

Hope for Teddy: Elizabethtown College students create therapeutic vest for Schreiber Pediatric patient, age 3

 [lancasteronline.com/hope-for-teddy-elizabethtown-college-students-create-therapeutic-vest-for/article_558fe0c4-16f9-11e6-88e9-d303ce080676.html](https://www.lancasteronline.com/hope-for-teddy-elizabethtown-college-students-create-therapeutic-vest-for/article_558fe0c4-16f9-11e6-88e9-d303ce080676.html)

Therapist Diane Weis kneels next to 3-year-old Teddy Rhoades in a treatment room at Schreiber Pediatric Rehab Center.

“Hi,” she says. “How are you doing?”

Gently, Weis guides the child through a series of stretches, then slips him into a brightly colored vest.

Inside the vest are four small motors. When they’re switched on, the vest vibrates, and Teddy’s posture changes dramatically.

His back straightens. His chin lifts off his chest. He looks over at his mother, Jaclyn Rhoades.

Standing nearby, Elizabethtown College engineering students Jake Evans, David Good and Buck Kauffman smile.

The vest is the three seniors’ handiwork, developed over the past year and a half as the capstone project for their degrees.

A therapy aid

[Teddy has cerebral palsy](#). His health had been delicate from birth, and when he was three months old, Rhoades found him blue and unresponsive in his crib. He was revived, but suffered brain damage.

WATCH: Teddy Rhoades' therapeutic vest

To improve his body control and muscle tone, he receives regular physical and occupational therapy. Therapists discovered that stimulating his back with a vibrating device helped him sit up.

The Rhoades family lives in Bowmansville; Teddy has two sisters and a little brother. Rhoades a former nurse, said she frequently attends medical conferences to get ideas for Teddy’s treatment.

At one of them, she learned about vibrating foot pads, which help cerebral palsy patients with posture and walking. Could someone build something along those lines for Teddy, she wondered.

As it happens, Elizabethtown College’s Center for Community Engagement regularly contacts local institutions, including Schreiber Pediatric, to solicit ideas for student projects. Rhoades sent Elizabethtown a letter asking for help.

Evans, Good and Kauffman took on the challenge. They visited Rhoades and observed a therapy session that included stimulation of Teddy’s back. Inspiration struck: Why not free up the therapist’s hands?

After considering various options, they chose to work with a child’s life vest. They pulled out the batting and put velcro inside.

For the vibrating element, they tried cannibalizing various off-the-shelf items, but the frequency wasn’t right: It massaged rather than stimulated. So they went with the four motors, wired to a circuit box that they custom-programmed.

“The vest is amazing,” Rhoades said.

Teddy can wear it about 15 minutes at a time. More than that, and his muscles get used to the stimulation and it stops being effective, occupational therapist Alissa Popalis said.

Multiple benefits

Rhoades said Teddy now associates the vest with his exercises. When she puts it on him, even if it’s not turned on, he’ll stretch and move, she said.

He’s able to sit up longer and move his head in ways he couldn’t before.

Strengthening his core is vital, Popalis said. It improves his head and posture control, his breathing and his eating. With his head up, he’s better able to focus on and respond to his surroundings.

Evans, Good and Kauffman are graduating this weekend, so they’re handing off the project to a group of rising seniors in Elizabethtown’s engineering program.

The plan is to make additional prototypes over the summer and get them into therapists’ hands, engineering professor Sara Atwood said.

The college’s Social Enterprise Institute is looking at potential commercialization, she said. The institute, [started last year](#), promotes initiatives that couple social goals with revenue generation so that each supports the other.

The vest definitely has broad potential, occupational therapist Bernie Hershey said. Evans, Good and Kauffman “came up with a nice, compact way to provide vibration to a set of muscles that are hard to get to in a small child,” she said.

The three students all said the project was fascinating and rewarding. As they watched Teddy sit up, their satisfaction at helping him was palpable.

“It’s a nice feeling,” Evans said.