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A Workout to Remember

USA Memory Championship tests the skills of competitors who can memorize a deck of cards in 60 seconds.

By Chris Cooper

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All photos: Chris Cooper/CrossFit Journal

The elevator to the top of the Consolidated Edison Building is jammed with bodies and big brains. On the way to the 19th floor, where the USA Memory Championship will be held, contestants, fans and parents maintain a nervous silence.

Among them is tall, bearded Nelson Dellis, the 2011 and 2012 USA Memory Champion. He holds national records for memorizing shuffled decks of cards and long lists of random numbers at great speed.

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"Did you do your CrossFit thing on the way here?" a coiffed, matronly parent asks Dellis. Others turn their faces up toward him. Dellis recounts his score and efforts on CrossFit Games Open Workout 14.5 while the others, eager for distraction, listen attentively.

"My quads are a mess right now," he says. "Good thing we're sitting today."

Dellis is a passionate member of I Am CrossFit in Miami, Florida. He competes in fitness events with other gym members, but his real game is memory: the ability to hold numbers, faces, words or other data in his brain and recount them in order, sometimes in staggering quantities and speed. Over the next several hours, Dellis will compete in seven events and win almost all of them, performing mental gymnastics and moving heavy cognitive loads. His capabilities are reminiscent of the fictional card-counting Raymond Babbitt from the movie *Rain Man*, but Dellis says anyone can learn this game. Even seemingly impossible tasks—such as memorizing 9,000 digits of pi and

recounting them in order—aren't out of reach for those who train, in his opinion.

The experiences of others have borne out Dellis' claim. As documented by Josh Foer in *Moonwalking With Einstein*, many "mnemonic athletes" compete in memory events without any special neurological wiring. They train for it the way CrossFit athletes train for the Open. In Foer's book, the author proved the hypothesis after training for a year and then competing himself. His book has inspired others to try. Many competitors at the 2014 USA Memory Championship in New York, New York, testify to reading the book and thinking, "It can't be *that* hard."

Invisible Palaces

To a bystander, it doesn't appear to be very athletic: Long rows of tables, dimmed lights and a few stray notepads fill the carpeted chamber. Many of the competitors wear neckties. Some even look a bit like Babbitt. But they're not savants. These are athletes who train up to five hours



Top memory competitors can memorize an entire deck of cards in about a minute and should not be invited to poker night.

every day, building their cognitive capacities. The “nerd” stigma still pervades, though some—such as Dellis—are fit. The cognitive horsepower in the room is intimidating to potential competitors and spectators alike.

“I could get people to come in here and get naked faster than I could get people to come in and expose their brains,” says Tony Dottino, founder of the USA Memory Championship.

But just as a snatch can be intimidating at first brush, it becomes familiar—and then powerful—with practice. Our brains share the plasticity of our muscles, if not the texture, and they can be trained to Olympic levels, too.

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The first tool typically acquired by memory athletes is some type of “mnemonic device”—a way to make information into a picture—for easier storage. Think of the way young children learn the alphabet: “A is for apple. B is for bee.” Linking each letter to a picture is a simple mnemonic device.

More advanced memorizers use a mnemonic device called the **PAO system**—person, action, object—to group data into a more complex picture. Some top mnemonic athletes claim obscene or hilarious pictures are most easily recalled.

Memorizers then sort the information using “memory palaces.” Visualizing their home or another familiar building, they place their PAO vignettes into rooms during a walkthrough.

For example, if you were trying to recall a shopping list containing cottage cheese, bacon, wine, fish and socks, you could visualize walking through your home and encountering each in a novel way: a bathtub full of cottage cheese containing a hairy man on your doorstep, a pig shaving strips of bacon in the bathroom, two bottles of red wine arguing in French on the couch, fish jumping from the sink



Mnemonic systems can be employed to help you recognize faces, either in a memory competition or at a party.

to a frying pan in the kitchen, and a pair of socks draped over the lamp in the living room and turning everything red. The clearer the story, the easier the recall will be.

“Everything I memorize, I’m converting into a picture,” Dellis says. “Once you have that, you just put it in your memory palace.”

In this way, Dellis and his competitors can break down extremely long strings of numbers into small chunks, convert them to pictures and place the pictures in order. Top athletes can have up to 50 memory palaces, all of which are familiar places in their lives.

“That’s where the difficulty comes in,” Dellis says. “Anyone can memorize a deck of cards if you have an image for each card. If you want to get faster, you have to get faster at your system. When I look at the card, it’s like I’m looking at a person I know well. It’s like learning a language. You have to get fluent in your memory system.”



For time, try and recall the first and last names of 150 acquaintances. Can you do it, and how long did it take?

For Time

Dellis' first challenge is the names-and-faces event: a short catalogue of 117 fictional characters, from which he must later recall first and last names. After 15 minutes of memorization time, the faces are represented to all athletes, who earn a point for each correctly spelled first name and last. Dellis scores 193, 41 more points than his closest competitor. **Dunbar's number** is part of a theory that holds each person can recall about 150 people with whom he or she has a personal relationship. Dellis can remember almost 200 random people after a glance.

Next, competitors are presented with a list of random numbers and given five minutes to memorize as many as possible.

"Does anyone know who holds the U.S. record in this event?" asks the announcer. Dellis is the only one to raise his hand. He should know: He set the record with 303 consecutive numbers. He pulls noise-canceling headphones over his ears and drops his chin with the others when the head referee shouts, "Three, two, one, go!"

Five minutes later, his sheet is replaced with a blank one and he begins to scribble furiously for several minutes. He recounts dozens of numbers unbroken, pauses for three seconds and bows his head to the task again. When he eventually comes up for air, he's done 310—a new American record, the equivalent of 44 seven-digit phone numbers in a row.

He wins the poetry event next. But the apex of the competition is the fourth event, speed cards, in which he'll attempt to break the U.S. record by correctly recalling a full deck of randomly shuffled cards in under 1:03—his current record. Since the event is so fast, all athletes are given two chances.

Surrounded by cameras, Dellis pulls the deck into his lap and goes to work. He double checks the cards once, then smacks his buzzer in 1:06.

"I was playing it safe," he says afterward. "I wanted to get a good time down on the first attempt and then go for it on the second."

Media press in close for the second attempt, and Dellis pulls a ball cap down over his eyes to further block out distractions. Across the aisle, Johnny Briones beams. It's his first championship and he's a sprinter: Memory cards are his favorite event. They wish each other good luck, and then Dellis is swallowed in a sea of cameras. This time is different: He holds each card for less than a second, eventually slamming the clock in 44 seconds. But he doesn't relax until all other athletes are done. Briones taps his clock in 1:00 exactly.

When the cards are counted, Dellis' judge finds a mistake: He's reversed two cards early in the deck. Although the others are all correct, Dellis' score is invalid. He saunters across the aisle to watch a judge count Briones' cards, then congratulates the younger athlete when his 1:00 time stands. It's the only event Dellis will lose all day.

The win earns Briones a spot in the afternoon's championship round: **three tougher challenges**, all seemingly impossible to observers.

In the end, Dellis is back on top. Alexander Mullin, who secures second by memorizing 94 randomly drawn cards in order, admits he's only been in the sport for a year. After reading Foer's book, he thought, "How hard could it really be?" and started building his memory palaces.

MoneyBrain

In an era which cognitive enhancement is sought, bought and fraught with false claims, memory champions prove a core component of intelligence can be trained. It would make sense if they were millionaires. But there's no prize money at the USA Memory Championship. The lead sponsor awards a single pen—"valued at \$5100"—to the winner: Dellis.

Dellis is as close to being a professional memory athlete as anyone. Although there's no prize money for winning the national championship, he says the prestige makes it possible for him to work as a public speaker and consultant. It's also brought him mainstream attention on **CNN** and **Saturday Night Live**.



At the USA Memory Championship no one ever, ever forgets to bring a pen.



Nelson Dellis (right) has won the USA Memory Championship three times, in 2011, 2012 and 2014.



When brain work is too easy, add a fitness challenge.

And Dellis has other reasons for competing: He took up the sport to improve his memory after his grandmother died with Alzheimer's. He wants to help people and believes techniques such as PAO, pegging—changing a number into a set of phonetic sounds or letters—and memory palaces will translate into a better life for everyone.

But why should the average person practice memorization techniques or even care about memory championships? The pursuit of excellence is aided by demonstrations of excellence. It helps the amateur to know what's possible. The exceptional outlier who sits clear across the spectrum can help draw another person toward "average." His example makes everyone better, and his experience leaves clues for everyone else.

The Greeks taught memory as part of a young child's curriculum, along with logic. Dellis believes kids who study memory would have a huge advantage in school and the workplace.

"When you know a list already, like the alphabet, you just start at 'A' and associate whatever you're memorizing with an apple," he says.



Dellis believes teaching simple memory techniques can improve lives, and anyone searching for car keys or a wallet might agree.

For example, when memorizing the names of U.S. presidents, children could tag the names to matching alphabetical symbols: George Washington eats an apple; John Adams builds a boat; Thomas Jefferson carves a coyote.

"If kids only knew that basic peg system, they'd have their first memory skill right there," Dellis continues. "When I teach kids, I come up with all these words for them to peg, and they love it. At the same time, they can memorize anything without even trying hard."

Carryover from simple memory games can help in real life, Dellis believes.

"When you start training your memory, you become so much more aware; you remember to remember," he says. "At its most basic level, it's paying attention. All these techniques are just fancy ways of paying attention. Forgetting where you parked your car, where you left your keys—that's just not paying attention."

In short, you can get better at remembering things because you know when to pay attention.

"The more you practice these techniques, the more it becomes your lifestyle. It's like a meta-remembering."

Practicing Duress

Memory training can be made into fun games for kids. Unfortunately, good memory is rarely required in a vacuum. Few people lose their car keys when they have plenty of time; it's usually when they're rushing and distracted by crying kids or an irate boss. Practicing memorization skills while under duress might help your brain work more efficiently when you're stressed.

Both Dellis and Briones have tried adding memorization to their workouts. In fact, fitness led Briones to cognitive sport.

"When I first started working out, I was weak. I could do a pull-up and a half—maybe," Briones says. "I wanted to get stronger, so I started doing P90X at home until I could do 20 pull-ups. One day I did 2,400 push-ups. So I started thinking, are there mental exercises I could do?"

After reading a book on memorization, Briones was skeptical. But he didn't have anything to lose, so he sat



**Top competitors will tell you memory isn't just a gift:
It can be trained.**

down with a deck of cards. He memorized that first deck in 30 minutes.

"I thought, 'What did I just do?'"

His early success encouraged him to continue with memory games and to combine his two new pursuits: memory and fitness.

Briones attaches his cards above his pull-up bar. At the top of every rep, he tries to memorize them. Then a friend replaces them with other cards after every rep.

"Then I'll do it with push-ups," he says. "If I can do this really well, I can do it when I'm sitting here (in competition). Physical stress helps me prepare for emotional stress."

Dellis has also built some memory work into his CrossFit workouts.

"I've done burpees while someone recited numbers to me, and rowing while someone read them," he says.

In workouts such as Cindy, in which few movements are repeated over and over, Dellis inserts a memory challenge each round.

"It's one thing to have one movement be a mind task, be focused on it, vs. doing it while you're doing something else. While you're doing burpees, you're just thinking, 'Let this end, let this end,' and at least you get to focus on something else."

While Briones and Dellis might be searching for ways to break up the long hours of training—five hours each day for Dellis—*some research* suggests memory training immediately after high-intensity exercise is best.

Remember to Remember This

One of the greatest cognitive benefits of exercise is an *increase in hippocampal volume*. The hippocampus plays an important role in spatial navigation and memory, and it's also one of the first regions to suffer damage in Alzheimer's disease. The memory loss and disorientation caused by the disease can *slowed* through regular exercise and memory training—and that puts Dellis in a unique position to help.

His charity, *Climb for Memory*, raises awareness and funds for Alzheimer's through mountain climbing. And he's attempting to make memory sport more exciting for viewers in his new event, the *Extreme Memory Tournament*.

"Memory," USA Memory Championship President Marshall Tarley says, "is the foundation of our intellect."



About the Author

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