The grandmaster diet: How to lose weight while barely moving

Tristan Fewings/World Chess/Getty Images

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ONE WEEK IN early March, on a blustery, windswept day, Fabiano Caruana decides to get away. He drives three hours west from his St. Louis apartment over winding gravel roads to reach his destination, a 2,000-acre compound in rural Missouri owned by a wealthy friend.

EDITOR'S PICKS

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The Body Issue

At 7:30 the next morning, he pulls on gray Mizzou sweats and matching running shorts, rubs the sleep from his eyes and heads out for his hourlong run with his training partner, Cristian Chirila. They jog up and down the hills around the farmland, whispering during water breaks about openings and effective chess permutations.

At 5-foot-6, Caruana has a lean frame, his legs angular and toned. He also has a packed schedule for the day: a 5-mile run, an hour of tennis, half an hour of basketball and at least an hour of swimming.

As he's jogging, it's easy to mistake him for a soccer player. But he is not. This body he has put together is not an accident. Caruana is, in fact, an American grandmaster in chess, the No. 2 player in the world. His training partner, Chirila? A Romanian grandmaster. And they're doing it all to prepare for the physical demands of ... chess? Yes, chess.

Caruana, left, retreats to a 2,000-acre compound in rural Missouri ahead of major tournaments to prepare

his body as well as his mind. Neeta Satam for ESPN

IT SEEMS ABSURD. How could two humans -- seated for hours, exerting themselves in no greater manner than intermittently extending their arms a foot at a time -- face physical demands?

Still, the evidence overwhelms.

The 1984 World Chess Championship was called off after five months and 48 games because defending champion Anatoly Karpov had lost 22 pounds. "He looked like death," grandmaster and commentator Maurice Ashley recalls.

In 2004, winner Rustam Kasimdzhanov walked away from the six-game world championship having lost 17 pounds. In October 2018, Polar, a U.S.-based company that tracks heart rates, monitored chess players during a tournament and found that 21-year-old Russian grandmaster Mikhail Antipov had burned 560 calories in two hours of sitting and playing chess -- or roughly what Roger Federer would burn in an hour of singles tennis.

Robert Sapolsky, who studies stress in primates at Stanford University, says a chess player can burn up to 6,000 calories a day while playing in a tournament, three times what an average person consumes in a day. Based on breathing rates (which triple during competition), blood pressure (which elevates) and muscle contractions before, during and after major tournaments, Sapolsky suggests that grandmasters' stress responses to chess are on par with what elite

athletes experience.

"Grandmasters sustain elevated blood pressure for hours in the range found in competitive marathon runners," Sapolsky says.

It all combines to produce an average weight loss of 2 pounds a day, or about 10-12 pounds over the course of a 10-day tournament in which each grandmaster might play five or six times. The effect can be off-putting to the players themselves, even if it's expected. Caruana, whose base weight is 135 pounds, drops to 120 to 125 pounds. "Sometimes I've weighed myself after tournaments and I've seen the scale drop below 120," he says, "and that's when I get mildly scared."

Caruana makes sure to eat a balanced breakfast each morning: two eggs, cured fish, oatmeal and fruit.
Neeta Satam for ESPN

But there is literally nothing for Caruana to fear but fear itself. Stress and anxiety, in fact, are the greatest drivers of the phenomenon. Here's how it works:

Grandmasters in competition are subjected to a constant torrent of mental stress. That stress, in turn, causes their heart rates to increase, which, in turn,

forces their bodies to produce more energy to, in turn, produce more oxygen. It is, according to Marcus Raichle, a neurologist at Washington University in St. Louis, and Philip Cryer, a metabolism expert at the school, a vicious, destructive cycle.

Meanwhile, players also eat less during tournaments, simply because they don't have the time or the appetite. "The simple explanation is when they're thinking about chess, they're not thinking about food," says Ewan C. McNay, assistant professor of psychology in the behavioral neuroscience program at the University of Albany.

Stress also leads to altered -- and disturbed -- sleep patterns, which in turn cause more fatigue -- and can lead to more weight loss. A brain operating on less sleep, even by just one hour, Kasimdzhanov notes, requires more energy to stay awake during the chess game. Some grandmasters report dreaming about chess, agonizing over what they could have done differently for hours in their sleep, and waking up exhausted.

To combat it all, today's players have begun to incorporate strict food and fitness regimens to increase oxygen supply to the brain during tournaments, prevent sugar-related crashes and sustain their energy. In the 1980s and '90s, smoking, drinking and late-night parties were common on the chess circuit -- that's right, chess had a "Boogie Nights" phase -- but that scene has all but disappeared.

"Physical fitness and brain performance are tied together, and it shouldn't be a surprise that grandmasters are out there trying to look like soccer players," Ashley says.

According to Ashley, India's first grandmaster, Viswanathan Anand, does two hours of cardio each night to tire himself out so he doesn't dream about chess; Kasimdzhanov drinks tea only during tournaments and plays tennis and basketball every day. Chirila does at least an hour of cardio and an hour of weights to build muscle mass before tournaments.

But not one of these grandmasters has perfected his fitness routine like the current world champion, Magnus Carlsen.

Tennis and other workouts help Caruana stay in shape -- and control the amount of weight he loses during a chess tournament. On average, he says, he drops from about 135 pounds to around 120 over a 10-day tournament. Neeta Satam for ESPN

IN 2017, MAGNUS CARLSEN realized he had a problem. The reigning world No. 1 for four years felt his grasp on the title loosening. He was still winning most tournaments, but his matches were lasting longer, the victories seemingly less assured. He was beginning to wane in the last hour of games. He noticed younger players catching up to him.

So it was that Carlsen visited the Olympic training center in Oslo, Norway, with his father, Henrik, seeking advice from performance specialists. Their suggestion was deceptively simple: "You need to cut back on the orange juice you drink during tournaments."

Carlsen had relied on a mix of half orange juice, half water for an energy boost since he was a child. But now, in his late 20s, his body was no longer breaking down the sugar as quickly, leading to sugar crashes. The nutritionists suggested that he instead drink a mixture of chocolate milk and plain milk, which contained far lower levels of sugar but would also supplement his body with calcium, potassium and protein.

"It kept his blood sugar at a reasonable level without too big a variation, and he felt less tired during key moments in tournaments that followed the change," Henrik said.

> **"It shouldn't be a surprise that grandmasters are out there trying to look like soccer players."**
>
> Maurice Ashley

But that was merely the beginning of Carlsen's makeover: Since then he has trained his body for chess, down to the very last detail. Before tournaments, he works out for hours -- running on the treadmill, perfecting asanas on his yoga mat, playing soccer with his friends. Before the world championship last year, he went skiing every day and tweeted that it strengthened his legs and his willpower to get to the finish line. He hired a personal chef, Magnus Forssell, who travels with him to ensure he's eating the right combination of proteins, carbs and calcium. (Says Forssell: "Before tournaments, you need a lot of energy, so I am trying to trick him to eat some pasta so he gets some reserve energy.")

These days, during tournaments, Carlsen focuses on relaxing and conserving energy instead of training. Caruana spends at least three hours before a match prepping his moves, but Carlsen does only 15 to 30 minutes of prep. His reasoning: Last-minute preparations are an unnecessary use of energy.

"When you allow your body to relax more during a tournament, it means that it will ask for more food, it means you can eat normally, you're not stressed, so your appetite is normal -- that's what happens with Magnus," Carlsen's father says.

There's more: Carlsen chews gum during games to try to increase brain function without losing energy; he taps his legs rhythmically to keep his brain and body alert between moves.

Anatoly Karpov, left, lost so much weight during the 1984 World Chess Championship that the tournament was ultimately called off. AP Photo

He has even managed to optimize ... sitting. That's right. Carlsen claims that many chess players crane their necks too far forward, which can lead to a 30 percent loss of lung capacity, according to studies in the Journal of Physical Therapy Science. And, according to Keith Overland, former president of the American Chiropractic Association, leaning 30 degrees forward increases stress on the neck by nearly 60 pounds, which in turn requires the back and neck muscles to work harder, ultimately resulting in headaches, irregular breathing and reduced oxygen to the brain.

"A chess player can develop chronic neck and upper back pain, as well as sore shoulders and backaches," says Overland, who has worked with the New York Mets and the U.S. Olympic Training Center. "This is particularly concerning considering how much energy they are exerting on playing a competitive game of chess at the highest level."

Not Carlsen. The Norwegian rests his lower back against the chair so it retains a natural curve, his knees slightly apart at the edge of the seat, feet firmly on the ground, and leans forward at about a 75-degree angle. In this position, which he arrived at through reading studies and trial and error, he's not too far forward

to lose alertness and not too far back to use extra energy.

"A lot of times you see Magnus winning games in the fifth hour of play," says Ashley, who has commentated on most of Carlsen's games in the past decade. "He looks like he's just starting out while his opponents are burning out."

Since he became a world champion in 2013, Carlsen has even practiced a strategy familiar to fans of Kawhi Leonard or LeBron James: load management. Although the average elite player will play 12 to 14 events a year to maintain his ranking and earn money, Carlsen has typically reduced his schedule to six to eight tournaments, taking months off to recuperate after each one.

"Even if he doesn't lose substantial weight like his peers, Magnus understood early on that his nervous system is stressed after every tournament and takes weeks at a time regaining that balance," Henrik says. "He understands his body well enough to know when he's achieved equilibrium before he goes out to play for another title."

No grandmaster has trained his body for chess more diligently than Norway's Magnus Carlsen. He has even discovered an optimal way to sit during competitions. TOLGA AKMEN/AFP/Getty Images

BACK IN MISSOURI, Caruana and Chirila hole up in the dining room for six

hours of chess, the room soundproofed for secrecy. Caruana is especially careful after screenshots of openings he'd planned to use against Carlsen leaked before last year's world championship. (It's only paranoia if they're *not* out to get you.)

Afterward, he looks exhausted, his glasses askew. Still, he grabs a handful of nuts and heads out for a final hour of tennis before dinner.

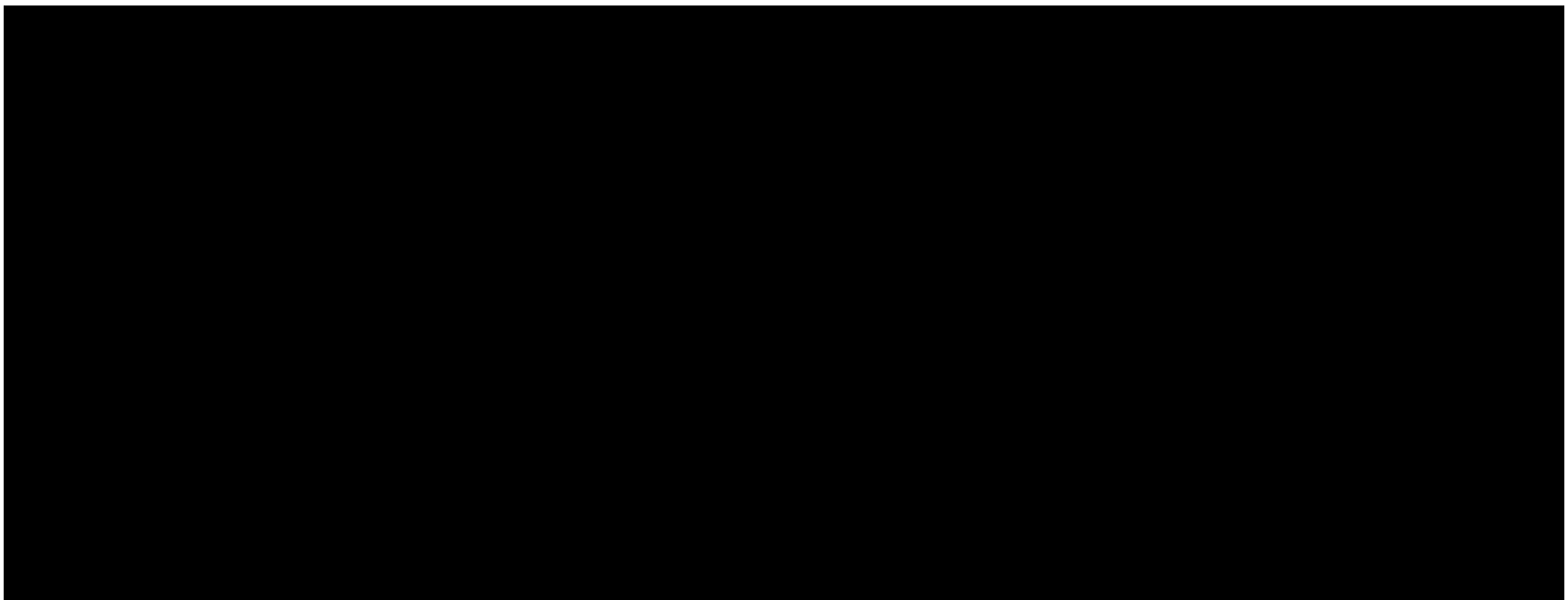
Kasimdzhanov and Chirila, after a dinner of salad, boiled shrimp, beef stew and mashed potatoes, walk into the kitchen for a serving of chocolate pudding pie. Caruana does not join them. "No dessert for me today," he says.

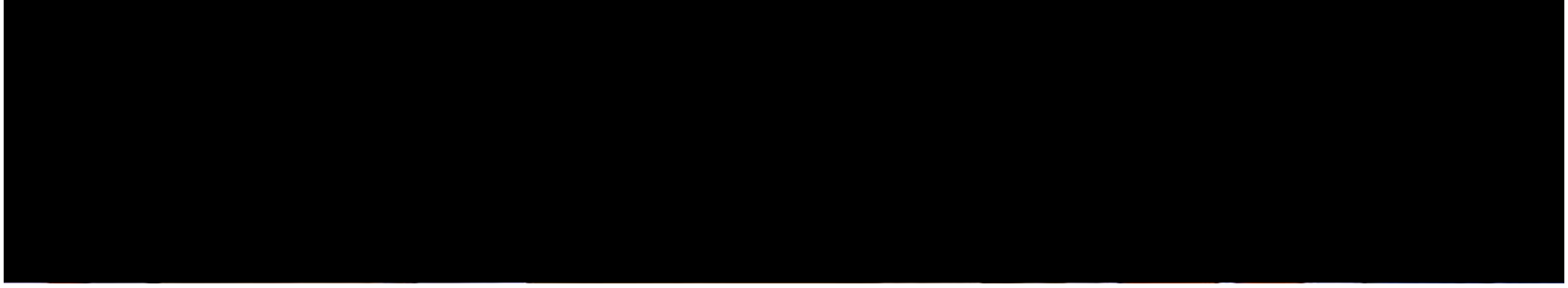
Before big tournaments, Caruana usually goes into detox mode. Last year he gave up alcohol for three months before the world championship. This time, he has chosen sugar. It's a habit he picked up from Carlsen, who is showing signs, at long last, of possibly being mortal. After a run of eight consecutive tournament victories, the Norwegian dropped 10 games at a competition in August and confessed to "constantly doubting" himself.

Carlsen's wobble on the eve of the Chess World Cup, however slight, is the opening Caruana has been waiting for. In his mind, Caruana knows what he has to do; like all grandmasters, he just needs his body to hold up.

"Sometimes you have to shock your body into listening to you," he says.

Florida Gators star Keyontae Johnson in critical but stable condition after collapsing on court





Myron Medcalf
ESPN Staff Writer

11:35 AM ET

Florida basketball star Keyontae Johnson remains in critical but stable condition after he collapsed early in Saturday's game against rival Florida State and was rushed to a nearby hospital.

Coach Mike White canceled postgame interviews to join Johnson at Tallahassee Memorial as his players boarded a bus for the two-hour trip back to Gainesville. According to the school, White will remain with Johnson at the hospital overnight.

Johnson's parents were flying in from Virginia to be with their son.

"Please keep praying for @Keyontae and his family. We all love him," White posted on Twitter.

Mike White
@MikeWhiteUF

Please keep praying for @Keyontae and his family. We all love him.

2:44 PM · Dec 12, 2020

7K 1.2K people are Tweeting about this

The Gators were coming out of a timeout Saturday when Johnson collapsed on the court. He was given emergency medical attention and taken to the locker room.

Like most of his teammates, Johnson tested positive for COVID-19 during the summer. Although the cause of Johnson's ailment was not immediately known, the coronavirus can lead to myocarditis, a viral infection of the heart muscle.

Before the incident, Johnson had just finished an alley-oop on a pass from Tyree Appleby. He was celebrating with teammates and walking toward the sideline before he collapsed.

Florida players were crying and hugging one another during the timeout, and a couple of them buried their faces in towels as White gathered his team in prayer.

Officials gave the teams time to regroup, and the game continued a few minutes later. Florida State coach Leonard Hamilton said administrators twice gave the Gators the option of stopping or continuing the game -- at that time and again at halftime -- and said they ultimately decided to play. White let his players make the call.

"Whatever they thought was in the best interest of their team, then I would accept it," Hamilton said. "My administration asked me, and I told them we would be OK with whatever they decided. It was my understanding that they wanted to play."

The Gators weren't the same afterward, as both teams seemed rattled. Florida (3-1) was ahead 11-3 after Johnson's dunk, but the 20th-ranked Seminoles (3-0) scored the next seven points and went on to an 83-71 victory.

Hamilton, who did not see Johnson fall, said some of his players were crying, and he questioned whether they would be able to be effective in the game. The longtime Florida State coach said some players were on their knees praying during the timeout shortly after Johnson had collapsed.

"Those types of things can affect you in some adverse ways," Hamilton said. "We're just all hopeful and praying that he's OK. If it affected our players in an emotional way, I can imagine what the situation was with his teammates."

Johnson, a junior forward from Norfolk, Virginia, is averaging 19.7 points per game this season and is considered an NBA prospect. He scored five points in four minutes Saturday.

"I know you're fighting bro," teammate Tre Mann tweeted long after the game ended. "God got you."

Johnson is known for his versatility and floor leadership and is considered a leading candidate for SEC Player of the Year. He averaged 14 points on 54% shooting from the floor and 7.1 rebounds as a sophomore.

The Associated Press contributed to this report.