



UM uses dancing robot to get kids excited about fitness

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Children follow the lead of Nao, a programmable humanoid-robot, in an exercise session at Pinecrest Elementary School in Pinecrest, Thursday, March 20, 2014. The robot-led indoor-exercises were part of the University of Miami's Translational Health In Nutrition and Kinesiology program, which was adopted as part of the YMCA afterschool program at the elementary school. FOR THE MIAMI HERALD

A French robot danced to the song *Gangnam Style* at Pinecrest Elementary on a recent Thursday, leading an auditorium full of kids in an exercise class.

The class was part of a pilot health and fitness program that the University of Miami's Translational Health in Nutrition and Kinesiology, or THINK, hopes to spread through South Florida schools.

THINK and the YMCA of Greater Miami are using the \$8,000 9.5-pound, 23-inch-tall Nao robot in an after-school program to get students excited about exercise.

"It's like a toy, but better," said Moataz Eltoukhy, an assistant professor at UM's department of kinesiology and sports sciences. "It's smart, it's interactive and the kids get excited about it. They want to listen to what it says and replicate what it does."

Eight-year-olds Gabriela and Carolina Lotze not only danced to *Gangnam Style*, but also to Michael Jackson's *Thriller* and *The Chicken Dance*. Students also participated in yoga, a game of Simon Says and some basic exercises like jumping jacks and toe-touches.

The twins' favorite part of the program: freeze dance.

"We get to go crazy and dance and play while we are doing something good for our health," Gabriela said.

"We've learned how to be healthy," Carolina said. "It's not good to eat sugar, and it's good to exercise every day. I think we'll grow up to be doctors."

As the robot's programmer, Eltoukhy punches commands into his laptop to control Nao's functions. It can communicate one-on-one with a student, or perform its pre-loaded lesson plan to an entire class. In addition to exercise, the robot lectures on health-related topics, gives pop quizzes and hosts "brain-fit" games.

Eltoukhy is studying levels of engagement in the students. So far, the findings are positive.

Third-grader Antonio Casaya, 8, called Nao his friend.

"I look forward to going to see Nao and getting my exercise," Antonio said. "He doesn't just teach me how to be healthy, he teaches me how to dance, which is really important."

If findings support the hypothesis that Nao positively engages students, a core curriculum will be developed for robots that can be placed in more schools. A year's worth of lesson plans can be loaded into Nao, which teachers can access via a control panel in the robot's head.

"It can be used for limitless applications," Eltoukhy said. "It can be applied to the education system by simply using the robot to promote health and well being, but it can also be programmed with any curriculum to do different activities based on teacher and student needs."

According to Eltoukhy, Nao was first developed to perform robot therapy with autistic children and he hopes to apply his findings to students with special needs in the future. In the meantime, he wants the robot program to be as prevalent as other science and technology subjects in the school system.

"We would develop a four-year curriculum for children bridging engineering and education together to promote health and well being," he said.

THINK's after-school program as a whole, which includes science labs, cooking classes and cognitive lessons in addition to Nao's workout sessions, started its outreach in schools based on statistics from the Centers for Disease Control: Childhood obesity has more than doubled in children and tripled in adolescents in the past 30 years, and about 12.5 million – 17 percent – of children and adolescents 2-19 are obese.

The pilot is studying 60 students at Pinecrest Elementary who are part of the YMCA's after-school program and their levels of engagement over a 10-week period.

The after-school program, which is currently receiving funding from Positive Promotions, Citizens Board Grant, The Home Depot, Compost305 and Whole Foods, will include its findings in an application for a National Institute of Health grant.

Chantis Mantilla, 27, THINK program director and doctoral candidate at UM's department of kinesiology and sports sciences, said the grant would integrate the program into five schools for a year-long period, and an additional school each year for five years after that.

"It's not like a teacher lecturing, which typically disengages students. With this program, students partake in more interactive activities," Mantilla said. "They know how to take their blood pressure, how their cardiovascular system works and how to read nutrition labels. High school kids and college students don't even have exposure to this kind of information."

Mantilla said the only negative feedback she's received about the program is its current restriction to one small group of students. With the help of the grant and the YMCA, she hopes the program will expand not only in Miami-Dade schools, but to Broward County, too.

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