

the **CrossFit** JOURNAL ARTICLES

Plyo Box with Slanted Sides

Lincoln Brigham



Plyo boxes are very popular in CrossFit gyms. They're great for all kinds of workouts—or for just sitting on after a good workout with your head cradled in your hands waiting for the room to stop spinning. However, commercial plyo boxes can cost as much as \$100 to \$200 each, plus shipping. Homebuilt equipment—a favorite CrossFit brand—can be constructed with quality at least equal to that of the best commercial designs and at significantly lower cost. Square boxes and open-sided boxes take a bigger toll on the shins from missed jumps, and slant-sided boxes are stackable, so they require less floor space for storage. So this month's journal brings you the do-it-yourself CrossFit custom plyo box with slanted sides. Your friends, relations, workout buddies, and clients will be sore impressed! Or just plain sore after a hard workout on one of these babies. Total cost for this project should be in the neighborhood of \$40-60 per box or less, depending on the size and your bargain-shopping abilities

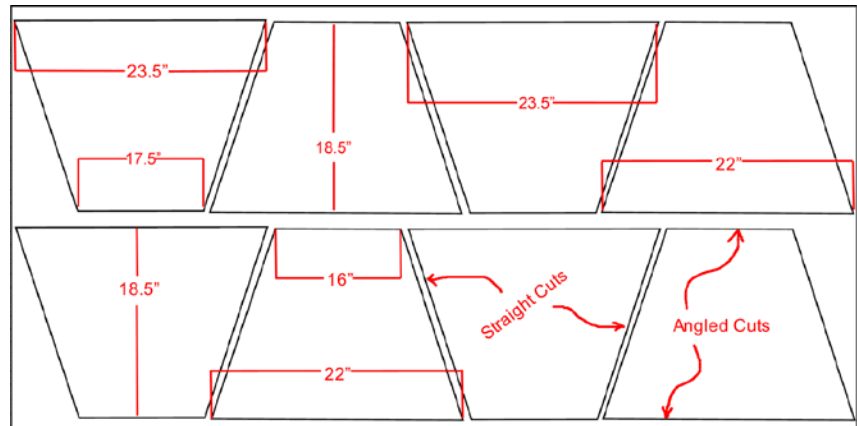


Cardboard mock-up

The first step is to use the instructions below to build a mock-up of the plyo box with the cardboard and packing tape. Really. Trust me on this. It's worth the time. With a cardboard mock-up, these plans can easily be adapted to any size plyo box desired. Additionally, building the cardboard mock-up saves a lot of tedious measurement calculations and head scratching, and it serves as good practice for measuring and assembly before cutting into expensive plywood. As carpenters always say, "Measure twice, cut once."

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Plyo Boxes (continued...)



(left) a cardboard mockup helps make sure the box is the right size for your application. (right) how to make the most of your plywood.

Materials

- 5 sheets of 24" x 20" cardboard
- Packing tape
- 4' x 8' x 3/4" maple, oak, or birch plywood, 1.5 sheets per two large 20" boxes (Skimping with cheap or thinner plywood is not worth the savings. And don't even think about using particle board.)
- 18" x 18" rubber mats, one per plyo box (try the local feed & grain supply store)
- 1-1/4" drywall screws, 40 per plyo box
- Wood glue
- Contact cement, 1 pint
- Base paint (primer paint for use on wood)
- Semi-gloss colored paint
- Semi-gloss polyurethane varnish
- Bumper sticker from CafePress.com

Equipment

- 24" straight-edge ruler
- Table saw or circular saw
- Variable-speed drill with screwdriver bit
- Jig saw
- Utility knife, carpet knife, or box cutters
- Sander with both coarse-grit sandpaper and extra-fine-grit sandpaper
- Safety goggles

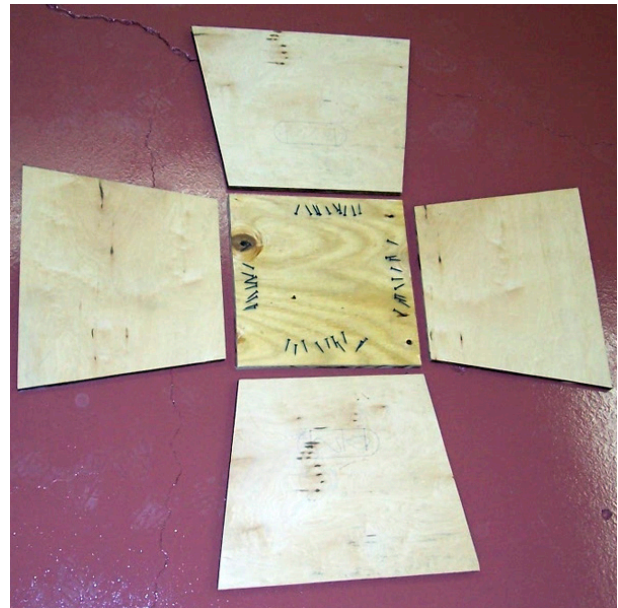
Instructions

These instructions are specifically for making a pair of boxes that are approximately 20" high, 23.5" square

base and 17.5" square top, but you can scale them to whatever size boxes you want.

You can also make the angle of the slope as steep as you like, bearing in mind that assembly and cutting gets trickier, and stability decreases, as the angle increases. This project uses approximately a 10-degree slope. If you are not comfortable with woodworking and cutting wood at an angle, you can make the box with straight sides.

Each side of this box will be 23.5" wide at the bottom and 17.5" at the top. Always remember that the plywood is 3/4" thick. This means that two of the sides will have



Plyo Boxes (continued...)

these dimensions and two will be cut 1.5" narrower: 22" at the base and 16" at the top. Draw a 3/4" edge on the cardboard mock-up to get a good visual on this.

Use the cardboard mock-up and the ruler to lay out the patterns to be cut on the plywood. The sides for two boxes can be cut using just one sheet of plywood if the base of the box is 23.5" or less. Be sure to leave about 1/4" between cuts to allow for the width of the saw blade!

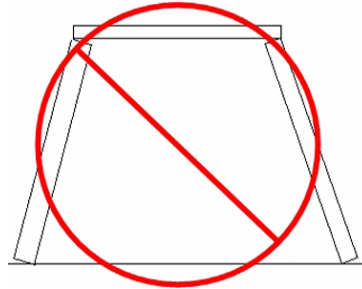
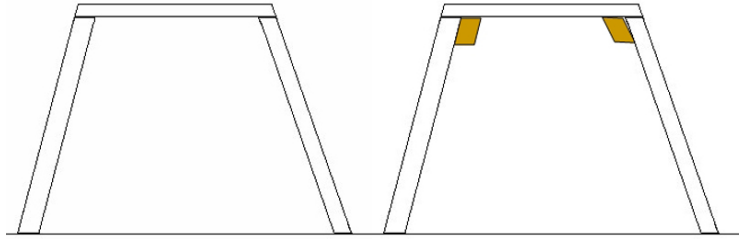
Now begin the cutting. The top and bottom edges will be cut at an angle so that the top sits flat on the sides and the whole thing sits flat on the ground. Set the saw blade angle by eye using the cardboard mock-up as a visual guide. The angle is not super critical, just be sure that you cut the top and bottom edges at angles parallel to each other. If idea of parallel angles sends you back to horrible memories of ninth-grade geometry, simply make sure that you start the long cuts from the same end of the plywood each time. Using the layout picture, make the four rip cuts (i.e., the long way) with the blade set at an angle. Then set the saw blade back to 90 degrees to finish the rest of the cuts.

Do not try to cheat by using square cuts for the top and bottom edges. This will result in a box that is difficult to assemble and finish as well as significantly weaker. Again, if you are not comfortable with angled cuts, build a box with straight sides. You may scrape more skin off your shins with straight sides, but at least you won't tear your hair out trying to screw the box together, and the box won't collapse when Trainee Ted the Tort Attorney jumps on it.

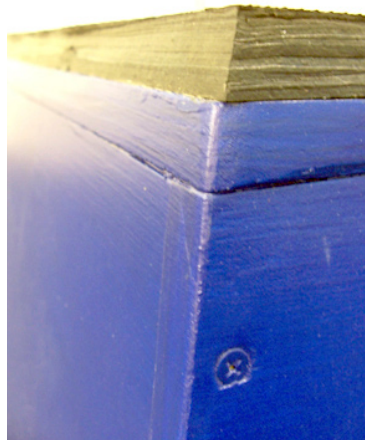
Pre-drill holes for the screws 3/8" from the sides of the two wider pieces. Glue and screw the box together, using the packing tape or a helpful friend to hold the box together while you screw down the pieces. Don't use nails instead of screws; that's just asking for trouble.

Glue & screw = strength and durability

Turn the box upside down onto the remaining plywood. Use the assembled box as a guide for the measurements for the top. Cut the top so the edges are at the same



Be sure to make angle cuts for the top and bottom edges of the side pieces to ensure snug, strong corners when assembled (top left). If you're not fully confident in the strength of the corners, some bracing can be added (top right). Use screws to assemble the boxes, not nails (bottom left).



angle as the sides, pre-drill screw holes at a slight angle 3/8" from all four edges of the top, and glue and screw the top into place.

If the joints are nice and tight, no further bracing should be necessary. If you are nervous about your carpentry skills, additional internal bracing in the corners may be helpful.

Next, draw outlines of handle holes on two opposite sides of each box. Drill a starter hole for the jig saw in the middle of the handle area. Make the hole big enough for the saw blade. Cut the hole for the handle slowly, being careful to rein in your great CrossFit strength to avoid twisting, tilting, or snapping the saw blade.

Plyo Boxes (continued...)

Sand the edges and joints smooth with coarse sandpaper, especially the edges of the handle holes. Use wood putty if necessary to hide any gaps. Paint the sides—but not the top—of the box with a base coat. (Warning: if you don't use a base coat, you'll need at least 4 coats of color.) Let dry according to directions on the paint can, then finish painting with a coat of semi-gloss color of your choice. After the paint has dried, apply 2-3 coats of polyurethane with fine sanding in between coats. Do not paint the top!

Sand the top of the box to remove any stray paint. (You didn't paint the top, did you? If you did, sand it off! Contact cement won't hold on paint.) Cut the rubber mat to size with a utility knife. Again, angled cuts that continue the slope of the sides will look more professional. Apply one coat of contact cement to the bottom of the mat and one coat to the top of the box. Let dry for 15 minutes before assembling. Contact cement is strong as heck but tricky to work with—you'll get only one shot at assembly and then it's stuck for good, so align the mat with the box carefully before actually setting it on. Be sure to let the contact cement dry until tacky before applying the mat. Use a hammer on the mat to ensure full contact. If done correctly, the contact cement will be stronger than the plywood.

If you plan on stacking the boxes, glue a 4" x 4" piece of leftover rubber mat or plywood to the underside of the top. This will keep the boxes from sticking together.

For a slick custom look, you can create a custom bumper sticker online to use as a label for the box. It's only \$3 plus shipping. If the logo has a distinct border, a nice visual touch would be to carefully cut along the border with a sharp knife before removing the backing. This will make the logo look less like a bumper sticker and more like a custom logo



This would be a cool bumper sticker.

Down and Dirty Bombproof Low Plyo Boxes/Pulling Blocks

Materials

18 feet of 2" x
10" lumber
(actual board
dimensions 1.5"
x 9-3/4")
60 long drywall
screws
Wood glue



Equipment

Saw
Screwdriver (variable speed drill would be very helpful)

Instructions

Cut the lumber into 1-foot lengths. Glue and screw nine pieces together to form one 12" x 13.5" x 9-1/4" block. Make two for use as pulling blocks, used to develop and strengthen the second pull in the Olympic lifts.



Lincoln Brigham is owner of [CrossFit Sedona](#). He is a USA Weightlifting Club Coach, CrossFit level II trainer, and CSCS (Certified Strength & Conditioning Specialist) with the NSCA (National Strength and Conditioning Association). In addition to medaling at the 2002, 2003, and 2004 National Masters Weightlifting Championships, he is a dance instructor and dance competitor and medalist at the 2004 and 2005 United Country Western Dance Council World Championships. He and his girlfriend Adrienne Harris (whom he coached to a gold medal and nine national masters records at the 2003 National Masters Weightlifting Championships) are probably the only people in the country who have competed in and taught both dance and Olympic weightlifting.