

GUIDE TO PURCHASING MATERIALS TO MAKE A PLAYSKIN LIFT™

Item	Potential Source	Cost
<p>To make your Playskin Lift™ from scratch: Fabric - Performance Quick Dry White Poly Spandex Knit (Four way stretch), 92% Polyester/18% Spandex</p> <p>To make your Playskin Lift™ from an off-the-shelf garment: Purchase the desired garment, preferably long-sleeved so the inserts can extend beyond the elbow to support it if your child has significant arm weakness.</p>	<p>Jo-Ann's Fabrics & Crafts</p> <p>(http://www.joann.com/performance-fabric-quick-dry-white/12505202.html)</p> <p>(Item #12505202)</p>	<p>\$14.99/yd (½ yard required to make a typical toddler garment)</p>
<p>Vinyl – Marine Vinyl 100% PVC face/100% Polyester back</p>	<p>Jo-Ann's Fabrics & Crafts</p> <p>(http://www.joann.com/marine-vinyl--french-vanilla/12214060.html#q=marine+vinyl&start=7;)</p> <p>Item # 12214060)</p>	<p>\$17.99/yd (1/4 yard required to make a typical toddler garment)</p>
<p>Phosphate-Coated 1080 Carbon Steel</p>	<p>McMaster-Carr</p>	<p>\$6.48 for 100</p>

Wire, .031" Diameter, 1' Length	(http://www.mcmaster.com/#8907k32/=uq4k2b; Item # 8907K24)	
Heat-shrink Tubing, 0.13" Internal Diameter Before, 0.06" Internal Diameter After Shrinking, 4' Long	McMaster-Carr (http://www.mcmaster.com/#7856k13/=uq415q; Item # 7856K13)	\$1.89
Heat-shrink Tubing, 0.19" Internal Diameter Before, 0.09" Internal Diameter After Shrinking, 4' Long	McMaster-Carr (http://www.mcmaster.com/#7856k14/=uq40t7; Item # 7856K14)	\$2.27
Elastic Hook & Loop Cinching Strap, Nylon, Black, 5/8" Wide, .093" Thick, 12" Overall Length	McMaster-Carr (http://www.mcmaster.com/#3029t132/=uq41ra Item # 3029T132)	\$1.92
General Purpose Athletic Tape	Walgreens (http://www.walgreens.com/store/c/walgreens-general-purpose-athletic-tape-1.5-inch-x-10-yard/ID=prod2301329-product)	\$4.99 for 10 yards (3" required for 1 pair of inserts)
TOTAL MATERIAL COSTS FOR THE CURRENT PLAYSKIN LIFT™ FROM SCRATCH:		\$29.54



How to Make the Playskin Lift Garment

Make the Playskin Lift with off-the-shelf childrens wear, in either the onesie or shirt style.

Written By: Move To Learn Innovation Lab

TOOLS:

- **Sewing Machine** (1)
- **Wire Cutters** (1)
- **Hand Needle** (1)
- **Scissors** (1)

PARTS:

- **Long Sleeve Knit** (1)
- **Long Sleeve Knit Onesie** (1)
- **Plastic Separating Zipper** (1)
- **Marine Vinyl** (1)
- **Velcro Strips** (1)
- **Safety Pins** (1)
- **Straight Pins** (1)
- **Thread** (1)

Step 1 — Select Garment Style



- Choose which style you would like for your PlayskinLift.
 - Shirt Style
 - Onesie Style
- Instructions for both styles are included in this guide.

Step 2 — Prepping for the Zipper



- Lay the garment flat, front side facing up
- Determine the center line of the garment front by measuring the width and marking the halfway point with a pen/pencil
- At this mark, draw a straight line from the neck to the hem
- For the onesie style, the center line will be slightly off center due to the snap crotch closure
- Cut along the center line on the front side only. This will be your zipper opening



Step 3 — Adding the Zipper



- Line up the bottom of the zipper tape with the bottom edge of cut front opening.
- If the zipper is too long for the garment, proceed to step 4: Trimming the Zipper
- Sew the zipper to the garment front opening using a straight stitch on your sewing machine
- Use any seam allowance from 1/4" to 5/8"



Step 4 — Trimming the Zipper



- Use a pencil to mark neckline edge on zipper tape
- Mark second line 1/2" above neckline mark
- Cut tape at the second mark
- Using wire cutters, remove zipper teeth between neckline mark and cut edge of tape
- Fold excess tape at neckline to the back and stitch down to secure.

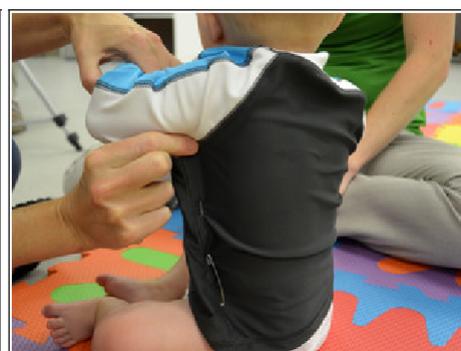
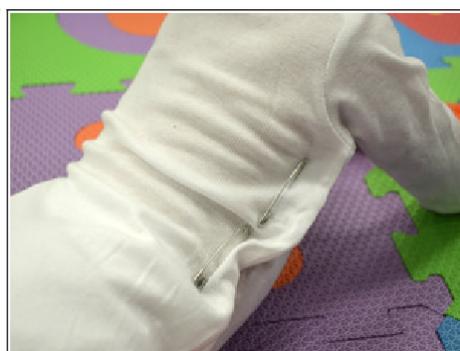
Step 5 — Getting the Perfect Fit.



- You will need the baby!
- Using either the shirt or onesie, put the garment on the baby
- Assess the fit of the garment to decide if alterations are necessary.
- Garment should be fitted, not tight
- Pinch excess along side seam to begin alterations



Step 6 — Fitting the Garment



- Using safety pins, pin the excess fabric along the side seam
- Pin the same amount of excess, as necessary, alongside seam to armpit
- Repeat above steps for the other arm



Step 7 — Fitting the Sleeve



- Starting at the arm pit, continue pinning excess fabric along length of sleeve
- With a safety pin, mark the hem
- Repeat above steps for the other arm



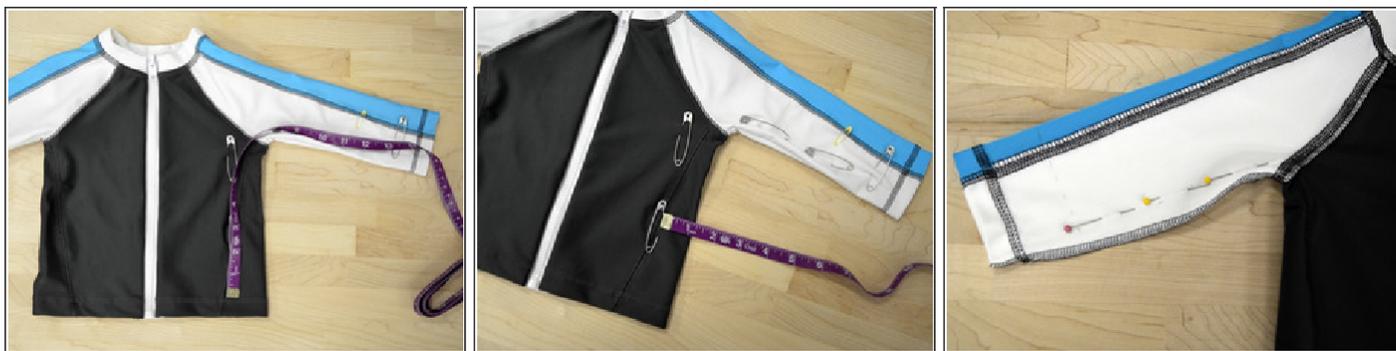
Step 8 — Marking location of the Vinyl Tunnels



- Determine the elbow's location on garment
- Vinyl tunnel should end halfway between elbow and sleeve hem
- Mark this location with smaller or colored safety pins
- Repeat above steps for the other arm

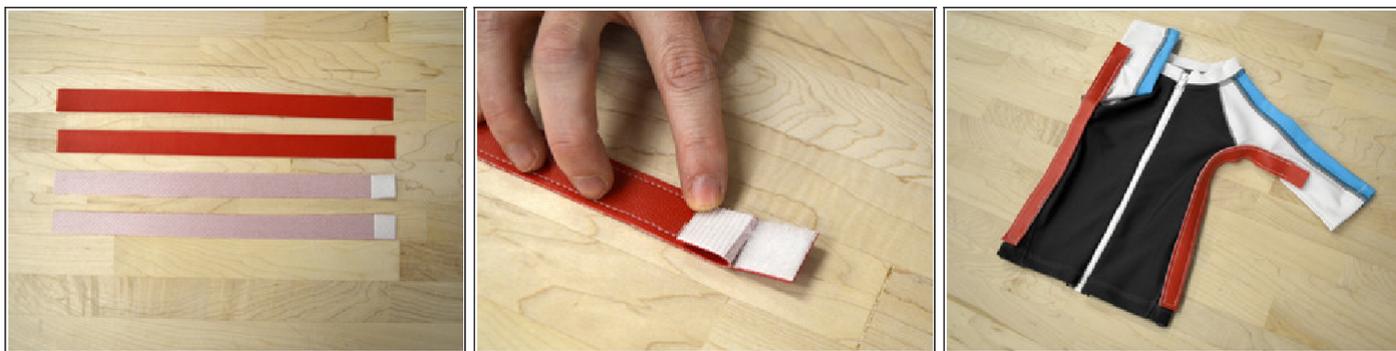


Step 9 — Sewing the Alterations



- Measure & record length from hem (or leg opening for onesie style) to brass safety pin. This is the vinyl tunnel length.
- Measure distance from safety pins to side seam. This will be the new seam allowance for side seam.
- Mark safety pin locations with graphite or marking pencil.
- Hem sleeve by machine to new length, as needed.
- Stitch new side seam following pencil marks. Repeat on other side seam.

Step 10 — Creating the Vinyl Tunnels



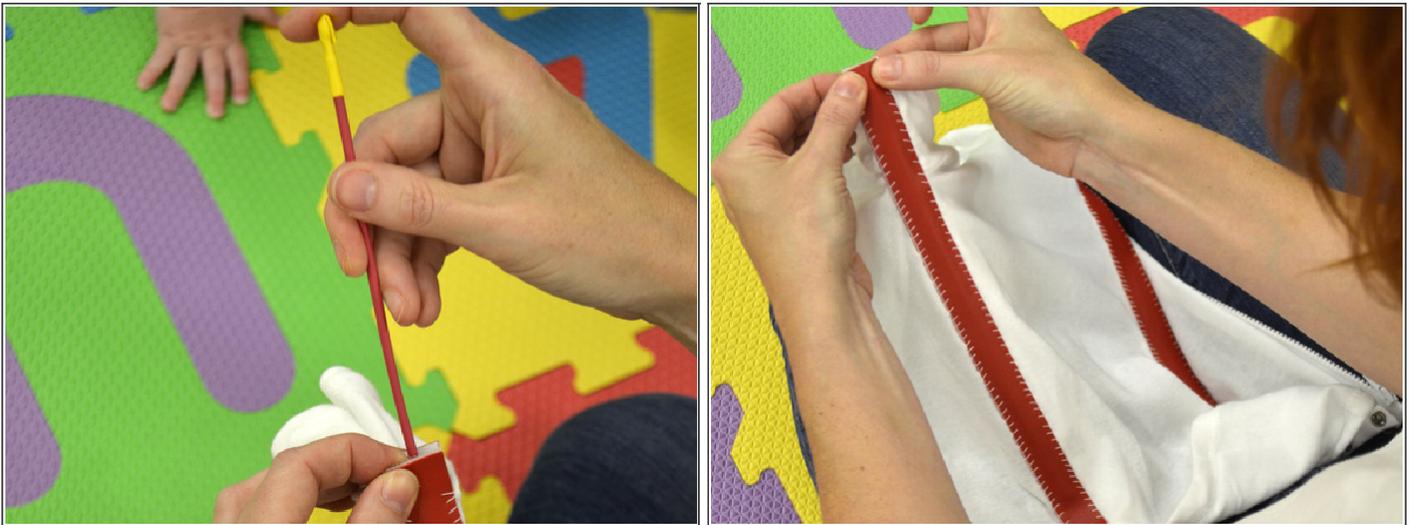
- Cut 4 tunnels from vinyl fabric 1" longer than recorded measurement and 3/4" wide. Attach 1/2" Velcro adhesive tabs (hook side) to end of 2 of the strips.
- To attach by machine:
 - Using a long stitch length, stitch two strips wrong sides together.
 - Stitch from Velcro tab, down long side, across bottom and up other side, ending at tab. The seam allowance will be 1/8".
 - Pin tunnel to garment side seam, from hem to marked end point on sleeve.
 - Stitch along previous stitch line. Attach loop side of Velcro to tab.

Step 11 — Alternate sewing method for tunnels



- Attach Velcro tabs (hook side) to end of 2 vinyl strips.
- Pin vinyl strips, wrong sides together, to side seams of garment.
- Using a whip stitch, hand sew the vinyl strips to the garment side seams.
 - Sew the strips in a "U" shape (along long edge, across bottom, and continuing up other side).
 - Keep stitches close together to secure strips to garment.
- Attach loop side of Velcro tab to vinyl strip.

Step 12 — Adding the mechanical inserts



- One mechanical insert will be used for each vinyl tunnel.
- Slide mechanical insert into tunnel.
- Close Velcro tab.
- Mechanical insert should be added once garment is on the baby.



Step 13 — Wearing the PlayskinLift



- For both PlayskinLift styles, the Velcro straps will be used to secure the tunnel.
- Dress baby in PlayskinLift and add the mechanical inserts.
- Place Velcro straps at tunnel end point. Tighten to secure.
- Be careful not to pull straps too tight. They should only be tight enough to keep tunnel from moving.
- Enjoy the PlayskinLift!



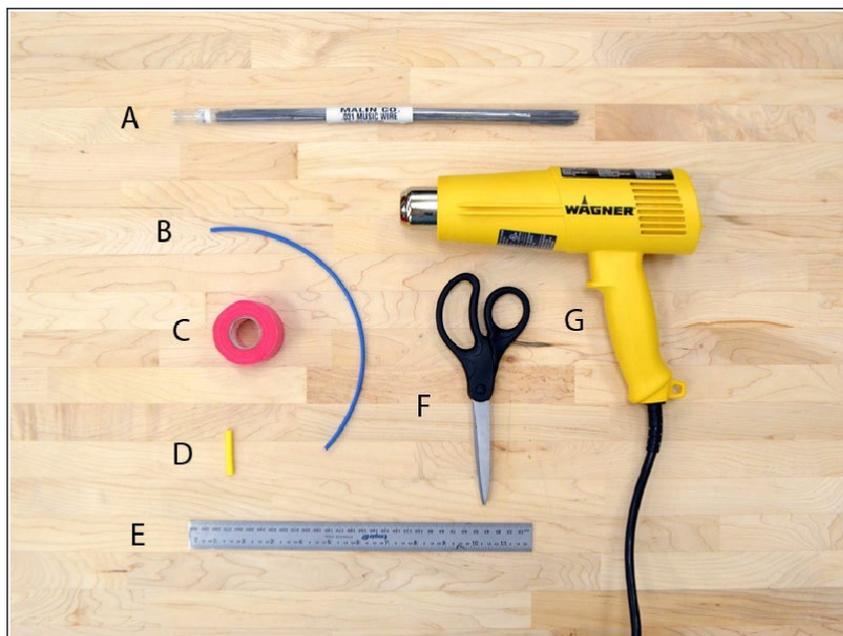


Move To Learn Innovation Lab

How to Make Mechanical Inserts

Written By: John Koshy & Iryna Babik

Step 1 — How to Make Mechanical Inserts



- List of Materials
- A: Bundle of music wire
- B: Heat-shrink wrap tube
- C: Exercise tape
- D: Larger heat-shrink wrap tubing
- E: Ruler
- F: Scissors
- G: Heat gun
- Wire cutters (not shown)
- Safety gloves (not shown)

Step 2

- When you have the vinyl tunnels stitched to the garment, you should measure the length of the inserts that would fit in that tunnel; make sure that length is less than 12" (the maximum length of piano wires is 12").
- Use the table below to determine the necessary power of inserts (in lbs.) depending on the child's age and the length of the inserts; the general rule is that older children need more power, shorter inserts should be less powerful (otherwise, they are too stiff and uncomfortable for the child)

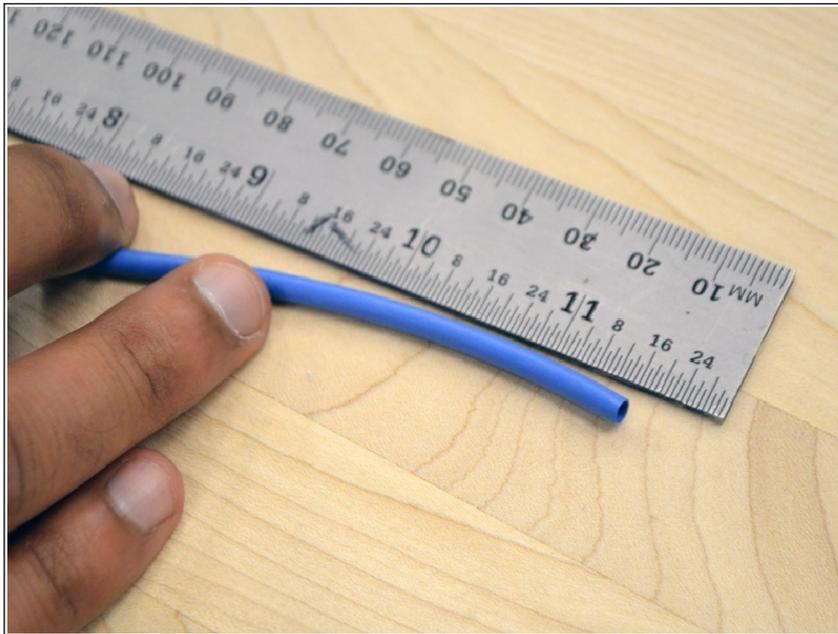
Child's age	Short inserts (8" to 9.5")	Long inserts (9.5" to 12")
4 to 11 mos	0.18 to 0.27 lbs	0.27 to 0.5 lbs
12 to 36 mos	0.18 to 0.5 lbs	0.5 to 1.2 lbs

- When you determined the power of the inserts (in lbs.), look at the next table to identify the number (in purple) and diameter (in green) of the piano wires you will need to make the inserts.
- For example, I am making inserts for 12-month-old child, and his inserts cross the elbow and are 11.5" long. Looking at the table above, I would determine that I need the inserts with the power of 0.5-1.2 lbs. I would make 2 pairs – one less powerful (0.5 lbs) and the other more powerful (1.2 lbs). For this, I would refer to the table below and find that for the 0.5-lbs-inserts, I might use either 12 wires of 0.024" diameter or 20 wires of 0.020" diameter; whereas for 1.2-lbs-inserts, I would take 10 wires of 0.031" diameter. The most popular in our lab combinations are marked in bold red, but you can use different combinations depending on materials available to you.

Power of the inserts (in lbs.)						
Number of wires	Wire diameter (in inches)					
	0.041	0.031	0.024	0.020	0.018	0.016
1	0.446	0.18	0.04	0.0025	0.018	0.0116
2	0.788	0.294	0.065	0.05	0.021	0.0192
3	1.168	0.408	0.09	0.075	0.024	0.0268
4	1.51	0.522	0.135	0.12	0.027	0.0344
5	1.89	0.636	0.18	0.15	0.03	0.042
6	2.27	0.75	0.22	0.17	0.033	0.0496
7	2.65	0.864	0.265	0.19	0.036	0.0572
8	3.03	0.978	0.31	0.21	0.054	0.0648
9	3.41	1.092	0.355	0.23	0.072	0.0724
10	3.79	1.206	0.4	0.25	0.09	0.08
11	4.17	1.32	0.45	0.28	0.108	0.0876
12	4.55	1.434	0.5	0.31	0.126	0.0952
13	4.93	1.548	0.575	0.34	0.144	0.1028
14	5.31	1.662	0.65	0.37	0.162	0.1104
15	5.69	1.776	0.7	0.4	0.18	0.118
16	6.07	1.89	0.75	0.42	0.198	0.1296
17	6.45	2.004	0.8	0.44	0.216	0.1412
18	6.83	2.118	0.85	0.46	0.234	0.1528
19	7.21	2.232	0.9	0.48	0.252	0.1644
20	7.59	2.346	0.95	0.5	0.27	0.176

- Count the appropriate number of wires: 2 sets for 2 inserts (right and left arm)
- Prepare the heat-shrink tubing of a diameter that would hold all the wires (not too snug and not too loose)

Step 3



- Cut the heat-shrink wrap tube of the 11.5" length

Step 4

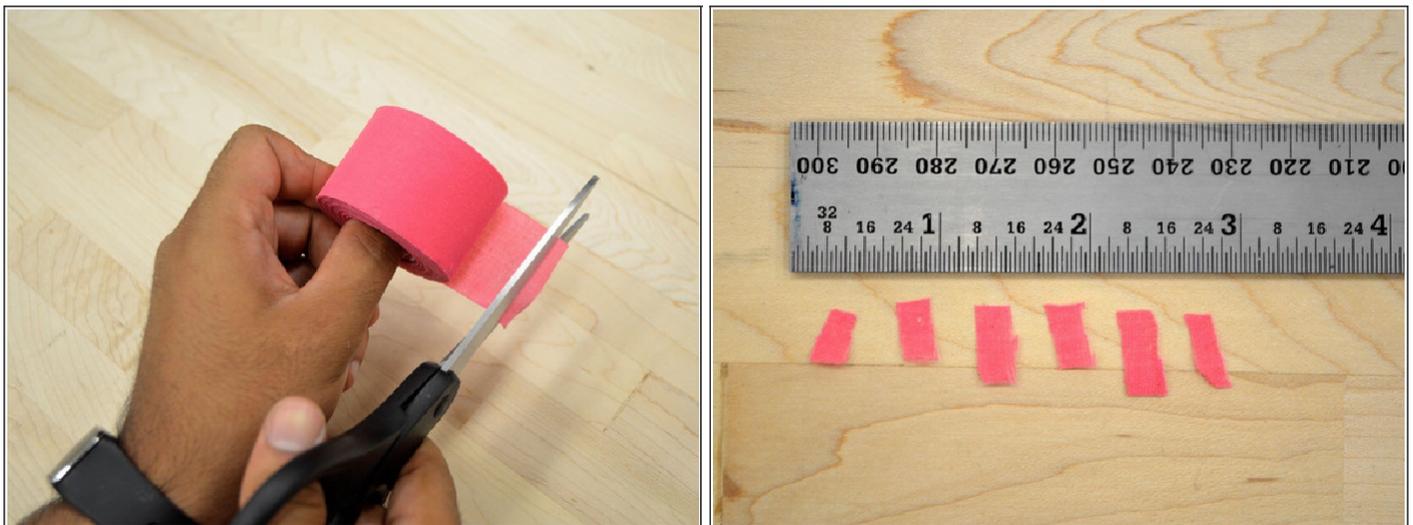


- Insert the bundle of music wires into the heat-shrink tubing
- Make sure that all the wires line up on one side of the insert (originally, wires come in slightly different sizes); the side of the insert with wires not lined-up will be the one you will be cutting to get the desired length of the inserts
- Be sure to leave equal lengths of wire showing on both sides of the tubing

Step 5

- Use the heat-gun to shrink the tubing over the wire; hold the gun about 1.5" away from the inserts while heating them, do not hold the gun in one place, but rather move it slowly along the length of the insert until the tubing gets snug around the wires
- The inserts might get hot; use heat-resistant gloves and be careful not to burn your fingers 
- Now, cut one side of each insert to get the desired length. For example, if my inserts should be 11.5" and wires come in 12" length, I will align my insert along a ruler, mark 11.5" length starting from the accurate side of the insert (where all the wires are lined-up) and cut the rest of with wire cutters
- Make sure that the heat-shrink tubing does not cover about 0.25" of the insert on each side; cut off the tubing if necessary

Step 6

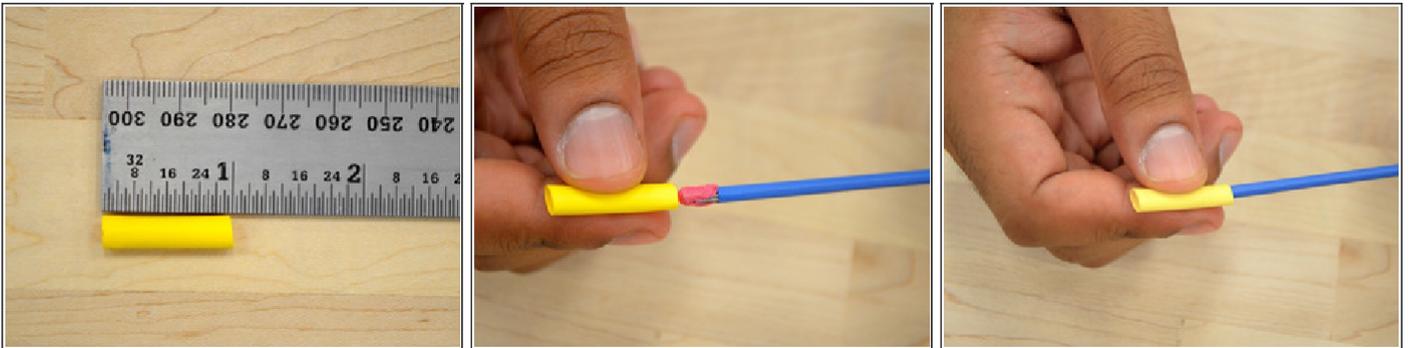


- Cut 10 pieces of athletic tape of size 1/4" x 3/4"

Step 7

- Fold a piece of tape over the exposed wire
- Fold 5 pieces of tape on each side, getting one layer of tape on top of another

Step 8



- Cut the larger tubing into two 1" lengths
- Put the larger tubing over the athletic tape while leaving about 1/4" hanging off the end

Step 9

- Use heat gun to shrink the tubing into position
- While the tubing is still hot cap the end by bending the tubing onto itself
- Be sure to use heat resistant gloves
- Repeat this step so that both ends are sealed



Step 10



- Complete insert