

Bleeding Control Prop for Tourniquet Practice *Advanced Bleeding Control*

Introduction

Hands-on skill practice is necessary to developing competence in using commercial or improvised tourniquets. Learners can practice on each other but must take precautions to not overtighten the tourniquet they are using on another person.



A bleeding control prop that simulates the control of bleeding can be an excellent addition to a hands-on training practice for bleeding control. Commercial props are available, but unfortunately they can be very expensive. As an alternative, consider building a low-cost and effective one on your own.

A bleeding control prop for practicing tourniquets should have the following:

- A stable base that can be held or clamped in place
- Realistic limb construction that includes skin, soft tissue, blood vessel, and bone
- The ability to apply a tourniquet by loop or by wrapping around and connecting
- The space to place two tourniquets side by side



All of the materials you need can be easily found. The simulated limb is constructed using a foam pool "noodle" as the main structure of soft tissue, a wooden dowel rod as a long bone in the center of the foam noodle, and an outer covering of shelf liner skin. A length of tubing is also run through the center of the foam to simulate a deep lying blood vessel. The constructed limb is connected to a solid wooden base using carriage bolts.

Preparation



- Begin by preparing the component pieces. To create the base, use a saw to cut a 20" length of 2" x 8" construction lumber.

- Using a 1" auger bit, drill two 1/2" deep countersink holes on the backside on the midline, 4" and 12" from one end. Using a 3/8" auger bit, drill the remaining portion of the holes completely through the board.
- If desired, paint or stain the base. To prevent the base from scratching a surface it might be on, consider applying small rubber or felt pads in the corners.

- Prepare the dowel rod by using a saw to cut a 20" length of 1-1/2" dowel stock. Mark a straight line lengthwise on the dowel and drill through the dowel rod on the straight line, 4" and 12" from one end, using a 3/8" auger bit.

- To prepare the foam noodle, use a coping saw or sharp knife to cut a 20" length of the noodle. Mark a straight line lengthwise on the noodle and cut along the straight line through to the center hole of the noodle using a sharp knife.

- Mark a straight line on a standard 20" roll of shelf liner at 15". Cut along the straight line using a sharp utility knife, to create a 15" by 20" piece.

- Create 1-1/2" slits on one of the 20" sides, 4" and 12" from one end.

Assembly



- Begin your assembly by placing two 7" 5/16 carriage bolts through the drilled holes in the dowel and attaching them tightly using 5/16" locking washers and nuts.



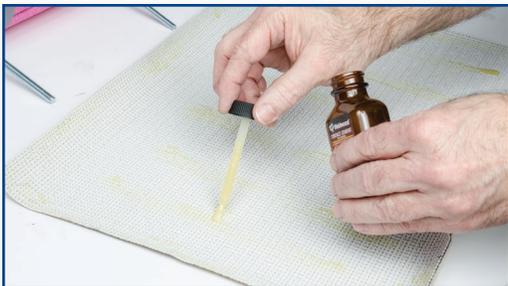
- Cut a 6" piece of 1 1/2" PVC pipe in half lengthwise. Lay the tubing straight and flat along the dowel with the two sections of pipe over it, avoiding the bolt heads. These will ensure effective clamping of the tubing when used. Secure tubing and pipe sections with duct tape.



- Spread the noodle apart and press the dowel cleanly into the center hole. Align the ends of the dowel with the ends of the foam noodle.



- Wrap duct tape around foam noodle at the ends and near the bolts to secure the noodle to the dowel.



- Spread contact glue on the back of the shelf liner, especially on the last 1" or so of each side.



- Align the slits in the liner with the bolts sticking out of the foam noodle and slide the liner up into the bolts until the bolts are at the end of each slit.

Assembly (continued)



- Carefully roll the liner around the foam noodle, keeping the ends of the liner aligned with the ends of the noodle. Flatten and smooth out liner to remove any wrinkles. Make sure the edges are all fully adhered. If needed, apply additional contact cement along edges to make sure they are completely adhered.



- Thread another 5/16" nut onto each carriage bolt so about 1-3/8" of thread is showing.



- Place a flat 5/16" washer onto each bolt and run the carriage bolts through the holes of the wooden base aligning the ends of the simulated limb and the base.



- To finish the prop, attach limb tightly to base using a flat washer, locking washer and nut in the countersunk portion of the holes on the bottom of the base.



- Allow the contact cement to dry completely before testing the prop.

Operation

When ready, the finished prop allows those practicing to fully apply a tourniquet in a manner in which one would be used in real-life. There is enough room between the carriage bolts to wrap a tourniquet band around the limb and attach it on the other side. The extended limb on one end of the prop allows a tourniquet to be looped and slid onto the limb. Both locations on the prop allow for a second tourniquet to be wrapped around or looped on to it.



Clamp one end of the tubing and attach a container of colored water to it. An IV administration set works great, or you can improvise something else. Elevate the container above the level of the prop and position the other end to run off into a receiving container. Unclamp the tubing and allow the water to run freely through the prop. This simulates blood flow through a limb. A properly attached tourniquet should stop the flow of water through the tubing.

Parts List

As described, here are the things you will need for building the prop:

- 1 — Wood base 2"x8"x20"
- 1 — Wooden dowel 1-1/2" x 20"
- 1 — Foam noodle 4-1/2" x 20"
- 2 — 7 x 5/16" carriage bolts
- 6 — 5/16 thread 1/2" nuts
- 4 — 5/16 locking washers
- 4 — 5/16 flat washers
- 1 — Tubing (as pliable as possible)
- 2 — 6" split pieces of 1 1/2" PVC pipe
- 1 — Shelf liner 15" x 20"
- 1 — Hanging container
- 1 — Tubing clamp
- 1 — Receiving container

Tools Required

Here are the tools you will need to build the prop:

- Saw for cutting base, dowel, and pipe
- Power drill
- 1" and 3/8" auger drill bits
- Marking pencil/pen
- Tape measure
- Straight edge
- Utility knife
- Socket wrench
- Adjustable wrench
- Duct tape