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THE CrossFit JOURNAL

CONJECTURAL FATIGUE: HIGH-REPETITION WEIGHTLIFTING

The snatch and clean and jerk can safely be used for conditioning—and have been for years.

BY LON KILGORE

Shaun Cleary/CrossFit Journal

High-repetition Olympic lifts can be used for both strength and conditioning.

Michael Brian/ CrossFit Journal

A tremendous amount of criticism has been leveled at high-rep Olympic weightlifting.

Much of it comes from a variety of sport-specific coaches—often vocal weightlifting coaches and personal trainers who state that doing higher repetition snatches, cleans, and jerks is not effective in application and likely dangerous. In their opinion, no one can perform these lifts with proper technique in higher repetitions because of fatigue-generated technique errors.

In fact, some coaches suggest the Olympic lifts should not be used to train anyone other than elite athletes.

The issue arises in discussions and in the media on a seemingly regular cycle. Let's consider it from two angles:

1. What position do some of the best coaches in the world take on high-repetition weightlifting?

2. Is there any evidence to suggest that higher repetitions are ineffectual or dangerous?

Coach Says

Anecdotally, football and strength coaches have used high-repetition cleans for decades to add mass, strength and local muscular endurance to players. More formally, the National Strength and Conditioning Association (NSCA) has published in its many outlets examples and recommendations for use of Olympic lifts to generate metabolic fatigue or the use of high-repetition cleans. In the NSCA trove, we can see highly regarded coach Bob Takano's recommendation for repeated sets of 3-5 cleans with short rest between set for conditioning purposes (NSCA Webinar Series).

While 3-5 is not high repetition per se, the reps are done in a condition of fatigue. But we can also see in the writings of other high-level coaches that high repetition (more reps rather than less rest) of Olympic lifts is considered useful, and these coaches fully support high repetition as a conditioning tool. Jim Schmitz, three-time coach for the U.S. Olympic Weightlifting team, describes 10-rep clean and jerks as a conditioning tool in an article published on IronMind.com.

"When people question the conditioning value of the Olympic lifts, I say talk to me when you can do 10 consecutive reps with no rest in between in the clean and jerk with your body weight!" he wrote.

We can delve even further, back to the era of Bob Hoffman (1920s-'70s), the father of American weightlifting, who recommended up to 16 repetitions in some of his program publications.

With that in mind, it's very hard to argue that variations of higher and fatiguing repetition schemes should not be used in training. These variations have been used successfully and safely for conditioning purposes for more than half a century on the advice of experienced and elite coaches.

From a coaching perspective, the accusation that use of Olympic lifts for conditioning is ineffectual or dangerous is similarly poorly supported. The heart of the chaos can be traced to the inability of some to separate the use of weighted exercises to develop strength from their use to develop endurance. The logic levied by the detractors of higher and fatiguing repetitions is that weights are lifted to increase strength, and any consideration or application of weighted exercise, most specifically the Olympic lifts, to develop endurance is ineffective and irresponsible.

But, when considered objectively, any exercise can be used for conditioning purposes. That's right: any exercise—you just have to define the conditioning purpose and parameters, then program the exercise to fit those parameters.

When considered objectively, any exercise can be used for conditioning purposes. That's right: any exercise.

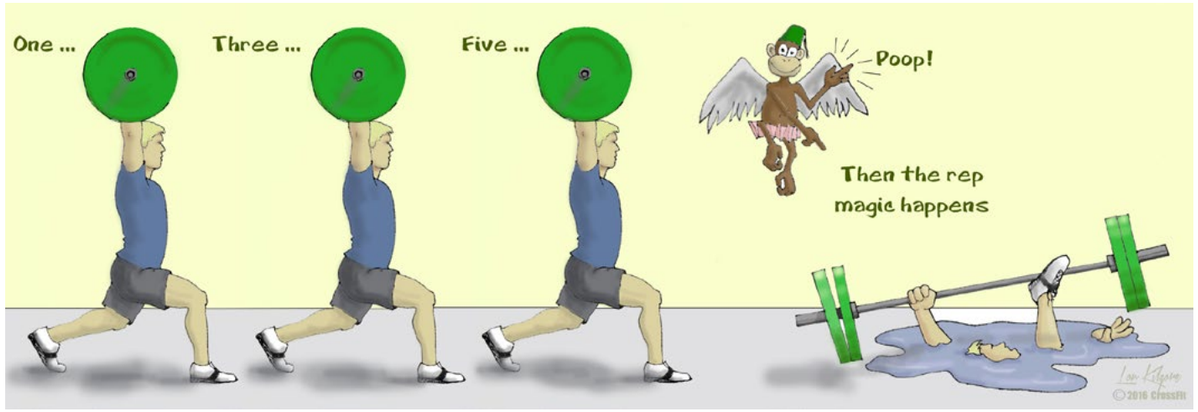
But an extremely common argument is that the Olympic lifts are too technically complex and prohibitively difficult to perform for multiple repetitions. That logic applied to CrossFit—and any other system that uses Olympic lifts or their variants in higher numbers or under conditions of fatigue—is based on a blanket inference. It is a subjective opinion that CrossFit coaches and other trainers cannot effectively teach weightlifting, that trainees cannot effectively learn the lifts to the point they can perform multiple repetitions and that science supports this position.

What is quite interesting is that many of these contrarians—who say that people cannot learn proper technique fast enough to support such training—actually deliver instruction intending to effectively teach the Olympic lifts to beginners in very short weekend workshops, seminars or introductory coaching sessions. And guess what? They can and do teach those complex human movements in a weekend, a day or an afternoon.

But how can their teaching and the trainees' learning of a movement skill only apply to singles, triples and maybe fives but not to 10s? Is there a magic point of no return where neural processing and motor patterns jump ship and leave the body in a quivering, spastic heap of bone and muscle incapable of coordinated movement?

The Olympic lifts help to improve fitness—both at low repetitions and high repetitions.

Shaun Cleary/CrossFit Journal



Some "experts" suggest technique cannot be maintained beyond 5 reps.

Deliberate Practice

Learning a physical skill is frequently presented as a very long process. This idea is often based on the writing of Malcolm Gladwell, who proposes that mastery requires 10,000 hours of deliberate practice. Gladwell's writing is based largely on a paper by K. Anders Ericsson and co-workers, in which the authors evaluate the difference in time of deliberate practice between good violinists and exceptional violinists.

If we are governed by this concept in exercise and train 10 hours per week, it will take 1,000 weeks or 19.2 years to master an exercise skill. If we train 20 hours per week it's 9.6 years. It's important to note that each of the subjects in this study could play the violin competently very early in his or her training career, and it didn't take the violinist years to play a tune.

The problem we face is that few papers dissect this concept down to isolate the physical learning. A violinist is learning independent use of the hands (fingering with one and bowing with the other). He or she is also learning to read, hear and process music intellectually while coordinating played notes to an externally based but internally implemented time reference. It is an intimidating and complex art form.

Pulling a bar from the floor and getting it on the shoulders is a simple bilaterally coordinated movement. It requires virtually no cognitive input and is independent of external time requirements other than those dictated by gravity. Does the simplistic nature of a clean, snatch or jerk require 10,000 hours or even 10,000 repetitions to master? Absolutely not.

A meta-analysis by Macnamara and co-workers found that only 18 percent of the variation in performance between low- and high-level athletes could be explained by the amount of deliberate practice. When the researchers focused on stratifying among the most elite athletes, only 1 percent of the difference between the top and bottom performers—all elite—was explained by the amount of deliberate practice. It's apparent many more factors are involved.

But really, how long does it take to learn a physical skill? Kirby and co-workers found that able-bodied subjects could learn to do wheelchair wheelies in less than an hour. In another study, simple elbow flexion assessed for acceleration, deceleration, speed and accuracy was learned in 400 repetitions over 1.5 hours (Flament and co-workers, 1999). Children learned a Wii Fit skiing task effectively with 100 repetitions over five weeks (Smits-Engelsman and co-workers, 2015). Further, it has been noted that motor-output accuracy had improved by the fifth physical practice session, eight additional sessions minimally increased accuracy, and multi-joint movement coordination had improved significantly by the eighth training session (Ya-Ching and co-workers, 2008).

So it is clear that very few discretely purposed training sessions can be effective in providing ample opportunity to learn an Olympic lift. Learning exercise technique does not take as long as some people would like you to think.

What happens if we throw fatigue into the mix? This is one of the central features of most arguments against higher-repetition Olympic lifts. However, as early as 1976 it was noted in a publication from the American College of Sports Medicine that "practicing a gross motor task under conditions of heavy-fatigue would facilitate performance of that task under criterion heavy-fatigue conditions" (Williams and co-worker, 1976). Further, increased body heat, such as when you are training hard, appears to enhance motor-skill acquisition (Littmann and Shields, 2016). We can look at these data in two ways:

1. Technique can improve with fatigue and sweaty body temperatures.

2. If you want to be capable of good technique while fatigued, you must train technique in the presence of fatigue.

Electrical Activity in Muscle

Is it possible that another phenomena might prevent us from learning and performing higher repetitions?

We do know that electromyographic (EMG, a recording of the electrical activity in the muscle) patterns change over repetitions completed, with notable differences seen by 10 repetitions. As repetitions stack up in a set, EMG tracings change.

Although data is limited, it has been proposed that learning a weighted movement is best accomplished using no more than 5 repetitions. The first rationale is that the first few repetitions closely follow the same electrical-stimulation pattern of muscle-fiber recruitment. Later repetitions start to diverge and recruit different muscle fibers. Second, and more importantly, using 5 repetitions gives the trainee an opportunity to learn and make mistakes and be corrected without performing a larger number of repetitions incorrectly. Timely feedback is considered essential to learning physical skills.

But the human mind is adept at learning. The human body is equipped to intuitively solve movement problems and reflexively avoid danger. This includes rapidly calculating the solution to movement problems. The ability of an average human to learn to perform an Olympic lift in a short period of time, often with limited or no external cueing, counters the argument that the lifts are too complex for inclusion in conditioning training. We can learn technique very quickly.

We scale, we individualize, we use the right repetition and set scheme for the goal to be accomplished—a point often ignored by detractors.

But if EMG activity changes over repetitions, doesn't it affect learning or movement?

The change in EMG activity in later repetitions does in fact point to different muscle fibers firing, but they are still muscle fibers (or motor units) in the active muscle, aligned in the same orientation as the other fibers in the muscle, responding to the same electrical impulses sent out by the nervous system. They are firing when they are called upon to do so. This means movement quality is preserved.

Some changes in EMG activity do indicate fatigue, which is defined as a reduced ability to produce force, so it should be evident that we can't do a true 1-repetition maximum (1RM) lift when fatigued. But when we are discussing higher repetitions or repetitions in conditions of fatigue, we are not worried about absolute strength; we are worried about developing endurance and work capacity.

If a trainee can do a 75-kilogram clean as a 1RM, he is not asked to do 10s with 75 kilograms. He is asked to do repetitions with much less, on the order of 30-50 percent less.

We scale, we individualize, we use the right repetition and set scheme for the goal to be accomplished—a point often ignored by detractors.

But You're a Bad Coach

Poor coaching is often intimated in the accusations levied against those who use higher repetitions with clients. In addition to the implied inability to teach trainees, irresponsibility is also implied.

Unfortunately for those accusers, those they accuse are as qualified as they are, and they fail to understand that trainees can become appropriately efficient with technique on their own (or even if they were coached poorly).

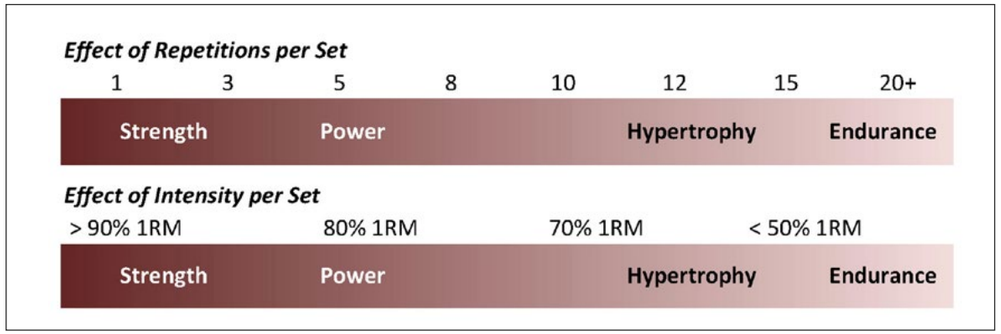
It is not unheard of to have individuals learn to do complex motor skills simply by imitation and without coaching input. A large percentage of weightlifters from the early and mid-20th century (and before) learned how to lift independently. If a coach was available in the small lifting community, it was a luxury.

Somewhere in the annals of the Iron Grapevine column in York Barbell's Strength & Health magazine is an early-'70s reference to this author's being a top prospect out of the Midwest, an observation based primarily on technique, which was largely learned through independent trial and error outside year round on a concrete patio in Mexico, Missouri, initially with Sears Orbitron weights.

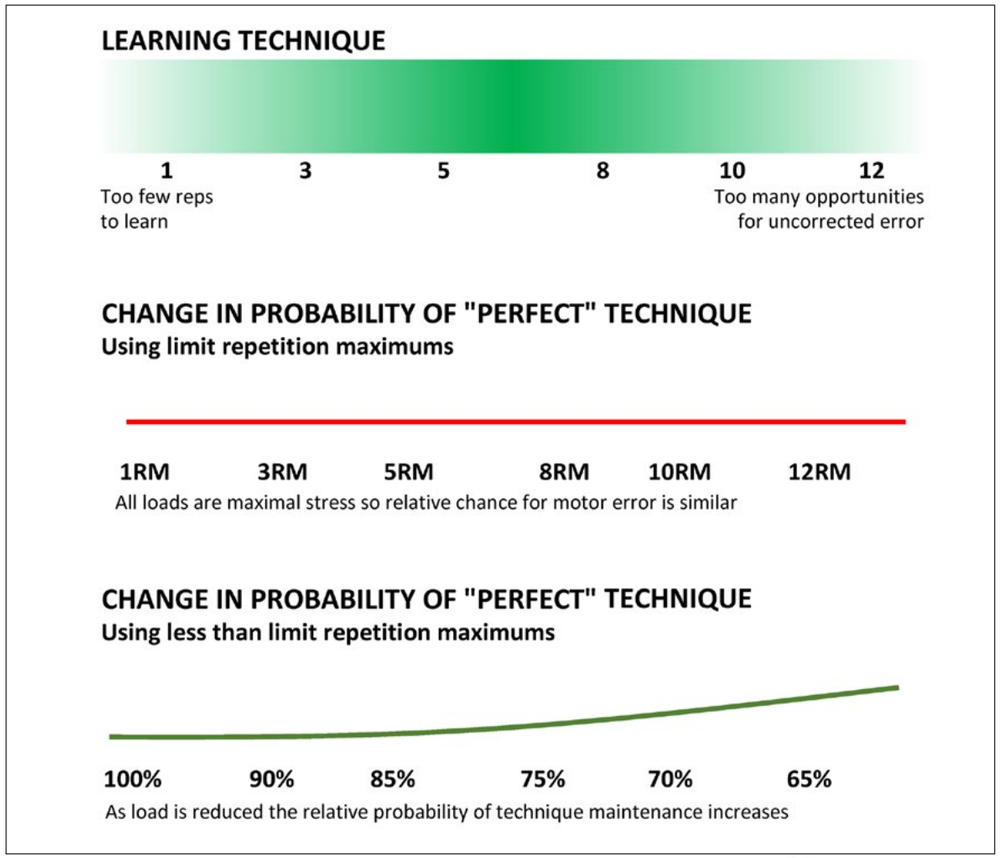
Even today, a very recent world champion and Olympic javelin thrower lists his coach as YouTube.

Learning exercise technique takes attention, dedication and effort, but is not the tremendously difficult task it is often made out to be. It can be accomplished independently by isolated trainees if they are attentive, studious, creative and persistent.

Not everyone wants to learn how to exercise alone. Some individuals have learning styles that respond better to external input. Coaches and trainers are important in both instances as they make learning easier, faster and more effective. They are extremely valuable assets if they don't let ill-informed preconceptions interfere with their training of clients.



With maximum efforts, form variations are equally likely no matter how many reps are performed. As loads are reduced, it is increasingly likely that form will be maintained.



Each end of the repetition contiuum targets different aspects of fitness. This is independent of the movement selected.

A Continuing Problem

So why does the debate about high-rep Olympic lifting keep coming to the forefront?

Availability of information is a blessing and a problem for new trainers and trainees. The internet allows every opinion to be published whether it is supported by fact or not. If the right person writes something that strikes a chord and garners lots of views, it can erroneously assume the mantle of authoritative fact. It is often difficult to discriminate between fact and fallacy.

And this is where it is important for trainers to understand science. Being able to apply simple anatomical, physiological and physical principles to fitness can prevent the adoption of errant conjectures as supported fact. This helps you use the right tool for the right purpose at the right time. Trainers, even though they are busy, need to take time to read critically and grow professionally

We cannot completely blame the open nature of the internet for the recurrence of such controversies. Exercise science needs to be better. Without actual high-quality data, we will never be able to move our level of understanding from conjecture to theory. Without reliable data, we cannot say whether 3 sets of 10 are better than 10 sets of 3 to produce strength. The data does not exist. Without reliable data we cannot determine how fast strength and endurance decay over the lifespan if we train. We can only conjecture using limited data. Change is needed in how exercise science is funded and conducted, as brilliant professors cannot get support to do quality research addressing essential questions.

Finally, we need better and unbiased "authoritative references" from professional organizations that espouse their eminence within the fitness field. The argument between high-repetition proponents and detractors cannot be settled using any of these organizations' books. Those groups, which had noble intentions at creation, have devolved into confused tangles of revenue streams that no longer serve the needs of working fitness professionals and the exercising public.

Ultimately, the best advice to trainers and trainees is to strive to use the best technique individually attainable on every repetition and to not adopt a dogmatic position about high-repetition Olympic lifts because both ends of the repetition continuum produce different fitness gains effectively and safely. ■

About the Author: Lon Kilgore earned a Ph.D. from the Department of Anatomy and Physiology at Kansas State University's College of Veterinary Medicine. He has competed in weightlifting to the national level since 1972 and coached his first athletes from a garage gym to national-championship event medals in 1974. He has also competed in powerlifting, the first CrossFit Total event, wrestling and rowing. He has worked in the trenches, as a qualified national level coach or scientific consultant, with athletes from rank novices to the Olympic elite, as a small business owner, and as a consultant to fitness businesses. He was co-developer of the Basic Barbell Training and Exercise Science specialty seminars for CrossFit (mid-2000s) and was an all-level certifying instructor for USA Weightlifting for more than a decade. He is a decorated military veteran (sergeant, U.S. Army). His illustration, authorship and co-authorship efforts include several best-selling books and works in numerous research journals. After a 20-year professorial career in higher academia, he currently delivers vocational-education courses through the Kilgore Academy, provides online commentary and analysis of exercise-science papers, and works as a writer and illustrator. He has done Grace, Isabel, Randy and Diane with the same technique he uses with heavy singles, doubles and triples—and he's not that talented; most people can do the same thing.

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HOW MUCH YA BENCH?

Often forgotten in favor of push presses or jerks, the bench press can add variety to CrossFit workouts.

BY HILARY ACHAUER

Nick Roush

Many don't know it, but the Girl workout Lynne has no time constraints. Feel free to rest as needed and charge up for big sets.

John Maguire

On April 22, 2004, Lynne Pitts followed her normal routine. She woke up and logged onto CrossFit.com to see the workout of the day.

The day's workout was 5 rounds for max reps of body-weight bench presses and pull-ups.

When she saw the workout, Pitts knew she'd do well.

A competitive powerlifter in the late '80s and early '90s, Pitts discovered CrossFit in 2003. She started doing the workouts in her garage gym in New Hampshire and began posting her results. Back then only about five to 10 people posted each day. Two of her favorite movements were the bench press—she once had a double-body-weight bench press—and the pull-up.

"It was wake up, hop on the computer and find the workout," she said. "I was like, 'Holy cow, it's perfect!'" Pitts said.

"Body-weight bench press—I'm a really good bench presser," she said. "And pull-ups … and I'm a really good puller-upper."

Pitts did the workout that day and posted a score of 77 bench presses at 115 lb. and 95 pull-ups, hitting a PR of 30 pull-ups in a row in the first round.

Pitts posted her score at 5:13 p.m., and at 8:11 p.m. Greg Glassman, Founder and CEO of CrossFit Inc., commented under the name "Coach": "Congratulations, Lynne! This workout will bear your name from here on!"

"I smiled from ear to ear, did a happy dance around. It was so cool," said Pitts, who has worked for CrossFit Inc. since 2004.

"It's got two of my favorite things, and the best thing of all—and this leads to a later controversy—no time component," Pitts said.

She said what she calls the "Santa Cruz Lynne" is different.

"There's a video with Brendan Gilliam doing Lynne as a couplet. As much rest as you wanted between couplets, but back-to-back bench press and pull-ups. And then, because it was a video, that became doctrinal. And there was actually debate—and there might still be debate—whether you have to do Lynne as a couplet," she said.

The bench press is sometimes used for strength work in CrossFit, but it's less frequently programmed as part of a conditioning workout. One of the biggest reasons is space and equipment: A class of 20 people would require 20 benches and 20 places to rack the bar. (As you'll see below, several clever affiliates have gotten around this by using the bench press as part of a partner workout.)

The other reason bench press is less common in CrossFit is because the focus on functional movement leads many gyms to emphasize the push press, press, jerk and dip. As Bill Starr pointed out in "The Role of Bench Press in Strength Training," Olympic lifters have historically avoided benching because pectoral muscles don't play much of a role in overhead lifting. He also noted it was generally accepted that bench pressing could decrease shoulder flexibility, which is key to weightlifting. However, as Starr argued in the article, the bench works the deltoids and the triceps, both of which are used in pressing and jerking.

Pitts said another advantage of the bench press is it's familiar to people coming from other sports and athletic backgrounds.

"It's like a known standard metric, but the way we do it is still non-traditional, like body weight for high reps. You don't see that in weight-training bodybuilding football-type workouts," said Pitts, who is now CrossFit's Senior Operations Manager.

If you rarely bench press in your CrossFit training, grab a bench, lower the J-hooks, and give one of these workouts a try.

10 Bench Press Workouts

Starting with Lynne, here are 10 great options for incorporating the bench press in a workout.

1. Lynne

5 rounds for max reps of:

Body-weight bench presses

Pull-ups

(No time limit. Count reps for each exercise in all rounds.)

2. Linda (aka 3 Bars of Death)

10-9-8-7-6-5-4-3-2-1 reps for time of:

1½ body-weight deadlifts

Body-weight bench presses

¾ body-weight cleans

3. Hero Workout JBo

U.S. Army Staff Sgt. Jeremie "JBo" "Bubba" Border, 28, of Mesquite, Texas, assigned to the 1st Battalion, 1st Special Forces Group (Airborne), based in Torii Station, Okinawa, Japan, died Sept. 1, 2012, in Batur Village, Afghanistan, from wounds suffered when enemy forces attacked his unit with small-arms fire.

As many rounds as possible in 28 minutes of:

9 overhead squats (115 lb.)

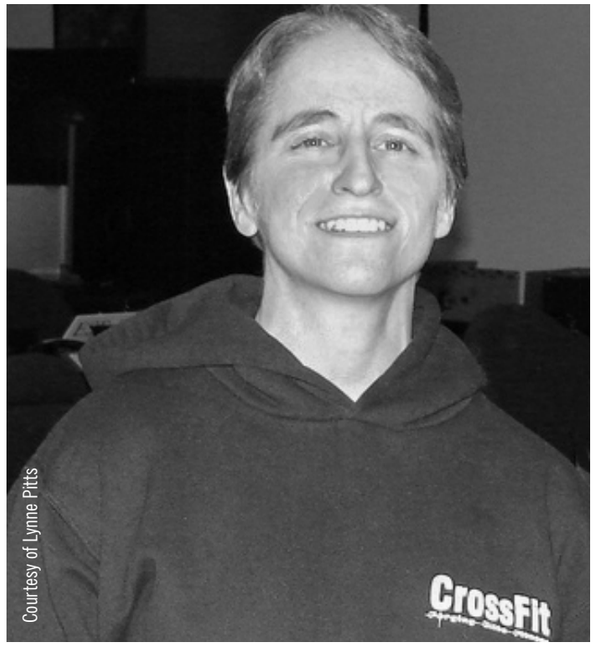
1 15-foot legless rope climb beginning from seated

12 bench presses (115 lb.)

If you've gone overhead in most of your recent workouts, consider the bench. Constant varation is, after all, key to CrossFit.

Jerrell Trulove

Partner workouts are a great way to ensure you have enough benches to go around.



Lynne Pitts, a former powerlifter, had a double-body-weight bench press.

CrossFit Founder and CEO Greg Glassman with Pitts.

4. Hero Workout Coffey

U.S. Marine Cpl. Keaton G. Coffey, 22, of Boring, Oregon, assigned to the 1st Law Enforcement Battalion, 1st Marine Headquarters Group, 1st Marine Expeditionary Force, based in Camp Pendleton, California, was killed on May 24, 2012, while conducting combat operations in Helmand Province, Afghanistan.

For time:

Run 800 meters

50 back squats (135 lb.)

50 bench presses (135 lb.)

Run 800 meters

35 back squats (135 lb.)

35 bench presses (135 lb.)

Run 800 meters

20 back squats (135 lb.)

20 bench presses (135 lb.)

Run 800 meters

1 muscle-up

5. CrossFit Krypton—Jan. 9, 2013

5 rounds for time of:

5 bench presses (no weight specified)

50 double-unders

5 muscle-ups

Rest 1 minute

6. Project Mayhem—Dec. 12, 2013

Watch Rich Froning do this workout.

10-9-8-7-6-5-4-3-2-1 reps of:

Bench presses (205 lb.)

10 pull-ups between sets of bench presses

7. Narrows CrossFit—July 26, 2016

In teams of 2, 3 rounds for total reps of:

Run 200 meters

Max-effort strict pull-ups

Run 200 meters

Max-effort body-weight bench presses

(One partner does an entire round while the other spots and counts reps, then they switch. Each partner competes 3 entire rounds. No time element.)

8. CrossFit Linchpin—Jan. 24, 2015

5 rounds for time of:

15 bench presses (135/85 lb.)

15 toes-to-bars

45 air squats

9. CrossFit Tribeca—Sept. 19, 2014

5 rounds for time of:

Row 500 meters

15 bench presses (135/95 lb.)

10. Reebok CrossFit One—July 22, 2016

Elizabeth-ish

In teams of 2, 45-30-15 reps of:

Bench presses (135/95 lb.)

Power cleans (135/95 lb.) ■

About the Author: Hilary Achauer is a freelance writer and editor specializing in health and wellness content. In addition to writing articles, online content, blogs and newsletters, Hilary writes for the CrossFit Journal. To contact her, visit hilaryachauer.com.

THE CrossFit JOURNAL

CROSSFIT LIFEGUARD: STEPHEN WALKER

Neurosurgeon credits Stephen Walker's fitness with saving his life while he fought polymicrobial brain infection.

BY ANDRÉA MARIA CECIL

All photos: Tony Frezza

Stephen Walker's moniker is "Mr. 5 a.m."

Since he joined CrossFit Palm Beach in December 2012, he's shown up every single day, most of the time for the 5-a.m. class.

Coaches have ribbed him on his aggressive workout schedule, stressing the importance of rest and recovery. Walker told them his time at the box is an investment in his future. He couldn't have been more right.

In late June 2015, 37-year-old Walker began to feel run down.

Within 48 hours, he had a fever and soreness on the left side of his throat. It wasn't cause for concern. His daughters, 1 and 5 years old then, had similar ailments. He had probably caught it from them.

But within another two days, Walker found himself convulsing as he sat in his office at Critton, Luttier & Coleman law firm in West Palm Beach, Florida.

"I went and stood on the corner in the sun to try to warm up," he remembered. "I finally was able to calm it down. I got my keys and went home."

That same day, Walker stopped at an urgent care facility.

"I didn't have a doctor before all this. … I hadn't had one since I had a pediatrician as a child."

Urgent care staff tested him for strep throat and the flu. Both tests were negative. Once they heard that Walker's young daughters were sick, they said he had likely caught something from them and advised he go home to rest.

The next day, July 1, Mr. 5 a.m. didn't get out of bed. When his wife, Robyn, returned to check on him midday, Walker was still in bed. When she tried talking to him, he didn't make sense. She called an ambulance.

Walker ended up in St. Mary's Medical Center's trauma unit. He was "highly confused, highly agitated," recalled Dr. David Petruska, the neurosurgeon on call that day. "He had symptoms of severe cerebral edema."

Hospital staff sedated Walker for three weeks. A machine helped him breathe. During that time doctors were perplexed, wondering if they were dealing with "an infectious process," said Petruska, a neurosurgeon of 25 years.

A CT scan revealed hemorrhages on the front areas of Walker's brain.

"It just did not look like classic trauma. It was too symmetrical," Petruska continued. "We began to (suspect) that maybe something more was going on."

Stephen "Mr. 5 a.m." Walker trained hard for years, and his effort served him well when he had to fight for his life in 2015.

An intracranial monitor—to measure brain pressure and draw spinal fluid—gave doctors more information.

"We come to the conclusion that he had a brain infection. How he developed his brain infection is probably curious," Petruska said.

Five days before Walker started feeling unwell, he had been surfing in Jupiter. Petruska hypothesized that Walker contracted a polymicrobial infection through an unknown something in the Atlantic Ocean.

"Also very odd," the neurosurgeon noted.

As doctors struggled to unravel the mystery of Walker's condition, Robyn sat by her husband's side in the hospital. She listened as doctors told her that in the unlikely event her husband survived he would be lucky to be a receptionist at his law firm, much less a practicing attorney.

"Yeah, we did paint a very bleak picture," Petruska said. "Somebody will survive but that is (not) necessarily (good) quality of living. We may save a life but not a human being."

Doctors ordered a course of antibiotics with little hope.

When it comes to an infection of this sort, Petruska noted, "the morbidity and mortality are high."

* * *

Petruska next saw Walker on the afternoon of Oct. 29 for a legal proceeding involving one of Walker's clients.

"I want to thank you for saving my life," Walker told the doctor.

"How'd I do that?" Walker said the neurosurgeon asked.

Walker began recounting.

"It struck me like a bolt of lightning. It was astounding," the doctor said emphatically. "I was stunned because I didn't immediately recognize him, because he (was) a very handsome, good-looking man, very well-proportioned, and he looked absolutely fantastic."

When Walker was discharged from St. Mary's on July 31, 2015, the 6-foot-3 former prosecutor was about 150 lb. By the time he saw Petruska again in October, he had regained muscle mass and was roughly 200 lb.

"There's no question in my mind," Petruska said, that Walker survived the near-death experience because of his fitness. And, Petruska added, because of St. Mary's medical care.

"He was in great physical condition."

Walker's seven-days-a-week investment had paid dividends. And then some.

Unable to do a single push-up or pull-up when he returned to training after being released from the hospital, Walker is now back to setting PRs.

"I would not be here if it weren't for all the hard work I put into the gym," he said assuredly. "I prepared myself unknowingly."

As CrossFit Inc. Founder and CEO Greg Glassman has said, fitness plus luck equals health:

"It is the part you can do something about plus the part you can do nothing about that sums to your outcome. So make the most out of fitness and you will not be part of the seven out of 10 who die unnecessarily due to lifestyle."

The now-39-year-old Walker has returned to practicing law in the areas of complex commercial and construction litigation, as well as marital and family law. He's also surpassing previous PRs, including a recent triathlon time of 1 hour, 21 minutes; his previous best was 1 hour, 27 minutes. When he first returned to CrossFit Palm Beach after his hospital stay, Walker could not do a single push-up or pull-up, and it was "a struggle" to deadlift 75 lb.

"People at my gym think I'm a little crazy because I'm back to where I was before," Walker said jokingly.

Still, he did not emerge unscathed. At the moment, Walker does not have a keen sense of smell and reports reduced physical sensation.

"I don't feel pain as much as I used to," he said. "I'm not sure if it's that or the mental aspect of what I went through."

Walker elaborated: "I continually push myself as hard as I can because now I know that's what allowed me to push for my life."

Treatment is ongoing, and doctors have given Walker a timeline of 12 to 18 months for a full recovery.

Today, he's back to his seven-days-a-week schedule at CrossFit Palm Beach and isn't shy about sharing his story, said coach Tony Frezza.

"He knows it saved his life and he knows it can save more lives." ■

About the Author: Andréa Maria Cecil is assistant managing editor and head writer of the CrossFit Journal.

MIKE WARKENTIN | UNCOMMON SENSE | SEPTEMBER 2016

THE CrossFit JOURNAL

THE GLASSMAN CHIPPER, PART 2

We challenge you to improve your mental fitness by reading our Founder and CEO's earliest CrossFit Journal articles.

All photos: Dave Re/CrossFit Journal

"If you insist on basics, really insist on them, your clients will immediately recognize that you are a master trainer." —Greg Glassman

"When we explained that we thought our workouts were so effective that if we were to post one every day, someone would eventually find them, try them, have great results, and come back and tell friends, the dot-comers laughed heartily and condescendingly chortled, 'Ahhhh, the old grassroots approach!'"

Greg Glassman wrote that in the 2005 CrossFit Journal article "www.crossfit.com."

On Feb. 10, 2001, the first workout of the day went up on CrossFit.com. Starting in September 2002, CrossFit's Founder and CEO supported these workouts with the CrossFit Journal, originally an e-zine emailed to subscribers. In 2008, the publication evolved to the website your currently see—"Journal 3.0" as it was called in a retrospective article that announced the new site.

Just as the emailed monthly zine reached its end in 2008, Journal 3.0 is approaching its end. CrossFit.com was revamped earlier this year, and we're currently working on a significant upgrade to the CrossFit Journal.

Journal 4.0 will include all the features you would expect: responsive web design, improved navigation and searchability, social-media integration, modern content presentation and so on.

With our current format nearing the end of utility—and with reference to "The Glassman Chipper" that presented our founder's first 38 CrossFit Journal articles—we're showcasing Glassman's written work from April 2004 to August 2007 below.

By late summer 2007, the first CrossFit Games were in the books, affiliate numbers were on the rise and the seminar schedule included increasing amounts of travel. Luckily, Glassman had amassed a growing number of Journal contributors who could carry the momentum he had built when it was time to delegate writing duties and attend to other aspects of CrossFit Inc.

Presented below are 47 Glassman articles, many of which are buried in our blog format. They range from technical pieces to works of fitness philosophy, critical responses and workout prescriptions. The latter group—the Grinder series—contains 13 named workouts designed for larger crews to complete in austere conditions. These workouts are programmed far less frequently than Fran and Helen, but coaches managing large groups should consider them a great resource.

Perhaps prime among the articles is "Virtuosity," a call to action that's no less inspiring today than it was in 2005.

But don't just read that one.

The pursuit of virtuosity dictates that you read them all.

CrossFit Journal Glassman Chipper, Part 2

For time, read all articles listed below from start to finish in order:

"The Moves," published April 2004.

"CFJ 21: Zone Meal Plans," published May 2004.

"What About Cardio?" published June 2004.

"Ring Strength," published July 2004.

"Why Fitness," published July 2004.

"Assistance for Bodyweight Exercises," published August 2004.

"The Kettlebell Swing," published September 2004.

"Medicine Ball Cleans," published September 2004.

"A Beginner's Guide to CrossFit," published October 2004.

"'The Girls' for Grandmas," published October 2004.

"Pullup Challenge," published November 2004.

"The New Girls," published November 2004.

"CrossFit PT" published December 2004.

"What About Recovery?" published January 2005.

"Gymnastics and Tumbling," published February 2005.

"Fooling Around With Fran," published March 2005.

"Kipping Pullups," published April 2005.

"Working Wounded," published May 2005.

"Garage Gym II: The Revolution," published July 2005.

"The Overhead Squat," published August 2005.

"Digital Coaching," (with Mike Burgener) published August 2005.

"Virtuosity," published August 2005.

"The Lifting Shoulder," published September 2005.

"The Glute-Ham Developer Situp," published October 2005.

"CrossFit Induced Rhabdo" published October 2005.

"Skill Transfer Exercises for the Snatch," published November 2005.

"www.crossfit.com," published December 2005.

"Scaling Professional Training," published January 2006.

"Good enough never is."
—Greg Glassman

"Professional Training," published January 2006.

"Validity of CrossFit Tested," published January 2006.

"The Scoop and the Second Pull," published January 2006.

"The Grinder: CrossFit Operations Order #1 'CHAD,'" published July 2006.

"The AOFP CrossFit Austere Program," (with Wade Rutland and J.T. Williams) published August 2006.

"The Grinder: CrossFit FRAGO #2: CARLA," published September 2006.

"The Grinder: CrossFit FRAGO #3: VICTORIA," published October 2006.

"The Grinder: CrossFit FRAGO #4: YBF," published November 2006.

"The Grinder: CrossFit FRAGO #5: PATRICIA," published December 2006.

"The Grinder: CrossFit FRAGO #6: GOMEZ," published January 2007.

"Evidence-Based Fitness Discussion," published January 2007.

"The Grinder: CrossFit FRAGO #7: DYER," published February 2007.

"The Grinder: CrossFit Frago #8: SHANE," published March 2007.

"The Grinder: CrossFit FRAGO #9: GIROUARD," published April 2007.

"Understanding CrossFit," published April 2007.

"The Grinder: CrossFit FRAGO #10: NOLAN," published May 2007.

"The Grinder: CrossFit FRAGO #11: LEGER," published June 2007.

"The Grinder: CrossFit FRAGO #12: PALMER," published July 2007.

"The Grinder: CrossFit FRAGO #13: SHORTY," published August 2007. ■

ABOUT THE AUTHOR: Mike Warkentin is the managing editor of the CrossFit Journal and the founder of CrossFit 204.

THE CrossFit JOURNAL

A CROSSFIT CALLING

Like many entrepreneurs, Lindsey Barber changed careers to follow her passion.

BY BRITTNEY SALINE

All photos: Darlene Sopyc

Lindsey Barber (top) couldn't decide on a career and found herself in a job she disliked. In 2011, she found CrossFit and changed paths.

Lindsey Barber gripped the wheel. Most of the 30-mile drive between Unity and Cut Knife, Saskatchewan, is open road, nothing but 360-degree field and sky, and she tried to enjoy her morning commute to a job she disliked.

She pulled into the small lot outside the chemical-and-seed supply company where she worked as a sales agronomist. Some days were spent loading pallets of seed and chemicals onto trucks; others found her visiting surrounding farms and meeting with growers. Mostly, she had to sell. Fertilizer, pesticide, seed—it was all "high-pressure sales."

"(My) job was basically to get the farmers on our program to buy as much product as they can, telling people what they need to hear just to make the sale," Barber said.

But Barber hated selling. She felt dishonest pushing products farmers didn't really need and felt "like I was serving no purpose in the world," she said.

She cut the ignition and sat in her car, fighting tears and unable to will herself to go inside. She never thought work would be like this.

"My parents always said if you really like what you're doing, then work won't be so bad," she said. "And I knew that this was not something I wanted to be doing forever, that there had to be something more for me to do. But I just could not come up with something that I would love to do enough to do it for the rest of my life."

Passionless

The younger of two siblings, Barber was raised on her parents' cattle farm in Biggar, Saskatchewan, a town of less than 2,200 people about 60 miles from Saskatoon. Though she always helped around the farm and took odd jobs over the summers, she never gave much thought to what she really wanted to be when she grew up.

"I had a really hard time figuring it out," she said.

After Barber graduated high school in 2006, her friends left for college, talking excitedly of majors and dream jobs. Barber stayed behind.

"I remember crying about it all the time, saying, 'I don't know what I'm passionate about; I'm not passionate about anything,'" she said.

She knew that she wanted to help people and that she didn't want a desk job, but it wasn't much to go on, so she went to the local college's career center to take an aptitude test. The result was business owner.

"It surprised me because it wasn't really something I'd thought of before that," she said.

Dismissing the results as a fluke, Barber spent the next months bouncing from job to job, working in a tire shop, in a food court and on an ambulance assembly team. In 2008, two years later and no closer to knowing what her passion might be, she enrolled in the agronomy program at the University of Saskatchewan. The decision was more about resignation than ambition.

"Where I'm from, most people go to school to be a nurse or a teacher, or the guys go work in the oil field, and I did not want to be a teacher, and I cannot handle blood," she said. "So I was like, 'Well, I guess I'll just live in a small town and go into agriculture,' which I had almost no interest in."

She had no more interest in agriculture after graduating than when she matriculated. The only class she enjoyed out of two years of soil studies was an elective entrepreneurship class. Still, she had a degree and bills to pay, so she became a sales agronomist.

Living for the Weekend

The supply company sat on a large farmyard just outside of Cut Knife, a town with a hair more than 500 residents. Large steel grain bins occupied most of the yard, while a massive chemical storage shed and seed plant stood to the side. Barber spent most of her time in a small office next to the plant, a single open room with a few desks and a coffee pot in the back.

Spring and summer weren't so bad. It was busy, and Barber, who had grown up loving sports—she was a competitive curler in high school—and the outdoors, didn't mind the manual labor of loading trucks with seed and spray planes with chemicals. In fall, she visited farmers at harvest time to talk about their needs for the next year.

Winter was the worst. From 8:30 a.m. to 5 p.m., Barber sat at her desk making sales calls, waiting for the clock to end the day.

> Barber should have been researching the company's products, but she had something else on her mind: CrossFit.

Barber knew she wanted to help people, and now she does that every day.

"I am not a salesperson, especially (for) something I don't care about," she said. "I wasn't interested in researching (the products) and telling people that they have to buy this or that product. If they don't need it, I don't want them to waste money on it."

Before long, Barber found herself living for the weekends.

"Friday was great; I would be super excited," she said. "Saturday was OK, and then Sunday I started getting this awful feeling, basically depression, every Sunday by noon. Like, 'Oh, God, here comes the next work week. I felt so sad and bummed out every Sunday night, and it started eating me alive."

At work, when she wasn't selling, she surfed the web. She should have been researching the company's products, but she had something else on her mind: CrossFit.

Finding Passion at—and Above—the Bar

In 2011, a year into Barber's agronomy position, she noticed an unusual picture on her boyfriend's Facebook feed. It featured a woman doing a one-armed handstand—"and she had abs," Barber added.

Barber messaged the woman, asking what she was doing in the photo.

CrossFit, she replied.

Barber opened a new tab and typed "CrossFit" into a Google video search. She clicked through the videos with the highest numbers of views, jaw on the floor as she watched Annie Sakamoto rip through Nasty Girls and Elizabeth to loud hip hop and screaming metal.

"I was like, 'This shit is some underground stuff. This is not your typical demo video that you see on the internet,'" she recalled. "And I remember thinking, 'Man, this music is so heavy, but I like what they're doing.'"

The nearest CrossFit affiliate was more than 120 miles from Barber's home in Unity, so she messaged Rob Smith—the coach who programmed for her boyfriend's friend—who ran CrossFit Off the Chain out of his garage in Fort Belvoir, Virginia, at the time. Smith told Barber to buy a barbell and plates, a kettlebell, dumbbells and a pull-up bar. The first workout he sent her was an AMRAP of thrusters and burpees.

"It was absolutely brutal," Barber recalled.

For the next six months, she eagerly devoured all the information

CrossFit Lair's original home was a windowless attic above a bar.

about CrossFit she could find, clandestinely reading affiliate blogs and the CrossFit Journal at work and even doing body-weight Tabata workouts on her lunch breaks.

"Once I got that barbell it just became a total obsession," she said.

Every time Barber posted a new PR or a Zone- or Paleo-friendly recipe online, she received a flood of messages saying she had inspired someone to make a lifestyle change. It was then that she began to see CrossFit as a potential calling.

"Getting those messages gave me the feeling I had been looking for when trying to find something fulfilling to do for the rest of my life," she said.

Her feelings were affirmed in spring 2012, when she attended a CrossFit Level 1 Certificate Course in Calgary, Alberta.

"Just being in a room of a whole bunch of people that really love everything that you love was super motivating," she said. "I was like, 'I wanna go to these seminars every weekend.' After that I realized that (CrossFit) was what I wanted to do."

After Barber earned her Level 1 Certificate, she set up meetings and phone calls with experienced affiliate owners across Canada, picking their brains about affiliation, equipment, programming and building a membership base. She signed up for a business mentorship program geared toward CrossFit affiliates. In January, 2013—just a few months after marrying the man whose Facebook page started it all—Barber went part time at her agronomy job and opened CrossFit Lair in a windowless attic above a bar in Unity owned by friends.

There was no room for rigs, and the cement floor could not withstand barbells, but the rent was free, and the members—about 10 curious people who had seen the posters Barber plastered across town—were eager to learn. Leading the small crew of moms, dads, grandmothers and 20-somethings through sets of burpees and push-ups, Barber finally had the feeling she had craved for years.

"I just realized that was the thing I had been looking for ever since Grade 10," she said.

They did body-weight workouts in the attic for four months before CrossFit Lair moved to its own 1,200-square-foot location in May 2013, complete with a Rogue rig, barbells and bumpers. In March 2013, two months before breaking in the second location, Barber had quit her agronomy job for good.

"I felt a ton of freedom," she said.

As of December 2014, CrossFit Lair—which now has around 90 members and three coaches in addition to Barber—is in its third iteration: a fully equipped 3,600-square-foot warehouse on the industrial side of Unity.

"So we don't have to run down Main Street anymore," Barber joked.

"100,000 Times Happier"

Barber's days look a lot different now.

After rising between 5 and 6 a.m., she sits down at her computer to respond to the dozens of clients for whom she provides nutrition planning. Then comes breakfast and some mobility work before she heads to CrossFit Lair just in time for the end of the 9:30-a.m. class.

"The ladies (in the 9:30 class) are fabulous and they make my day," said Barber, now 28.

The rest of the day is consumed with coaching, staff meetings, training, programming and errands. Even if she finishes the day's work before the last class ends, she likes to hang around.

"I just like being there even if I'm not coaching," she said.

She estimates she works more hours now—and makes less money—than she did at her old job. But it's worth it, she said.

"I love absolutely every minute of it," she said. "I am 100,000 times happier. Some days I have trouble getting enough sleep as I just love being awake in my life."

> "Some days I have trouble getting enough sleep as I just love being awake in my life." —Lindsey Barber

Barber made it clear that it's not about getting to hang around in a gym and work out all day. It's about seeing the changes in people's lives. She recounts struggling with body image as a teenager, obsessed with the scale and the latest fad diets.

"I spent so much money on it and I was so confused," she said "I see all the bullshit out there that people fall for, especially women. … My goal in life is to get people to see the bullshit and learn to love themselves."

Barber's athletes appreciate her candor.

"She shares personal stories and it makes it so real that she has struggles, too, and there were things that she had to deal with and work around," said 42-year-old Shauna Hammer, who is in her third year at CrossFit Lair.

After helping Hammer set a personal goal of achieving an unassisted pull-up, Barber wrote special accessory programming for her to follow, offering daily encouragement. When Hammer got her first pull-up in a recent workout, "(Barber) celebrated that with me just like it was her own first pull-up," Hammer said.

Sherrie Berrecloth, a 53-year-old grandmother of four, had a similar experience after deadlifting 245 lb.

"(Barber) was as excited for me as I was," she said. "She has a passion that I don't think I've seen in too many people. She is always there to make me want to do more and do better. I can tell that she's proud of the stuff I'm doing, and that just means the world to me."

For Barber, these stories confirm her decision to go all in on CrossFit.

"When people say their favorite time of the day is CrossFit or they used to worry how they looked in a swimsuit and now they just want to squat 200 lb., that kind of stuff is what makes me feel like I'm finally doing something," she said. "Instead of floating through life day to day, I now have a purpose. I feel so fortunate to be able to work with these people. Every day is just so frickin' fantastic."

The Price of Passion

Still, good things rarely come without sacrifice.

The closer Barber grew to her newfound passion, the further she felt from her husband and in-laws. Before CrossFit, she'd been heading full steam toward a life of work, children and housekeeping. But then she became more excited about staying late at the gym weeding weaknesses instead of the garden.

"(My husband) worked during the day, and he was always like, 'When are you going to come home at night?'" Barber said. "But I didn't want to come home and do nothing or cut the grass."

Her dramatic career change didn't come without cost, but Barber is certain she made the right decision to move from sales agronomist to gym owner.

At holidays and family meals, her mother and father-in-law would admonish her to have more work-life balance and not to be at the gym so much.

"I was like, 'No. If this is what I love doing, why do I have to do less of it?'" Barber recalled. "And they both have jobs they hate. I'm like, 'Of course you think I need balance,' because to them (work) is something that's awful, but to me, I'm like, 'Don't take me away from it. I love it here.'"

In December 2014, Barber separated from her husband, and by April 2015 they were divorced.

"He was a good guy, but it was through CrossFit that I learned that that wasn't the life for me," Barber said. "I wasn't OK with living on the farm, having babies, cutting grass and working a job I didn't like so I could buy a bunch of stuff that did nothing but sit there. I realized maybe there was more for me and I could actually make an impact on the world."

She moved out of the 1,600-square-foot home she and her husband had built and into a small trailer home, which she shares with a roommate.

Concerned family members questioned whether she was making the right choice, but Barber had no doubt at all.

"There was never a time when I was like, 'This is not right,'" she said. "Even now I can sit here and say I would rather be single and doing this and helping people than be in that marriage just going through life doing what I was supposed to be doing from other people's perspectives."

Just One Life

It's been more than three years since Barber first opened CrossFit Lair, and she still thinks she's dreaming.

"Even still, every day now I'm like, 'I can't believe this is my job,'" she said. "I started this little gym, and I always said if I can change just one life, I'll be happy."

She recalled overhearing a conversation as three potential new members left the gym after a recent intro session she conducted.

"One of the guys said, 'Well, my life is forever changed,'" Barber said.

She grinned.

"I frickin' love my job." ■

About the Author: Brittney Saline is a freelance writer contributing to the CrossFit Journal and the CrossFit Games website. She trains at CrossFit St. Paul. To contact her, visit brittneysaline.com.

THE CrossFit JOURNAL

RACK IT RIGHT

Zachary Long explains how to identify and correct flexibility limitations in the front-rack position.

BY ZACHARY LONG

Shaun Cleary

Front-rack positioning can make or break the CrossFit athlete.

Poor flexibility in the front rack is one of the most frequent complaints in the gym, and without good positioning an athlete's ability to properly perform the front squat, clean, overhead press and jerk can be significantly affected.

The front-rack position is a combination of several motions: shoulder flexion and external rotation, elbow flexion and pronation, wrist extension, and thoracic-spine extension. As with any movement or positioning fault, a better understanding of the various components will allow the athlete or coach to more effectively correct underlying problems.

Points of Performance

A proper front-rack position has several key elements. First, the athlete should be able to have a full grip on the barbell, meaning each finger is securely wrapped around the entire bar. During the front squat and clean, a loose fingertip grip will sufficiently stabilize the bar in the rack position, but when the barbell must be redirected overhead during presses, jerks and thrusters, a full grip is generally needed, though some will jerk from the fingertips.

For those with insufficient mobility to fully grasp the barbell in the front rack, the first few fingers will be securely wrapped but the ring and pinky fingers will often lose their grasp.

A fingertip grip will work for cleans and squats but is not ideal for pressing.

The elbows should be high in the standing position. While there is no exact angle or landmark to measure, the general rule is for the upper arm to approach parallel to the ground, with parallel ideal, as noted in the "CrossFit Level 1 Training Guide." The hands grasp the barbell just outside the shoulders, with the spine remaining in an upright, neutral position.

(Editor's note: Different coaches will recommend different approaches. For instance, Chad Vaughn recommends setting up for the jerk with the bar on the fingertips and the elbows high, while Mike Burgener generally prefers more of the hands on the bar and lower elbows. Similarly, some athletes will drop the elbows slightly in a thruster in preparation to drive the bar overhead. Coaches and athletes should select the techniques that work best for each movement and best accommodate proportions and flexibility. Greater flexibility offers more options.)

When all these elements are present, the barbell can comfortably rest on the "rack" of the shoulders; that is, on the upper deltoids and partially on the clavicle bone but not pressing into the throat and obstructing the athlete's airway. It should be noted that the farther back the barbell is placed, the shorter the moment arm between the hips and the bar, which is why some coaches use the exaggerated cue "choke yourself with the bar."

For maximum transferability, this front-rack position with a solid grasp of the barbell and elbows raised should be maintained through any lift that utilizes the front rack. Many lifters will receive a clean with a fingertip grip and reset for the jerk, but consider the challenges of completing a squat-clean thruster with two or more fingers off the bar.

Many athletes who demonstrate a proper front-rack position while standing will drop their elbows in the bottom of the front squat or clean. If the elbows remain raised, the shoulder mobility demands on the front rack increase as the athlete descends.

In situations such as this, it becomes important to determine the source of the limitation. Often, you can tell the athlete to "keep the elbows high" or use a tactile cue at the elbows to remind the athlete of the proper position. If the resulting positions are improved, the athlete simply needs to learn the proper pattern.

When appropriate cues do not fix the front rack (or the front rack was incorrect from the start), further investigation is needed to determine the exact limitation.

Limitations throughout the entire body can alter an athlete's ability to maintain proper front-rack positioning. For example, limited ankle or hip mobility can alter the mechanics of the body enough to increase strain at joints as far up the kinetic chain as the wrist.

The remainder of this article will focus on the upper-body components of the front rack, but we suggest reading the CrossFit Journal article "Dissecting the Squat" to understand the lower-body movement and mobility demands of the squat pattern.

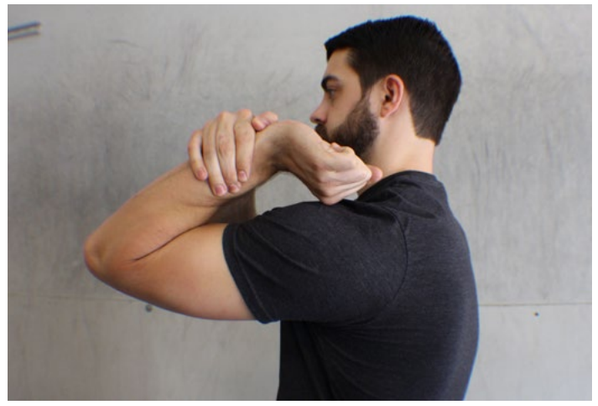
Front-Rack Breakouts

Flexibility limitations to the front rack should be analyzed independently to best isolate the physical limitation. The process should be as follows:

When breaking out mobility limitations specific to the front rack, we will start at the wrist. The athlete begins with his or her palm and fingers flat on the ground and then shifts his or her weight forward to push the forearm to vertical. If the athlete is able to obtain a vertical forearm position relative to the ground without the hand's rising, then wrist mobility can be considered normal and mobility testing down the kinetic chain should be performed. If this position cannot be reached, wrist mobility should be addressed as discussed later.

The heel of the hand should remain on the floor as the forearm reaches vertical.

Elbow flexion should be the next component tested. The athlete should begin with his or her arm held directly in front of the shoulder with the palm facing the floor. Next, the athlete should bend the elbow and attempt to touch knuckles to shoulders. For those with smaller forearm and upper-arm mass, the knuckles should reach the shoulder as shown below. In those with larger muscle mass in the upper arm, this position may not be possible due to soft-tissue approximation. In these athletes, extra external rotation of the shoulder or extension of the wrist is necessary to obtain a proper front rack.



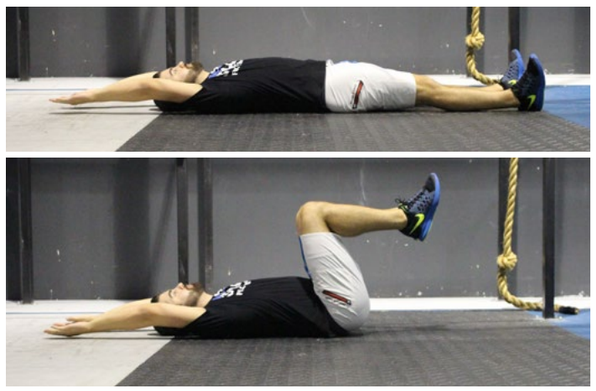
Flexibility should be sufficient to allow the athlete to touch knuckles to shoulder.

To assess shoulder external rotation, the athlete should begin with his or her elbow positioned directly in front of the shoulder so that the upper arm is parallel to the ground and the forearm is perpendicular to the upper arm. The amount of external rotation required for a proper rack position varies among athletes, but in general all athletes should be able to move their forearms past this vertical position and into greater than 90 degrees of external rotation.

All images this page: Courtesy of Zachary Long

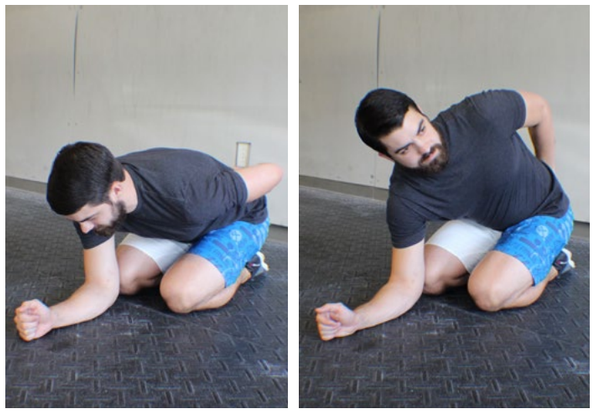
More than 90 degrees of external rotation will allow proper positioning.

The latissimus dorsi muscle, better known as the "lats," can also limit the front rack. To test the lats for tightness, the athlete lies on his or her back with legs flat on the ground. The athlete then lifts the arms as far overhead as possible without letting the back change position. The amount of shoulder flexion is noted. The test should then be repeated with the hips bent to 90 degrees. Flexing the hips stretches the lower attachment of the lats, so if mobility is decreased with the legs bent, lat tightness is to blame.



Tight lats will limit shoulder flexion when the hips are flexed to 90 degrees.

Thoracic-spine extension plays a critical but often-overlooked role in the front rack. To analyze thoracic-spine extension, test an athlete's ability to rotate the thoracic spine each way. The athlete begins on his or her forearms and knees and then lowers the buttocks to rest on the heels. The athlete should then place one hand behind the back and lift the shoulder on the same side as high as is comfortably possible without letting the buttocks rise, shifting his or her weight, or bending the spine. The athlete should be able to rotate the thoracic spine enough so that if an imaginary line were drawn through the collarbone it would make a 50-degree angle relative to the ground. This test should be repeated on both sides.



Thoracic-spine extension is lacking if athletes cannot rotate to open the chest.

Solutions: Restoring Proper Positions and Improving the Front Rack

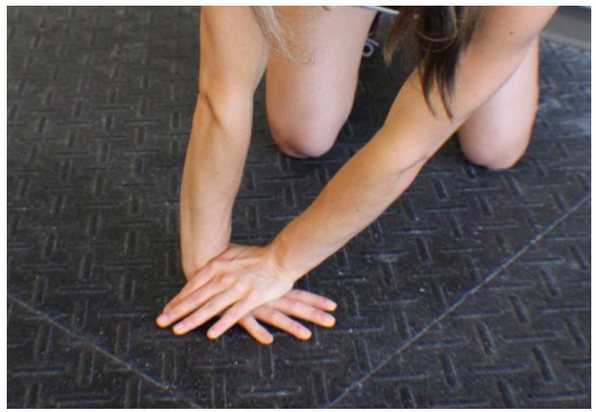
Before treating any upper-extremity limitations of the front rack, we must re-emphasize the need to ensure proper basic mobility and movement in the squat pattern. In the author's experience, lower-body mobility limitations can often manifest in upper-body problems. For example, limited ankle mobility can force the athlete to flex the spine to keep the weight over the center of the foot during a front squat. In order to keep the bar racked, the athlete may have to hold the wrist in excessive extension, and as a result pain or discomfort may present at the wrist. Never assume the site of dysfunction is the only limiter of performance.

When working to improve the front rack, a plan of attack that targets an athlete's specific limitations will produce better results than taking a generalized approach to improving positioning. This is why we advocate for such a specific series of tests to pinpoint problems before providing corrective exercises. After an athlete's problem areas are identified, perform one or two specific interventions for that problem and then perform one more-generalized front-rack mobilization to directly apply those mobility gains to the position.

To improve wrist extension, the athlete begins by applying firm pressure with the thumb of one hand onto the muscles of the palm side of the forearm while repeatedly moving the wrist into and out of wrist extension. Every few passes, the athlete will reposition his or her other hand to perform soft-tissue mobilization to the entire forearm-flexor musculature.

Working on the soft tissue of the forearm can improve wrist extension.

Following that, the athlete places his or her hand on the ground or a box and then places the opposite hand directly adjacent to the wrist joint. The top hand holds the bottom stable as the athlete rocks back and forth, mobilizing the wrist joint.

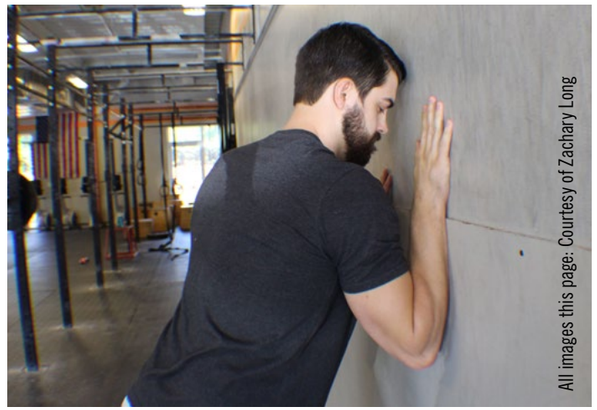


Rocking movements in this position also address wrist extension.

Elbow flexion is also treated using a combination of soft-tissue work in conjunction with joint mobilization. To improve the soft-tissue extensibility of the triceps, the athlete places the bulk of the muscle belly onto a barbell with moderate pressure. The athlete will then repeatedly bend the elbow back and forth while maintaining pressure. After a few bends, the athlete repositions the arm and continues the process at several different points throughout the triceps.

A barbell can assist with soft-tissue work on the triceps.

To focus on improving joint motion, the athlete bends his or her elbow with the palm facing away from the body. The palm and forearm are placed flat on a wall and the athlete leans into the wall, applying overpressure to push the elbow into greater angles of elbow flexion.



All images this page: Courtesy of Zachary Long

Gentle pressure can be used to create greater elbow flexion.

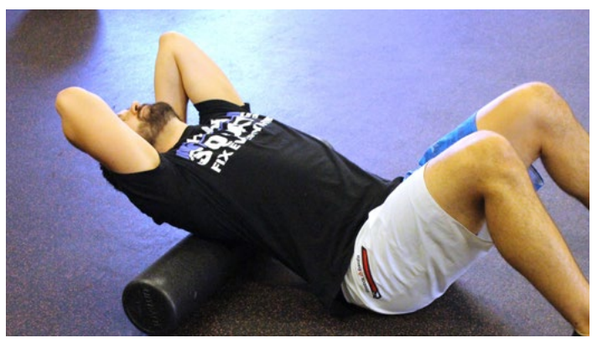
To improve shoulder-specific mobility in the rack position, have the athlete employ some self-myofascial release to the muscles around the shoulder. Focusing on the teres major, lats and subscapularis muscles will be most effective.

The lats and teres can be mobilized by having the athlete lie on his or her side with arm overhead and the foam roller positioned just lateral to the shoulder blade. The athlete can roll up and down the side while moving the arm up and down (video).

A foam roller can help address the lats, teres major and subscapularis.

The athlete can also use his or her hands to apply pressure to the subscapularis muscle, which is located on the anterior shoulder blade, by reaching it through the armpit. The arm is then lifted up and down while the pressure is maintained (video). To best stretch this area, the athlete can set a barbell at shoulder height and rest one elbow on the barbell. The opposite arm bends the treatment-side elbow maximally with the palm facing away from the body. While the arm is supported in an externally rotated position, the athlete leans his or her torso forward, stretching the lats and teres muscles (video).

For those with thoracic-spine limitations, utilizing a foam roller to mobilize the spine is one of the easiest ways to improve range of motion for the front rack. The athlete lies on the foam roller with it positioned perpendicular to the thoracic spine. The athlete then repeatedly extends the spine over the foam roller at multiple levels along the thoracic spine from the bottom of the rib cage to the neck.



The roller can be moved up and down to address different parts of the spine.

A band can be used to stretch in the front-rack position.

A loaded barbell can provide a stable object for the athlete to push on while working to achieve proper positioning.

All images this page: Courtesy of Zachary Long

Following treatment of the individual's specific limitations, a front-rack-specific movement should be performed. There are many different options available to specifically mobilize the front-rack position utilizing bands, PVC pipes and barbells.

To mobilize using a barbell, position the loaded bar at shoulder height in a rack. Grip the bar at front-rack width with both hands and forearms vertical under the bar. Take one elbow and push it forward to position that arm in a proper front-rack position. Apply upward pressure to drive the barbell to its proper rack position on that side. Repeat on each side.

As with any movement dysfunction, identification and treatment of an athlete's exact limitations will provide faster and more effective fixes. The front rack is no exception. Utilize the above tests to formulate your specific action plan and break through your positioning faults. ■

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MIKE WARKENTIN | UNCOMMON SENSE | SEPTEMBER 2016

THE CrossFit JOURNAL

AN OPEN LETTER TO THE "BIG DOGS"

Nice deadlift. What's your Helen time?

Mike Warkentin/CrossFit Journal

Ben Smith, the Fittest Man on Earth in 2015, has trained to be good at everything from running to swimming to lifting.

Naveen Hattis/CrossFit Journal

We're well aware of your snatch PR.

We can indeed hear you grunting as you rep out.

We know you hold the top spot on the squat leaderboard.

And yes, we know all about your big bag of supplements, your special gear, your amp-up music and your pre-lift routine.

But a great many of us really don't care about your strength numbers.

Here's why: You're in a CrossFit program.

This, of course, is not to throw shade at those who are specifically training for powerlifting, weightlifting or strongman. You guys and girls are cool. We're thrilled to watch you clean and press our deadlift PR. We'll gladly lend our car if you need something to pull around the block. Have at that 700-lb. yoke with our complete blessing. We respect you and your goals.

We're also down with strong guys and girls who bust their asses all week in workouts that include heavy barbell work, long runs, gymnastics and everything in between. You guys are A-OK.

The people who need a reminder are the Big Dogs—those who are part of a CrossFit program yet clearly dodge every conditioning workout, taking pride only in their lifting numbers.

Lest you miss the point, let it be stated again: There is nothing wrong with a love of lifting. Training specifically to lift heavy is fantastic. Regularly lifting heavy is also part of a well-rounded CrossFit program. Lifting to target and eliminate a weakness is fine as well. However, exclusively lifting heavy to the detriment of other aspects of fitness is ridiculous if you claim to do CrossFit. CrossFit is not just showing up to max out on heavy days.

> Exclusively lifting heavy to the detriment of other aspects of fitness is ridiculous if you claim to do CrossFit.

If you only want to lift and begrudge anyone who suggests true fitness includes stamina, endurance, flexibility, conditioning and so on, you stick out like a chalk-free barbell at a CrossFit gym. We suspect you want to stick out because you believe it's important that many other people know how much you can lift.

If it wasn't, you'd probably be in the basement benching alone to the "Rocky IV" soundtrack.

Big Dogs generally lack self-awareness, so if you're unsure if you're a member of the pack, please review this list of telltale behaviors:

- Writing strength numbers on the whiteboard in larger print or in a color that stands out.
- Speaking overly loudly about recent strength PRs.
- Scaling loads up to turn met-cons into strength work.
- Justifying brutally slow met-con times by saying "but I scaled up."
- Having a work schedule that somehow always prevents attendance on conditioning days.
- Commenting on other people's PR videos with thunder-stealing nonsense such as, "Finally joined the 400 club, hey?"
- Grunting and over-the-top PR celebration.
- Stating "I've done way more before" after any submaximal lift.
- Asking other members what they lifted only so they'll ask in return.
- Justifying poor results by mentioning soreness from an "epic squat sesh" earlier in the week.
- Claiming the most prominent squat rack so people can see what's on the bar.

About six or seven years ago, Big Dogs were slightly more accepted in CrossFit programs. Your strength and power were indeed impressive, so some looked past an overall lack of fitness in what might be considered the early-middle part of the CrossFit revolution—a time when many athletes were only beginning to scratch the surface of what's possible.

Then something interesting happened: Athletes proved that you can get really, really strong while still improving all the other aspects of fitness.

CrossFit Founder and CEO Greg Glassman always said this would happen, but you scoffed at the thought and instead took pride in your place at the top of the deadlift leaderboard, which interestingly corresponded with your absence from the Helen leaderboard.

At the 2016 Reebok CrossFit Games, Smith followed up an 11th-place finish in Ranch Trail Run with a 505-lb. deadlift.

Chris Nolan/CrossFit Journal

Sam Briggs, the CrossFit Games champion in 2013, is known for her engine, but she's more than competent on the barbell.

It took a bit of time for things to sort themselves out, but guys like Ben Smith have utterly ruined it for you. Smith's slightly outdated CrossFit Games profile lists impressive strength numbers: 480-lb. back squat (he's hit 500), 540-lb. deadlift, 300-lb. snatch and 335-lb. clean and jerk (he's lifted 370).

But Smith, the Fittest Man on Earth in 2015, can also run 5 kilometers in 20:20. He can do Helen in 7:19. He's scored 520 on Fight Gone Bad. He's done Filty Fifty in 16:17.

Smith's just one example. Look to the stats of just about any Games or regional-level competitor—male or female—and you'll find an astounding blend of strength and, yes, conditioning. Fitness, in other words.

Look to the stats of just about any Games or regional-level competitor—male or female—and you'll find an astounding blend of strength and, yes, conditioning.

It's clear that Smith's numbers are not the sort of thing that would put him at the top of the podium at a weightlifting or powerlifting meet contested by highly trained specialists, but they're damn good for an athlete who trains for general physical preparedness, and they're more than enough to take the Big Dogs out of the conversation in a CrossFit box.

This is terrible news for you, as your prized strength numbers are now often equaled or significantly bettered by athletes whose fitness allows them to be good at every single CrossFit workout from one-rep-max deadlift to Murph. Every Big Dog has his or her day, so you might beat these athletes in one or two strength workouts, but they'll smoke you in the next nine—if you show up, of course.

You're quickly becoming a rarity. The strong guy/girl is being replaced by the strong athlete who can run, row and bang out muscle-ups, too.

You really need to make a simple choice: train like a lifter or train like a CrossFit athlete. Either option is totally fine. If you select the former, expect us to cheer you on as you bend the bar. Bending the bar is very cool.

"It is not a character flaw. There is no value judgment. Rather, you are not advancing your fitness. Instead, you are advancing a very narrow bandwidth of a specialized capacity," as stated in the "CrossFit Level 1 Training Guide."

Usain Bolt has done exactly that, and no one should criticize him. Specialization isn't bad. Specialization is what allows people to break world records. But specialization also 100 percent ensures that certain elements of fitness will be neglected on purpose.

So if you choose to stick with this CrossFit thing, keep in mind that we're all chasing the kind of well-rounded fitness that allows us to be good at any physical task.

That doesn't mean you need to give up your love of lifting, and you don't have to hide your ear-to-ear grin on deadlift day. We want to see you load up the plates and pull, and we'll be cheering as you notch a new PR. But you do need to start showing up to conditioning and gymnastics workouts and putting in some effort. Stop ducking the 5-kilometer run or trying to do Cindy with 225-lb. squats that hide your inability to do pull-ups quickly. Quit benching after class and do some rowing intervals instead.

Read "What Is Fitness?" and realize strength and power are but two of the 10 attributes we're training. Buy into the program.

If you're really into overall fitness, feel free to join us for a sweet 5 by 5 of heavy back squats.

But we're doing a 400-meter run after each set, and the workout is scored by time to completion. ■

About the Author: Mike Warkentin is the managing editor of the CrossFit Journal and the founder of CrossFit 204.

THE CrossFit JOURNAL

LIFT TO LIVE WELL

Physiotherapist Sharon Mallia reports on the success of CrossFit-based training with 20 seniors aged 75-91.

BY SHARON MALLIA

All photos: Courtesy of Sharon Mallia

With older adults, movements often need to be modified, and intensity must be closely monitored at all times.

Michael Brian/ CrossFit Journal

Life expectancy has increased drastically, and the number of older persons across the world is expected to more than double over the next four decades to reach a staggering 392 million persons aged 80 years or more by the year 2050 (32).

This increase in life expectancy represents a unique opportunity and challenge for exercise professionals. When it comes to training older adults, we need to move away from the erroneous impression that older adults should only engage in mild-to-moderate physical activity. However, in order to provide a safe yet effective training program, every professional trainer must keep a few things in mind.

The Physiology of Aging

The natural aging process brings about a decline in physical performance that is mostly attributed to a drop in aerobic endurance and muscular strength (25,35,33). The assumption is that loss of muscle size contributes to weakness, so much effort has been dedicated over the years to preventing age-related loss of muscle tissue (10). However, studies have indicated that weakness and muscle size are less tightly related than previously thought, with progression of weakness considerably outpacing the loss of muscle (9,14).

Age-related muscle weakness (dynapenia) can have devastating effects on a person's ability to perform everyday activities such as climbing stairs, picking up a grandchild, or simply getting out of a chair or bathtub, predisposing older adults to poorer function and greater risk of falls (31).

Training Older Adults

The present body of literature focuses mostly on the use of progressive resistance strength training (1,13,15,18,20,28). However, improving muscle strength alone produces only a trivial change, often non-significant in reducing late-life disability. Why? Because when the training predominantly focuses on increasing muscle strength, older adults might find difficulty in learning how to transfer this newly found strength to improve their performance of mundane tasks (17).

The most plausible reason for this non-linear transferability is that even though age-related decline in muscle strength is strongly associated with functional decline in older adults (11), the aging process also influences other motor elements such as balance, agility and coordination (27). Therefore, if the exercise program only targets one essential body motor element, the training effect will not necessarily translate into an improvement in everyday function.

On the contrary, functional training approaches such as that seen in CrossFit "train muscles in coordinated, multi-planar movement patterns and incorporate multiple joints, dynamic tasks, and consistent alterations in the base of support" (29), which is more approximate to the way people perform daily tasks (17).

Fundamentally, functional training is built on the core principle of training specificity, which means that training in a specific activity is the best way to maximize performance in that specific activity (12,23). This is what the core CrossFit movements are based upon. Squatting, for example, mimics standing from a seated position, and deadlifting mimics picking an object off the floor (7). In other words, the closer the mode of training mimics the desired task or motion, the better the outcome will be. While it might initially seem confusing to talk about specificity in CrossFit, a program that focuses on general physical preparedness (GPP) rather than specific training, "CrossFit's specificity" is that it uses compound, multi-joint movements that replicate in the gym the way the body must move to accomplish tasks outside the gym.

When using vigorous exercise with older adults, every workout must be specifically designed to accommodate the fitness level and physical limitations of each person.

When using vigorous exercise with older adults, every workout must be specifically designed to accommodate the fitness level and physical limitations of each person while keeping in mind that those things that are core to every younger individual's fitness are equally important to older adults. As written by CrossFit Founder and CEO Greg Glassman: "Your needs and the Olympic athlete's differ by degree not kind. Increased power, strength, cardiovascular and respiratory endurance, flexibility, stamina, coordination, agility, balance, and coordination are each important to the world's best athletes and to our grandparents. The amazing truth is that the very same methods that elicit optimal response in the Olympic or professional athlete will optimize the same response in the elderly" (7).

However, training older adults requires more than simply scaling down the workout of the day. First, moderation of intensity is critical when training older adults, just as it is with deconditioned, sedentary or injured clients. However, one should not rely on the typical signs of intensity—such as sweating and heavy

breathing—when working with older adults (21).

Second, one must be aware that the aging process is associated with degeneration of the cartilaginous tissues, leading to tightening of the joints, tendency toward osteoarthritis and loss of tissue elasticity (3), putting older adults at an increased risk of musculoskeletal injury.

Ultimately, when training older adults, the goal should always be that of maintaining independence and improving quality of life. Except in extreme cases involving masters athletes, an older adult's ability to lift a grocery bag or go face-to-face with small grandchildren is far more important than chasing high performance in the gym, though improved gym performance most certainly relates to improved function outside the gym.

An Eight-Week Study on Retaining Physical Function in Older Adults: The CrossFit Approach

CrossFit is becoming increasingly popular in older populations, but so far no academic studies have delved into the topic of CrossFit and older adults. I am a physiotherapist by profession and was introduced to the world of CrossFit about three years ago. Since then, I have been incorporating some aspects of CrossFit in my work at a geriatric rehabilitation hospital, and after seeing its efficacy, I decided to incorporate CrossFit in my thesis submitted as part of a master's degree in gerontology and geriatrics.

The primary objective of this study was to test whether CrossFit principles can be safely and effectively used to improve the physical function of older adults, consequently increasing their level of independence in activities of daily living and offering them better quality of life. The second aim was to investigate the perception older adults have of this training program.

Method

The study population consisted of 20 older adults (19 females and 1 male) who were voluntarily recruited from two residential-age care homes in Malta. The ages varied between 75 and 91 years old, with a mean age of 84. The intervention consisted of 16 CrossFit-based exercise classes, with two sessions taking place every week for eight weeks and each session lasting between 45 minutes and an hour.

The participants' level of functional fitness was measured before and at the end of the intervention using the Senior Fitness Test, which is composed of a battery of test items specifically designed to assess the four physical parameters identified as being the relevant components of functional fitness in older adults (24): muscular strength, aerobic endurance, flexibility, and agility and dynamic balance. After completing the exercise program, participants were asked to take part in a focus-group discussion to express their perceptions and personal experiences of the exercise program.

All sessions included a dynamic warm-up, skill/strength work, a conditioning component and stretching.

CrossFit aims to optimize physical competence in each of 10 fitness domains: cardiovascular and respiratory endurance, stamina, strength, flexibility, power, speed, coordination, agility, balance, and accuracy (7). While all are valuable, the domains that are paramount for older adults are balance, flexibility, strength and aerobic fitness (2), and this intervention focused on these elements.

A typical session consisted of four components:

Dynamic warm-up—Warm-up featured a set of exercises intended to elevate the heart rate and increase the body temperature. The warm-up lasted 10 to 15 minutes and consisted of aerobic exercises, functional movements, joint-mobility work and stretches that complemented the movements in the workout of the day.

Skill/strength work—This part lasted around 10 minutes. On some days the aim was to master a specific skill that would later be used during the workout of the day, while on other days the focus was on strength training.

Workout of the day—This component lasted between 15 to 30 minutes depending on the intensity and consisted of a combination of exercises such as squats, lunges, push presses, deadlifts, ground-to-overheads and step-ups. Every participant was advised to work with the weight and intensity he or she felt comfortable with, and all exercises were modified to the needs of the individual. As stated by Powell (21), "relative intensity" is most important when training older adults. The workouts were carried out individually or in a team depending on the session.

Cool-down and stretching—The last few minutes were always dedicated to cool-down and a series of stretches for the major muscle groups.

The exercise sessions were designed to be progressive in nature, and the first few focused on mastering four of CrossFit's nine fundamental movements: squat, front squat, overhead squat and press. We also introduced the deadlift, sumo deadlift high pull and medicine-ball clean later. The push press and push jerk complete the list (34) but were not included in this program because they require a higher level of skill. Although these lifts are beneficial, the researcher chose to focus on those functional movements that are most relevant in the geriatric scenario. The nine foundational CrossFit movements are important because capacity and sound mechanics in these movements constitute the essence of physical competence in three-dimensional space, and they translate readily to all other movements (34). As participants started to master these movements, the difficulty level was increased by utilizing more complex exercises that involved multiple movements (e.g., ground to overhead) and additional balance components (e.g., catching a ball from various heights).

Results

All the participants led a sedentary lifestyle and started the intervention at rather poor fitness levels. Some used walking aids, and others could not even rise from a chair without having to ask for assistance. For this reason, all the exercises had to be highly scaled. However, following eight weeks of training, all participants still achieved a satisfactory improvement in both upper- and lower-body strength as measured by the chair-stand test (45.8 percent average improvement) and the arm-curl test (39.2 percent average improvement). This supports the idea that although high training intensities appear to be necessary to achieve muscle hypertrophy, training at lower intensities is sufficient to initiate neuromuscular improvements (30).

Most participants also improved significantly in lower-body flexibility (51.6 percent average improvement): "I enjoy sitting on my couch watching TV, but before when I used to drop something like the remote control, I had to get up and struggle to pick it up. I love that now I can just bend over and reach for it" (78-year-old female).

However, at the end of the intervention a few participants still struggled with movements that required reaching down for their toes: "Before it was very difficult to bend and reach for my toes especially to put on tights; I never used to manage. Although I still cannot do it, I feel I have improved, and I want to continue carrying out these exercises until I manage to put on my tights" (90-year-old female).

On the other hand, the extent of improvement in upper-body flexibility as measured by the back-scratch test (8 percent average improvement) was much smaller than that observed for lower-body flexibility, and for most participants it was not sufficient to bring about an improvement in everyday function. These results are in line with the findings reported by Misner and colleagues (19), who studied the long-term (five years) effects of exercise on shoulder and hip range of motion and reported only a trivial improvement in shoulder range of motion as opposed to hip range of motion.

> The participants claimed that since they started taking part in this CrossFit-based exercise program, they felt increasingly fit and energetic.

There was also a marked improvement in aerobic endurance (21 percent average improvement) as measured by the two-minute step test, and the participants claimed that since they started taking part in this CrossFit-based exercise program, they felt increasingly fit and energetic. More importantly, this increase in exercise tolerance enabled them to complete activities they were not able to do before, such as going to the market or simply managing a flight of stairs.

"I enjoy going to the local market and whilst before I had to stop and rest a few times on the way, now I can keep on going," an 81-year-old female stated.

According to their initial scores of agility and dynamic balance, all participants were at an increased risk of falling. At the end of the intervention, this study found an average improvement of 15 percent in the participants' agility and dynamic balance as measured by the timed up-and-go test. However, when comparing the scores achieved by the participants to normative scores based on a validity study of community-dwelling older adults, this improvement was not enough to substantially abridge their risk of falling. Having said that, the participants still reported a decrease in fear of falling and an improvement in their everyday level of function. Most of this improvement can be attributed to an increase in self-confidence, as participants believed more in their abilities.

Moreover, the participants explained how this increase in agility and balance led to a boost in their self-image and self-esteem. For example, an 84-year-old lady shared that the previous day they had an outing, and while the bus driver usually had to bring her a step to go up on the bus, this time she managed to go up and down without the need for the step. Although it might not sound like much, to her it meant regaining some of her lost independence.

Activity avoidance due to fear of falling is common in older adults—even in those without a history of falls (37). Older people who are afraid of falling and consequently avoid activities enter a debilitating spiral of loss of confidence, restriction of physical activities and social participation, physical frailty, falls, and loss of independence (5,38).

"The major positive impact these exercises had on my life is the fact that now I can manage to go up and down a few steps. Before I did not manage and I used to avoid them completely because I was too scared of falling. Now I feel much more confident and I can even manage certain movements (she said while bracing herself) that I could not manage before such as crossing my hands over my body," said a 78-year-old female.

Over and above the physical improvements, CrossFit gave participants the opportunity to build new friendships and widen their social circle. While exercise served as a communal topic in conversation, it made them feel more included and more confident in joining social events. With older adults in long-term care being inactive and alone up to 65 per cent of their time (6), this study suggests that a CrossFit-based group-exercise program can be an effective method to reduce loneliness in older adults living in long-term care. Evidence does in fact show that social-network involvement is associated with health and well-being across the lifespan (16) because members of a social network can facilitate an older adult's adaptation to life-changing events (26).

The eight-week program was progressive in nature, and testing at completion revelealed marked increases in participants' strength and conditioning.

Throughout the course of the study, there were no reports of any injuries or negative repercussions. Thus, this study supports that CrossFit is safe and well tolerated in healthy older adults even in the eighth and ninth decades of life. It can prove challenging to provide the necessary individual attention and meet the needs of the individual while tending to a large class, so I suggest that initially older adults—especially those starting from sedentary lifestyles—should start training individually or in small groups until they can master the basic movements and reach a fitness level that allows them to join a class.

Conclusion

Overall, the CrossFit-based exercise program implemented by this study was a success, suggesting that two CrossFit-based exercise classes per week have the ability to enhance the level of physical function in older adults, including those in their eighth and ninth decades of life and those living in long-term residential care. Older adults perceive CrossFit as a fun method of training and recognize that its functional nature and holistic approach can help them improve their ability to carry out everyday tasks and subsequently retain their independence.

Finally, implementing a CrossFit-based exercise program for older adults is feasible even with restricted financial resources because every open space can be adapted and used for training.

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THE CrossFit JOURNAL

BUSTED TENS AND BENJAMINS

Affiliate owners discuss budgeting for replacement gear and making the new equipment last.

BY BRITTNEY SALINE

Wendy Nielsen

Some affiliate owners recommend paying more for quality: At CrossFit Calgary, more costly synthetic climbing ropes have lasted far longer than cheaper options.

Brett Marshall

A 45-lb. plate can be a great doorstop.

Of course, it's a better fitness tool, but what else can you do with a broken bumper?

The business of fitness is tough work, and CrossFit athletes are tough on implements. As eager as affiliate owners are for their clients' PRs, progress inevitably comes with broken weights, snapped skipping ropes and busted rowers.

"Things are gonna break," said Justin Riley, owner of CrossFit East Sacramento in California. "It's part of being a business owner that you're going to have to fix things and replace things and do maintenance."

Equipment shelf life isn't always the first thing affiliate owners think of after they open their gyms, but according to Jeremy Thiel, owner of CrossFit Central in Austin, Texas, it's something they should consider from the start.

"It's very hard to know exactly when equipment's gonna go out," he said.

With two locations and around 700 members total, Thiel has seen his fair share of damaged goods. Since he opened CrossFit Central in 2005, he's lost four rowers due to damage and wear and tear. He's purchased six barbells in the last six months alone, and every six months or so he orders a new batch of bands. These costs are obviously in addition to regular monthly expenses such as utilities, payroll or even chalk, and smart affiliate owners set a nest egg aside to cushion the blow, he said. For CrossFit Central, that's 3 percent of monthly revenue "so we're not caught off guard and we have that money available to reinvest," Thiel said.

The figure was the result of some third-party number crunching: The percentage is based off membership base and past expenses that were closely analyzed by an accountant.

"It's really important for boxes to make sure they have bookkeepers and accountants that they're working with," he said. "As an affiliate owner, you wear a lot of different hats, and managing your budgets and accounting, that's probably not your expertise."

Kevin Montford, owner of CrossFit SoCo in Colorado Springs, Colorado, does things a little differently, replacing broken equipment and buying new things once a year with funds raised by an annual equipment fee. Each April, CrossFit SoCo members pay US$50 each toward replacement and new equipment (families pay only one $50 fee). The gym has around 350 members, and the equipment fee brings in approximately $15,000 each year.

Montford came up with the idea in 2013, when, after four years of affiliation, he found that replacing equipment was eating into paychecks.

> "People are pretty aggressive on equipment, and we were constantly breaking bumper plates."
> —Kevin Montford

"(The impact on the budget) was big," he said. "People are pretty aggressive on equipment, and we were constantly breaking bumper plates and replacing medicine balls and slam balls that were busting."

The key to the program's success, he said, is including members in the purchasing process. As April approaches, Montford takes stock of what needs replacing and writes it on the whiteboard with a cost breakdown for each piece of equipment. After replacement equipment is accounted for, members vote on what they'd like to buy with the rest of the money. Past votes have yielded SkiErgs, rowers and specialty gymnastics equipment.

"No one's ever complained about it; it's been great," he said. "They're the ones who are going to benefit from it."

At CrossFit Fort Bragg/Evolution Athletics, Daniel Skidmore and Chris McNamara take a less direct approach, rolling the cost of equipment into regular membership prices.

"I look at it as (equipment fees) are part of the encompassing package in your monthly membership," Skidmore said. "You're paying to keep it nice."

Tender Loving and Care

The best way to deal with broken equipment, McNamara said, is to minimize breakage in the first place by buying quality equipment—and then maintaining it.

"Spend a little bit more money up front in the hopes of getting a long run out of it and maximizing your total time with it," he said.

Brett Marshall, owner of CrossFit Calgary in Alberta, Canada, agreed. Over a span of six years, CrossFit Calgary ate through several climbing ropes, each set made of different material, before switching to a more expensive—and more durable—synthetic rope that didn't fray down to a shoelace after regular use.

"We've been over a year now with these new ones … and they are essentially undamaged," he said, "which, for the amount of


Wendy Nielsen

A message from every affiliate owner in the world: Please don't drop the 10s.


Brittney Saline


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Some gym equipment regularly needs to be replaced due to wear and tear. Budgeting will help owners prepare for these costs.

rope climbing that we do, normally there would have been extensive fraying going on by this point."

McNamara stressed that aside from purchasing high-quality equipment in the first place, the best thing affiliate owners can do is take care of it.

"Don't forget to start out with a maintenance schedule from the very start so you're being more proactive with your equipment plan versus reactive," he said.

CrossFit Fort Bragg/Evolution Athletics adheres to a maintenance plan divided into one-, two- and three-month intervals, with duties ranging from lubricating the chains on the rowers to inspecting pull-up rigs for rust damage.

"If you see something (broken), do something about it," Skidmore added. "And when something needs (maintenance), just go ahead and check everything."

House Rules

It's not just coaching staff who should do the maintaining, though. A huge factor in how long equipment lasts, Marshall said, is how it's treated. For that reason, CrossFit Calgary has a few house rules.

"Our house rule is pretty simple," he said. "It says, 'Don't drop things that shouldn't be dropped.'"

> "Don't drop things that shouldn't be dropped." —CrossFit Calgary

Light barbells tend to scatter when dropped, careening into other equipment—or people—and light bumper plates have a tendency to crack. Even kettlebells can crack when dropped on end from a height.

"We don't freak out if people are dropping things here and there (because) they're fatigued and if the intensity's very high, but as a general rule, our members are instructed in terms of how to care for the equipment, which definitely doesn't involve dropping it," Marshall said.

But it's not just about rules and burpee penalties. It's about setting "a culture of respecting the equipment," Riley said, and that starts with the staff.

Fresh off a stuffy gig as a trainer at a country club at which he had to tuck in his shirt and take care not to leave so much as a scuff on the floor, Riley opened CrossFit East Sacramento in 2008. He and his business partner "were so excited to be out of there that we ... started this gym with sort of a thrasher mentality," he said.

Soon he had more broken 10-lb. plates than whole ones, and the sheetrock walls were pocked with holes punched by athletes' heels during careless handstand push-ups.

"That got old," he said. "I think initially we didn't set a culture of having a lot of respect for the facility, and that's something we had to go back and do later."

Still, at the end of the day, CrossFit affiliates are about fitness first. Do your best to prevent and save for damage, Riley said, but remember that a few broken plates are sometimes the price of progress.

"These facilities get used hard, and things will break," he said. "Just understand that it's part of being an affiliate owner. It's really important that you are upkeeping the facility because people pay a lot of money to come into a place like this. Lead by example, and in a polite way, with good leadership, make sure you set a precedent for respecting the gym's equipment." ■

About the Author: Brittney Saline contributes to the CrossFit Journal and the CrossFit Games website, and she trains at CrossFit St. Paul. To contact her, visit brittneysaline.com.

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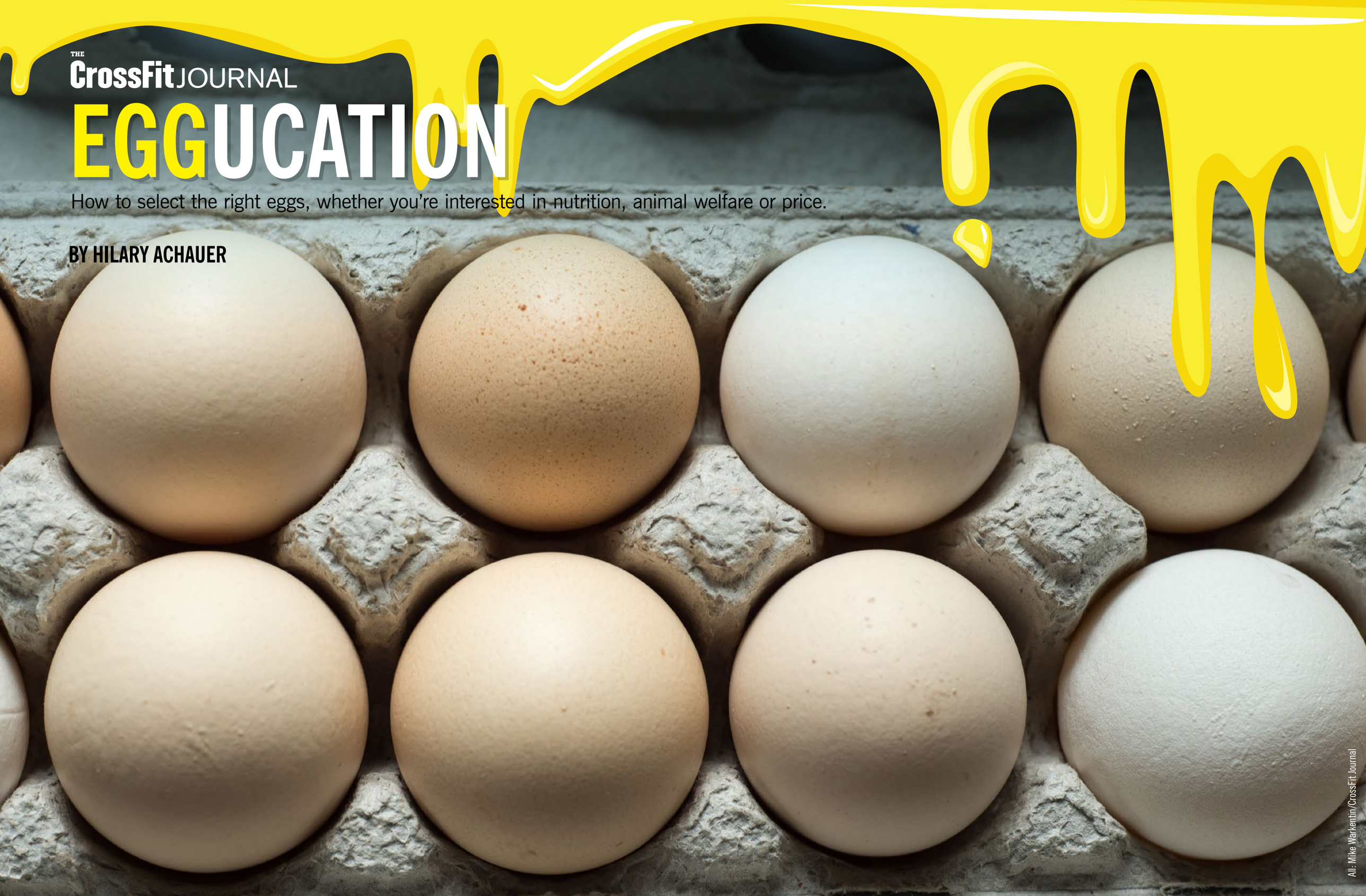
EGGUCATION

How to select the right eggs, whether you're interested in nutrition, animal welfare or price.

BY HILARY ACHAUER



All: Mike Warkentin/CrossFit Journal

Egg fact: Brown eggs are more expensive because they come from slightly larger birds that cost more to feed.

For years I've purchased brown eggs.

Specifically, Trader Joe's Brown Organic Free Range Eggs.

I bypassed the cheaper options because it seemed like the healthy thing to do. I had the vague sense the brown color meant they were healthier, more natural, but I couldn't tell you what any of the claims on the carton actually meant.

Then I stumbled across a fact that blew my mind:

The color of the eggs has nothing to do with how the chickens are raised. Chickens with white feathers and white earlobes lay white eggs. Dark-feathered chickens with red earlobes lay brown eggs. That's it. The reason brown eggs cost more is the brown-egg-laying chickens eat more than the white-egg-laying chickens, so they're more expensive to raise.

Once I discovered the secret of brown eggs, I wondered what else I didn't know. What's the difference between free range and cage-free, and why are pastured eggs so expensive?

The Labels

Shopping for eggs comes with three primary considerations, the importance of which varies from person to person: the well-being of the chicken, the nutritional value of the eggs and the cost of the eggs. The environmental impact of the egg producer is another important question, but that's a bigger issue I'm not going to address here.

Worrying about the lives of egg-laying chickens is a relatively new phenomenon. In the early 2000s, activist Paul Shapiro realized he could affect the largest number of animals by focusing on farms instead of circuses, research labs and the fur industry. He set his sights on chickens, and thanks to the efforts of Shapiro and animal-welfare groups, soon nearly every egg sold will be cage-free.

Any egg not marked "cage-free" most likely comes from a chicken kept in a battery cage. Each chicken in such a cage gets only about 67 square inches of space, less than a sheet of letter-sized paper. The chickens spend their two-year lifespan in this cage, never going outside to spread their wings or peck at the dirt.

Eggs sold in California are the exception. As of 2015, all shell eggs sold in California must be cage-free, but not all California eggs are labeled "cage-free." Instead they are stamped with "CA SEFS Compliant"—California Shell Egg Food Safely Compliant.

This law does not mean California chickens are free to roam the farm at will. As with many egg designations, the term "cage-free" is somewhat misleading.

Here are the actual meanings of common terms on packages of eggs sold in the United States:

- Cage-free—Although these hens are not confined to battery cages, they are still kept inside. Cage-free chickens can walk, spread their wings and lay eggs in nests. No law governs how much space each chicken gets, but industry groups have voluntary certifications requiring each hen to have least 1 square foot of space—about twice as much space as battery-cage hens are allowed.

- Free range—This designation means the birds have access to the outside, but there is no stipulation on how much time the chickens get outside or what the conditions are like outside. Some free-range chickens only have access to a cement porch with a small amount of grass, but in some cases industrial fans for ammonia removal can create winds that discourage them from going outside. When buying free-range eggs, do some research on the farm to find out what the term means to its owner.

- Free range and certified humane—If an egg carton is labeled "free range" and "certified humane," the chicken must have access to at least 2 square feet of outdoor space for up to six hours each day.

- Organic—If an egg is labeled "organic," the United States Department of Agriculture (USDA) has certified the chicken is free range, eats only organic feed and has not been given any hormones or antibiotics. However, as discussed above, "free range" does not mean the chicken spends the day happily pecking in the dirt. Further, hormones cannot legally be given to U.S. chickens, and antibiotics are seldom used in egg-producing chickens. This scorecard rates organic egg farms.

- Pastured or pasture raised—The terms "pastured" and "pasture raised" are not associated with any federal regulation, but pastured eggs come from chickens that roam in fields and forage on plants and insects. (For this reason, eggs from pasture-raised chickens will not be labeled "vegetarian.") Two of the biggest producers of pastured eggs in the United States, Vital Farms and The Happy Egg Co., allow their birds to wander and forage all day every day, although The Happy Egg Co. eggs are labeled "free range on pasture"—its own phrase not tied to any official category. As with free-range eggs, it's worthwhile to research the farm to find out exactly what "pastured" means to its owner.

A 2015 Penn State study found pastured eggs have more vitamin E and omega-3 fatty acids.

Health Benefits and Proper Storage

The distinctions above are all related to the experience of the chicken. If you don't care about how the chicken is treated, what type of eggs should you buy? Are there health benefits to eggs from pastured chickens?

A 2010 USDA study using the Haugh unit, a measure of egg protein quality, found no discernible difference between factory and pastured eggs. However, the Haugh unit only evaluates the egg's protein content and freshness. That same year, a study conducted by Pennsylvania State University's College of Agricultural Sciences found pastured eggs had twice as much vitamin E and long-chain omega-3 fats. They also had more than double the total omega-3 fatty acids. Both vitamin E and omega-3 fats play an important role in maintaining good health. As an antioxidant, vitamin E helps strengthen the immune system and assists in the formation of red blood cells. Omega-3 fats have been shown to help prevent heart disease and stroke, and they might protect against cancer and depression.

One study showed that organic-farmed eggs contained higher levels of polychlorinated biphenyls (PCBs) due to an environmental contaminant. The 2015 study found dioxin-like PCBs in the eggs, which was traced to corrugated asbestos-cement cover plates on the roof and sidewalls of the stable. It's uncertain what type of egg farms use these cover plates, but because the materials are likely very common, the authors suggest "high probability" that this was not an isolated incident.

Salmonella rates are generally lower in eggs from cage-free chickens because it's easier to maintain sanitary conditions with fewer chickens, and organic feed does not have toxic herbicides and fungicides. Factory chickens are generally fed a chicken mash based on corn and soy that can also include slaughterhouse waste; using such a feed can be risky, as it might contain any germs or diseases that infected the animal or animals the chickens are consuming.

In the 1970s, the fear of salmonella led the United States to require all egg producers to wash eggs after they are hatched. Washing the eggs cleans off bacteria, but it also removes the eggs' natural protective coating that keeps water and oxygen in and bad bacteria out. Once the egg is washed, it's more vulnerable to bacterial invasion, hence the need for refrigeration. In countries that don't require egg washing—most of the rest of the world—eggs do not need to be refrigerated. Once an egg has been refrigerated, even if it hasn't been washed, you should maintain that refrigeration, because the condensation that occurs when moving an egg from the chill of the refrigerator to room temperature facilitates the growth of bacteria.

Cost

The final consideration when buying eggs is cost. A dozen factory eggs cost about US$2.50 per dozen, sometimes as low as $1.50. Free-range, organic eggs are about $5.50, and organic, pastured eggs can cost anywhere from $8.50 to $9.50 per dozen. That's a significant difference, especially if you're feeding a big, egg-loving family.

The cost differential is starting to shrink as some farms selling pastured eggs grow in size and achieve economies of scale. An example of this is The Happy Egg Co., whose fare costs about $5 a dozen at my local grocery store. (The Happy Egg Co. eggs are also available at Walmart for that price.) The company is notable for being the first commercial egg producer in the United States to be granted humane certification from the American Humane Association.

If I can't find pastured eggs, I buy the cheapest option, knowing all eggs sold in California are cage-free. And I never bother with brown eggs if a cheaper white equivalent is available.

We all make decisions when grocery shopping, weighing cost, health, taste and convenience. Now that I've figured out what all these egg labels mean, I can focus on what's important to me.

Pastured eggs are healthier and more humane, and for those reasons I've decided I want to support the kind of farms that allow the chickens to roam free.

I'd rather pay more and eat less. ■

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