

# Therapy Roller

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## Background

Persons with autism deal with sensory issues on a daily basis. For autistic people sensory stimuli can overwhelm the central nervous system. Sometimes children with autism can suffer from breakdowns due to sensory overload. A soothing pressure can help to reset the nervous system. The Therapy Roller applies this type of calming pressure. The main beneficiary of the Therapy Roller described here is a little boy. He is non-verbal and requires a lot of attention. Other autistic students will benefit as well.

## Purpose

The Comprehensive Development Classroom (CDC) at Waterville Elementary School in Tennessee needs a Therapy Roller to assist calming children with autism. Thus, the goal of this project was to design and build a Therapy Roller to apply a calming pressure to the students with sensory issues. The students must use the roller independently and must safely exit at any time. The roller should apply various levels of pressure. The students need to easily adjust the pressure at any time.

## Design/Method

The process of picking the final and best Therapy Roller design involved multiple steps. The first step was to research current Therapy Roller designs and standards related to production of a Therapy Roller. The second step was brainstorming possible Therapy Roller designs which meet the customer's needs. The next step was to create virtual designs of the product using Solid Works and Pro-E software. The device was then partially built for testing with the customer. Final build followed once the fit was satisfied.

## Results

The therapy roller is 33.5" long, 33" wide, and 19" tall. The arms, sides, support slats, and U-braces are cut from 3/4" blondewood plywood. The wooden parts are stained with a water-based stain and sealed with polyurethane. The bottom rollers are 30"-long standard 1.9" diameter steel conveyor rollers with 7/16" hex axles. The top rollers are 30"-long 3/8" diameter steel conveyor rollers with 1/4" round axles. Each roller is covered with a 30"-long 8" diameter super-cushioning polyurethane foam cylinder. The foam is upholstered with a dark green vinyl. 10" mini-bungees are attached from eye bolts on the arms to eye bolts on the side panels to create tension.



The user enters the Therapy Roller from either side. The user enters with arms first, then with the head. As the user's body moves through the roller, the top rollers move up and increase the tension in the bungees. The tension in the bungees causes the pressure from the top rollers. The weight of the user creates the pressure between the user's body and the bottom rollers.

## Conclusions

The final therapy roller design produced by the team was a success. After constructing the Therapy Roller and testing them with the customer at Waterville Elementary School, it was confirmed that the Therapy Roller achieved all intended objectives and performed all intended functions.