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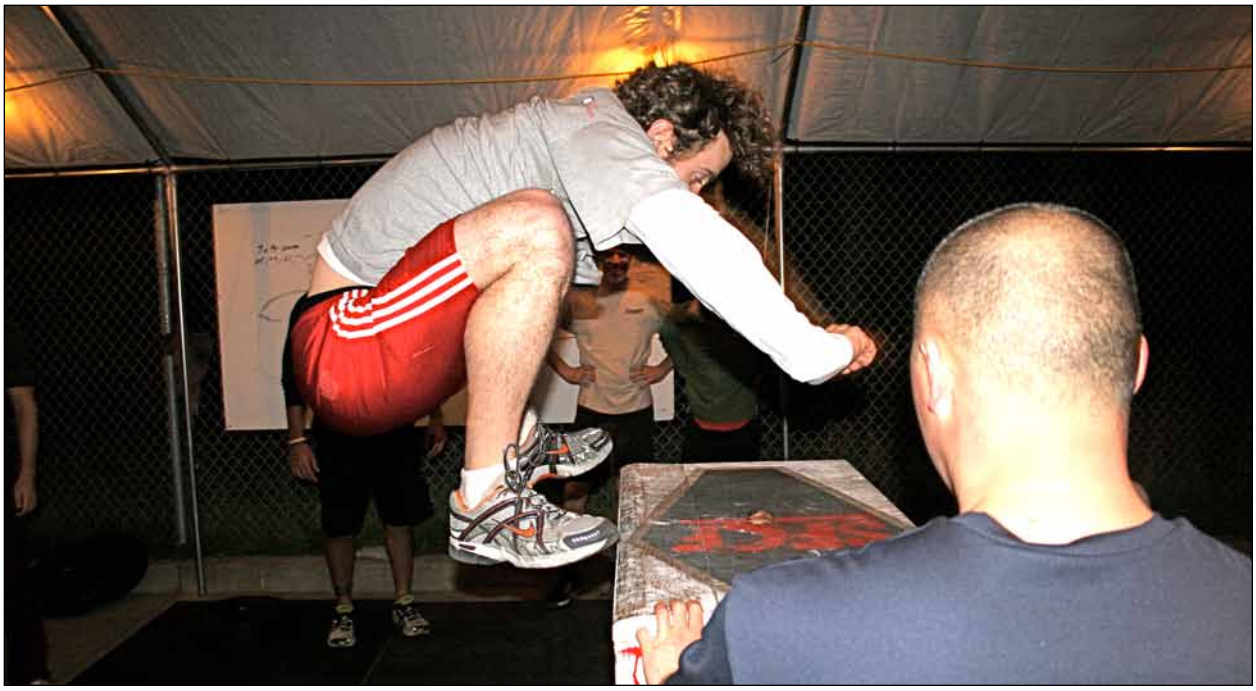
Kelly's Koffin: Five Feet Over

Standard box jumps are dead at CrossFit San Francisco thanks to an adjustable 58-inch plyo box. Here's how to build your own version—bloodstains not included.

Larry Gallagher



Courtesy of San Francisco CrossFit

Sometime last fall after a workout at San Francisco CrossFit, I was pulled aside by Kelly Starrett, alias K-Star, well-known CrossFit extrovert and founder of said affiliate. He had a vision of creating the ultimate jumping box, a platform that would be stable and high—higher than anything anyone at SFCF had ever ascended.

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Kelly had looked online for professionally made versions, but the highest platform sold was only 42 inches. With shipping it totaled over $400. Confident in my modest but solid woodworking skills, I accepted the challenge. When the high-jumping freaks at SFCF were previously looking to expand their vertical capacity, they would take one of the standard 25-inch boxes and pile bumper plates on top, creating a narrow platform of dubious stability and full of testicle-crushing possibilities.

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Kelly was looking for something higher and wider. Together we guesstimated that the width should be about 40 inches to allow jumpers to land in a wide squat atop the box as they pulled their legs up at the peak of their leap. As for height, Kelly figured 60 inches would be high enough to give him something to work up to, even if the distance seemed attainable only for a high jumper doing the Fosbury flop and absurd for anyone planning to land on two feet.

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If You Build It, They Will Jump

After a few weeks of head-scratching and sketching followed by a day of cutting, gluing and screwing, I was able to present him with the prototype adjustable jumping box. In the long-standing American tradition of semi-literacy, we dubbed it "Kelly's Koffin." Ebullient under any circumstances, Kelly was positively irrepressible when it came to the virtues of extreme jumping on his new toy. "It's the ultimate proletarian instrument," he said in an effort to impress with his command of obsolete Marxist terminology. "You can really develop a lot of interesting power output. You can generate explosiveness, and it's only jumping. It's not technical and it rarely requires a coach. In its simplicity, getting people to be more powerful in their jump is incredible."

The big box, Kelly explained, pushes the workout beyond the daily met-con grind.

"I think overall in CrossFit there's not enough good, quality jumping, and jumping on a 20-inch box doesn't do it," he said. "A lot of times a box jump ends up being just a more dynamic version of step aerobics. This will get me in trouble to say, but one of the things that I see a lot of time in new coaches is step aerobics with weights. There's definitely a hard metabolic piece to that, but what you've done is create a unit of work, not necessarily a stimulus to jump higher or squat more. I'm not sure that a workout like that necessarily gets you towards a bigger engine."

Jumping like this, Kelly said, is also a good diagnostic for hip flexibility.

Size matters: smaller plyo boxes don't encourage the same maximum effort that the Koffin demands.

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"Ultimately, everyone's going to top out at relatively the same height, but your capacity to get your legs up and out of the way, clear from the hip capsule, is what gets you that extra foot on the jump," he explained.

Always on the lookout for a new trick or a new way to teach an old one, Kelly has found a number of different ways to work the Koffin into individual or group workouts. One way that people are building strength is by breaking the chain of eccentric and concentric loading. As an example of this, he has athletes sit atop a standard 20-inch box and jump directly onto the Koffin without loading.

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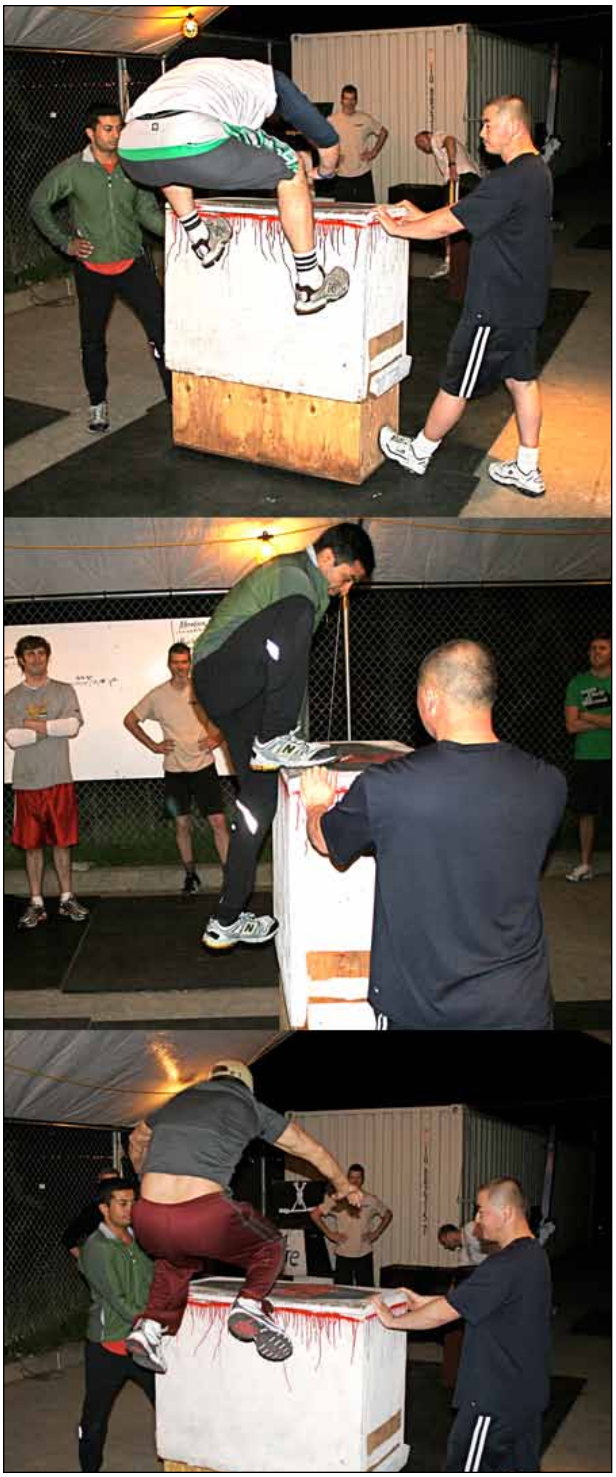
In a typical eccentric-concentric chain, a certain amount of energy is stored in the eccentric phase via a counter-movement like quickly bending the knees and flexing the hips before a jump. The stored energy is then explosively released during the contraction, in this case during the vertical leap.

"A lot of top athletes are finding that by breaking that chain and focusing on one half of it, they can significantly increase adaptation," Kelly said. "This is pure concentric loading, which is why it is so hard."

The Koffin is also well suited for investigating the connection between explosiveness and heavy lifting.

"Mel Siff demonstrated that if you do something heavy, you are facilitated to do something fast," Kelly said, pointing to Olympic champion Michael Johnson, who on more than one occasion set up a record-breaking sprint with heavy squats.



Courtesy of San Francisco CrossFit

Where's the challenge in hopping on a standard plyo box? With a Koffin you've got to risk something if you want the reward.

In this spirit, Kelly likes to follow a workout full of front squats with PR attempts on the Koffin. For those craving even more intensity, Kelly suggests doing the jumps with barbells.

> "It breaks people out their thruster-pull-up mode, 'cause we're fucking good at row, thruster, pull-up, box jump. We can do that for months. That's practiced. Anytime that we can inject something in that people are less practiced at, that's good."
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Of course, the most popular group exercise by far is utilizing the Koffin in an elimination event in which the height is raised until the champ or champions are left standing.

A Koffin—Fun for the Whole Box

One of the touted virtues of a CrossFit workout is that it prepares an athlete for the various organic physical challenges the real world has a habit of hurling at us. The Koffin certainly fits with that mentality.

"Maybe one of the things I like about it is that there's consequence," Kelly said. "There's a consequence for if I don't make it. There's some accuracy required to do it when you're breathing hard that is different from just pulling on a pull-up bar. But when you're going from a burpee to the Koffin, there is something about it that's scary and legit."

As a physical therapist, Kelly sees a lot of athletes with problematic upper bodies and shoulders in need of replacement. These people will never be able to snatch or jerk, but the Koffin is a tool that will allow them to develop explosive hip extension without further damaging themselves.

Courtesy of L. Gallagher

Author Larry Gallagher and his bloody box.

Fancy rationalizations aside, Kelly admits the best reason for building a Koffin into a workout is that it's fun.

"It breaks people out their thruster-pull-up mode, 'cause we're fucking good at row, thruster, pull-up,box jump. We can do that for months. That's practiced. Anytime that we can inject something in that people are less practiced at, that's good," he said.

The Koffin has quickly worked its way into the culture at SFCF, and the original wood tones were upgraded to the "dripping blood on white motif" at a painting party. Coach Adrian (Boz) Bozman has added a Koffin T-shirt to his line of homemade silkscreens and has also offered a challenge to all CrossFitters: mount the box at the highest setting (58 inches) and receive a free T. According to the rules, you can get a running start, but you can't use your hands. Thus far only two SFCF athletes have achieved this distinction.

Do you have what it takes? Planning a trip to the Bay Area soon? The Koffin beckons.

Prefer to stay at home?

For the carpentry geeks among you, consider building your own koffin. A list of materials is (where else?) in the box at the right. The gory construction details follow on the next two pages.

So page down. If you dare.

KOFFIN KONSTRUCTION

Materials

3 sheets 4 x 8 x ¾ in. CDX plywood

2 x 6 x 40 in. (minimum) kiln-dried Douglas fir

2 x 4 in. x 8 ft. Douglas fir framing stud (or a comparable amount of scrap pieces)

1¼ in. screws

2 in. screws

3 in. screws

2 small right-angle brackets with ¾ in. screws

Tube of PL Construction Adhesive or Liquid Nails

Thompson's Water Seal or similar wood water-proofing agent

Tools

Cordless drill

Electric drill

Circular or table saw

Power planer or belt sander

1½ in. hole saw

Drill bits

Countersink

Caulking gun

Koffin Konstruction

This contraption is basically just a box within a box. The inside dimensions of the top (the larger box) should be about ¼ inch larger than the smaller box so they can fit together snugly, but not so snugly that you'll get frustrated trying to lift the top. Our outer box measured 41¾ inches long by 19¾ inches wide by 30 inches high. The inner box was 40 inches high, 18 inches wide and 29 inches high.

The inner box follows basic common-sense construction. Along the left and right sides I drilled a series of 1½ inch holes into which the adjustment pegs fit (Figure 1). At the bottom I drilled the rows 6 inches apart. In the upper settings I halved the distance to allow for smaller incremental increases as the box got higher. You can probably drill the holes a bit closer than I did—just make sure to leave at least an inch of plywood between the holes.

The top of the outer box is more complicated. The "Shin-Savr" front edge of the Koffin features a curved piece of kiln-dried Douglas fir. I might have been able to get away with an ordinary crappy 2x6, but given the amount of abuse the front edge was likely to get, I thought a better piece of wood with a tighter grain would be less likely to splinter over time. Besides, Kelly's money means nothing to me. I achieved the curve along the front edge with a power planer. In the likely event that you don't have a power planer, you can probably produce the same results with a belt sander, but it will take longer and generate more dust. If you're feeling ambitious, you can install a curved edge on both sides of the top so two athletes can alternate jumping from either side.

The rest of the top is made of two layers of ¾ inch plywood. As in Figure 2, I notched the back of the fir 2x6 on the table saw so it would mate with the staggered plywood pieces. This allowed me to join the two parts of the top to one another to avoid any sagging. I secured them together from the inside with a few 1¼ inch screws short enough that they wouldn't poke through the top of the Koffin and produce a flesh-ripping hazard.

I secured the lip to the sides of the top box with a handful of 3 inch screws. Be sure to drill pilot holes all the way down into the plywood to minimize splitting. There are no screws along the front edge of the lip for obvious reasons, so to join the two together I used two small right-angle brackets, being careful to use short screws that would not protrude through the top.

Courtesy of L. Gallagher

Figure 1: A series of holes allow an outer box to reach a height of 58 inches—high enough to satisfy even the elite skylords at your box.

Courtesy of L. Gallagher

Figure 2: Despite the Koffin's beveled front edge, some of this blood may be real.

In the center of the top piece I cut an elliptical hole that serves two purposes: it gives you a way to grip the top and allows air to enter and exit when you're putting the two halves of the coffin together, minimizing suction.

On either side of the top piece I installed handles so two people could work together to adjust the height of the top box. As per Figure 3, I beveled the edge of the handle to make it easier to grip. I secured the handles by screwing them from the inside out, so the 2 inch screws would be anchored into the 2x4 handle and not the ¾ inch plywood.

For the adjustment pegs I mounted two 5 inch pieces of 1 inch dowel on a piece of 2x4 (Figure 4). I countersunk the holes with a 1 inch bit, glued the dowels into the holes, and also screwed through the back of the 2x4 for good measure.

If you aren't planning on moving your Koffin around too much, you might want to consider filling the interior box with all that heavy junk you have lying around—mangled bumper plates and broken-handled kettlebells. They will act as ballast and add to the stability of the base.

In the end, the total cost of materials came out to $106. Between shopping for materials and construction, it took me approximately 6 hours to put the thing together. It was priceless labor traded for priceless CrossFit classes.

✦

Courtesy of L. Gallagher

Figure 3: The outer box has beveled handles for ease of lifting. God knows your hands are shredded from all those pull-ups.

Courtesy of L. Gallagher

Figure 4: Adjustment pegs run through the inner and outer box, making the Koffin a nice tool for encouraging constantly varied, high-intensity, functional movement.

About The Author

Larry Gallagher is carpenter in residence at San Francisco CrossFit. He feeds himself by working as a freelance writer and doing construction. If he has any money left over, he burns it writing and recording music. For more about this fascinating character, visit larrygallagher.com.

Ever the gentleman, Mr. Gallagher would be happy to answer construction questions.

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