and superstitious. If they do this a certain way, they are going to keep it that way."

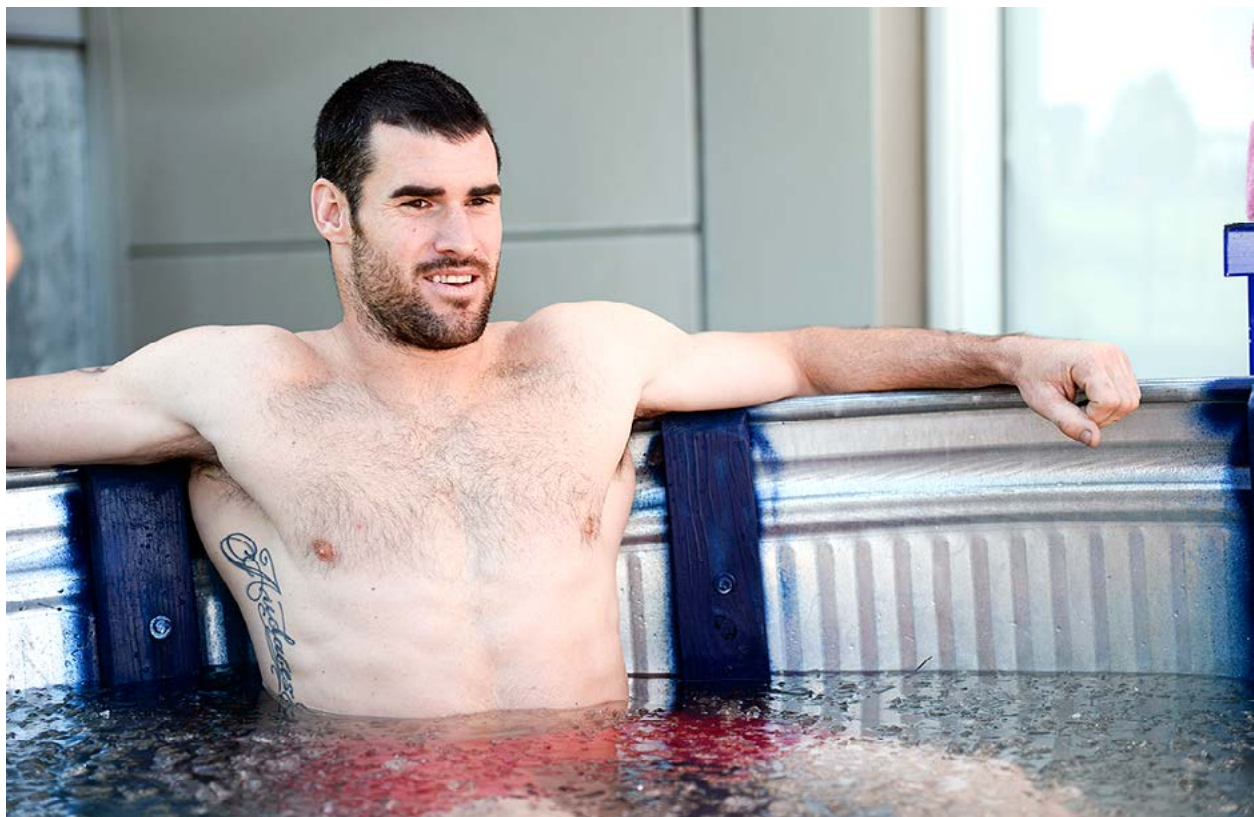
Kenneth Leverich, a two-time CrossFit Games competitor who placed 28th at the Games in 2013, relies on ice baths for recovery.

In 2013, Leverich reclined in an ice bath after the last event of the Games on Sunday, looking dazed and relieved after four days of competition. The ice baths around him were empty except for a pink rubber ducky floating in the tub next to him.

"(Ice baths) help flush out the lactic acid," Leverich said. "It helps promote recovery, and the swelling goes down. It's a similar feeling to a massage."

Leverich said he wasn't able to use the ice bath as much as he would have liked at the Games in 2013 because the events were so close together. He likes to have at least three hours between his ice bath and the next event.

Aja Barto, another experienced Games competitor, also relies on ice baths for recovery. He does this even though his coach, CrossFit Invictus' C.J. Martin, doesn't believe they are effective.



Utah athlete Tommy Hackenbruck looks very much at home in a giant ice tub.

"I use them in between events, only at competitions," Barto said. "They work for me, even if the benefits are psychological. I feel like they flush my musculature and wash away lactic acid."

Barto said he especially relies on ice baths at the CrossFit Games, where recovery is essential.

"They work for me. I feel better afterward," he said.

Barto, of course, was at one point a baseball player in the Texas Rangers organization.

The New Approach to Recovery

Porath used to be a proponent of ice baths.

"They were a big part of rehab," he said, "a cornerstone of conventional, acute recovery. We'd just slap ice on it right away."

That all changed about a year ago.

"I started seeing stuff through Kelly Starrett (founder of San Francisco CrossFit, who also runs the CrossFit Movement and Mobility Trainer Course) and others who were coming out against (ice baths). It thoroughly changed my mind," Porath said.

Starrett's position is presented on MobilityWOD.com.

Porath now feels that icing for recovery actually inhibits healing.

Dr. Porath says plunging the body into ice creates congestion and interferes with the influx of nutrient-filled blood.

"When you undergo a big max-effort workout and go 100 percent, your cells make metabolic waste, or garbage," Porath said. "What you want to do is increase circulation to get rid of that 'garbage.' Ice creates stasis and inhibits circulation."

He says plunging the body into ice creates congestion and interferes with the influx of nutrient-filled blood.



CrossFit Games athletes are faced with a host of challenges over many days, so some, like Kenneth Leverich, use ice baths in hopes of faster recovery between events.



Porath said it's "better to jump on a (stationary) bike" than to ice.

"Inflammation is the first step of the healing process, and it's a vital component," he said. "We've evolved over thousands of years to heal in a certain way. Just look at athletes when they get out of an ice bath. They move like 90-year-old men and women."

Porath says icing in the event of an injury, to numb the pain, is a different issue.

"If you want to ice so you can numb the area and then go play tennis, that's one thing," he said. He also recommends using ice to avoid overheating and to bring down the athlete's core temperature.

However, he doesn't think athletes should use ice baths as a way to recover for the next event or workout.

"The lymphatic system has no pump," Porath said, "it's circulated by muscle activity. Our bodies weren't designed to be immobilized. Movement is required."

Porath advocates gentle movement—like rowing or cycling—or an electrical muscle-simulation device, like the MarcPro, to move deoxygenated blood away from the fatigued muscles.

In the 2009 study [Effects of Cold-Water Immersion on Physical Performance Between Successive Matches in High-Performance Junior Male Soccer Players](#), scientists studied the effects of ice baths on 20 high-level junior male soccer players over four days. They found cold-water immersion did not affect performance, but it did reduce the perception of general fatigue and leg soreness between matches in tournaments.

The 2012 study [Water Immersion as a Recovery Aid From Intermittent Shuttle Running Exercise](#), published in the *European Journal of Sport Science*, tested 40 male athletes and found ice baths did not improve an athlete's perception of pain, nor did they have positive effects on biochemical markers related to damage in muscle cells.



Those who are against ice baths feel athletes should keep moving after an event to optimize recovery.

Bryan Wadkins competed at the CrossFit Games in 2013 in the Masters 40-44 Division, placing seventh overall. Masters athletes are particularly invested in recovery, as the ability to bounce back after crushing workouts suffers as we age.

As a former wrestler and CrossFit Games Regional competitor, Wadkins was accustomed to using ice baths for recovery but decided to forgo icing at his first CrossFit Games on the advice of Porath. Even though he was committed to avoiding the ice baths, Wadkins did admit to a moment of doubt.

"I did the 21-15-9 heavy-deadlift and box-jump (event)," Wadkins said, "and I have a previous back injury."

Wadkins' back was feeling sore and tight after that event, and when he walked past all the athletes in ice baths, he wavered for a minute.

"I asked Dr. Bill, 'Are you sure I shouldn't ice?'" he said. "I thought maybe I should ice, because it's a subject that's still developing."

However, he stuck with the advice of Porath and instead got massage therapy, used heat and did some stretching.



Kinnick happily gave up ice baths when Starrett came out against them.

"I was able to come back the following day (and compete)," Wadkins said. He said he believes avoiding the ice bath helped him continue to in the competition.

"The cold restricts blood flow," Wadkins said. "Massage and heat promote blood flow. We've been ingrained to ice it, ice it, ice it. It's like we used to say, 'Advil, Advil, Advil.' Now, we're thinking, 'Hey, that's probably not the best thing.'"

"I've always thought (ice baths) sucked. Nobody enjoys getting into them. If there's no benefit, I'd rather not do it."

—Jeremy Kinnick

Jeremy Kinnick, a four-time Games competitor, has never really used ice baths to recover.

"I've only used an ice bath a handful of times in my life," Kinnick said.

One of those times he remembers very clearly.

"I was playing baseball in college, and I guess I stayed in the bath for too long—or it was too cold—and I got a mild case of hypothermia," Kinnick said. "I was jacked up for days."

Kinnick has used ice baths for recovery during the CrossFit Games but said he does not notice a benefit from them.

"I've always thought they sucked," Kinnick said. "Nobody enjoys getting into them. If there's no benefit, I'd rather not do it."

When Kinnick heard Starrett come out against ice baths, he said he breathed a sigh of relief. It was another reason for him to avoid the icy plunge.

"They are painful and horrible," Kinnick said.

"If someone said, 'Drink this water. It will help you recover,' I might consider it," Kinnick said, but he added that he has no desire to immerse himself in an ice-cold tub unnecessarily.

Instead of ice baths, Kinnick prefers to cool down by going for a walk or taking a light jog. The length of his cool-down depends on the length of the event. Then he follows up with light stretching and rolling out to create blood flow.

Unlike those who are strongly against ice baths, Kinnick says for him it's just a personal choice. He thinks athletes should try out different methods and see if they notice improved recovery.

"It's all about preference—whatever gives you that mental edge," Kinnick said.

The Debate Continues

Each side of the ice-bath debate holds strong opinions, but so far no study has offered definitive proof either way.

Proponents of ice baths offer anecdotal evidence and say they just feel better after an ice bath. And even if the

benefit is only psychological, that's still significant. Any mental edge, no matter how small, makes a difference.

Those against ice baths for recovery say we're icing just because that's what we've always done, and many suggest the practice actually hinders recovery.

Improving recovery time is important for CrossFit athletes. Faster recovery means more time to train hard, and in competition it means increased performance in events on the same day or on subsequent days of competition. As Barto said after wrapping up the 2013 Games, "This is who can take the biggest beating and recover."

In attempts to reduce down time, athletes rely on a variety of methods including physio tape, compression gear and fancy supplements—many of which run the line between legitimate aid and placebo.

At present, ice baths are still in question, with more science needed to determine their efficacy.

Additional Reading

[Two Studies Back Benefits of Ice Baths](#)

[Bathing in Ice After Intense Exercise "Does Not Work," Says New Report](#)

[Evaluation of Hydrotherapy, Using Passive Tests and Power Tests, for Recovery Across a Cyclic Week of Competitive Rugby Union](#)

[Cold-Water Immersion \(Cryotherapy\) for Preventing and Treating Muscle Soreness After Exercise \(Review\)](#)

[Really? The Claim: An Ice Bath Can Soothe Sore Muscles](#)



About the Author

Hilary Achauer is an award-winning freelance writer and editor with a background in marketing and communications. An amateur-boxer-turned-CrossFit athlete, Hilary specializes in health and wellness content, focusing on emerging fitness trends. Her writing has been featured in a leading online parenting magazine as well as a number of travel and lifestyle publications. She is an editor for Frommer's travel guides and writes websites, brochures, blogs and newsletters for universities, start-ups, entrepreneurs, accounting and financial service organizations, and management consultants. She lives in San Diego with her husband and two small children and spends most of her free time at CrossFit PB. To contact her, visit HilaryAchauer.com.



If ice baths don't work, at least they'll keep your drink cold.