

This device is designed to be worn whenever the patient is experiencing tremors and would like to participate in tasks requiring a steadier hand. For example: cooking, writing, shaking hands, hugging loved ones, etc...

To operate, place sleeve onto arm such that the outside damper is on the outside of the arm when thumb is pointed upward. Sleeving should be snug but not enough to cut circulation, modification may be needed. Do not attempt to operate if any signs of damage or malfunction are visible.

Bill of Materials:

Consumables:

1. 1/8in foamboard
2. hot glue
3. long sleeve shirt of size correlated with compressive fitting sleeves
4. Assorted shot or fishing weights (150g, splittable into 50, 50, 25, 25)

Equipment:

1. Hot Glue Gun
2. Safe place to cut
3. Exacto, razor, or another sharp blade

Steps of Assembly

1. Gather materials from above
2. Trace out needed foamboard parts
3. Cut foamboard parts
4. Plug in and prep hot glue gun
5. Assemble boxes
6. Assemble center support
7. Assemble boxes to arms to center support
8. Cut and assemble forearm sleeves from shirt

Photos are below along with captions to walk through the assembly phase.

Kian Hageman is the party responsible: he alone contributed to design and manufacturing prototypes. Prototype was completed in 5 hours start to finish, the measuring, cutting, and glueing of parts together, two identical boxes and arms are made, then glued to the center support and then to the supportive compression sleeve.

Deliverables: Mathematical model, MATLAB dynamic model, Creo virtual model, prototype sleeves right and left, research.

Improvement: to be made for next prototype; improved materials such as metal and/or plastic casings, include springs and weights, create a non-shirt sleeve that is easily adjustable to a “one size fits all” system.

To Build:

1. Draw and cut foamboard to size, size as follows PER DEVICE.
 - Box (2x); front and back: 4*2.5”, long side: 4*½”, Short side: 2*½”
 - Center Support (2x): 2” diameter circles
 - Arm (2x): 2” 2” diameter circles with a 5” end of circle to end of connection point shaft, shaft is 1” wide, connection point is 1.5” from the bottom of shaft, cut diagonally ¼ inch from perpendicular with width of ½”
 - Raisers (7x): traced and cut from attachment point of Arm, only covers the shoot out and not the shaft.
2. Using hot glue gun, glue but-joints on the face of back foamboard cutout and the side of the long and short cutouts.
3. scale and add weight accordingly to achieve 50g or 25g total weights for boxes. You must have two boxes of the same weight.
4. Hot glue weights down such that the box is more or less balanced at its CenterPoint. (at this time, it may be wise to label what box is what weight)
5. Glue the front panel on
6. Glue Arms as seen in photos below with center support circles affixed to top and bottom. (place such that shafts form a straight line and angled connectors are facing apposing directions)
7. Glue raisers, 3 to one side and 4 another, such that the arm system will sit level on tabletop (Arms are offset from one another by 1 foamboard unit)
8. Paying attention to the orientation of the boxes glue boxes to arm system. Note placement in relation to arm. To best place for you , place forearm thumb pointing upward onto worksurface, place boxes touching arm such that one is on the outside near the wrist, and one is inside near the elbow. Place arm system such that both boxes can be affixed with as much surface area in contact with the box as possible and connections are made near the wrist and elbow. (see photos below)
9. Cut sleeve of shirt to desired length based of size
10. Via eyeballing it, align and affix the shirt sleeve with hot glue to each box and center support on top



Sideview of prototype, note the differentiation of arm height and such 3 vs 4 risers being used. Also note the attachment of arms to boxes relative to the center of the box.









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