



Spotlight:

# Battling Obesity

[Cal State Fullerton](#) » [Inside Online](#) » Spotlight



### Researching Prader-Willi

Professors study genetic disorder in effort to find possible remedies



### Keeping Fit

Shari McMahan shares 11 helpful tips for getting and staying healthy



### Building Bonds

Partnerships between CSUF and local agencies help improve community health



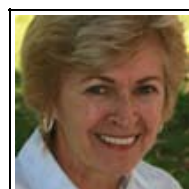
### Joining Forces Abroad

Prevention is goal of partnership with Mexican university and health care agencies



### Healthy Living

Center promotes obesity prevention through research and community programs



### Health Matters

CSUF contributes to well-being through education, research, outreach and service



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# Taking Aim at Obesity

Researchers Study Genetic Disorder and Possible Remedies

[Health Tips From a Pro](#) | [Obesity Statistics](#) | [Cause for Concern](#)

Stories by Mimi Ko Cruz '91 | Photography by Kelly Lacefield

**Cameron was so hungry, he picked through his school cafeteria trash bin for extra food.**

“He was in first grade at the time and when his teacher told me he took food out of the garbage, it was like a physical feeling of being punched,” his mother, Lisa Graziano, said. “That’s when his disorder hit me full force. Since then, we’ve had to lock up all the food in the house because if it’s left out, he’ll eat it.”

Cameron, now 10, has Prader-Willi Syndrome (PWS), a genetic disorder that causes an insatiable appetite, often resulting in life-threatening obesity.

Thanks to the vigilance of his parents, Cameron is not obese. The fourth-grader eats “extremely healthy” food every two to three hours, and he plays baseball, soccer and basketball, Graziano said. “He’s a hard-working, funny kid with a busy schedule. He enjoys a typical kid life.”

But, food is a constant preoccupation, she added. That’s why she signed up to be one of the focus families in a research study being conducted by professors at Cal State Fullerton and the University of Florida.

Cameron was diagnosed with PWS when he was 13 days old, after his pediatrician noted his symptoms – inability to suck or keep his eyes open, severe hypotonia (low muscle tone) and failure to thrive. In 1999, when he turned 9 months and he stopped growing because of the disorder, Cameron was approved for a growth hormone medication that he still receives nightly in the form of an injection.

“Anything that focuses on how to teach parents to help their kids stay active and incorporate physical activity is essential and



crucial,” said Graziano, who serves as executive director of Prader-Willi California Foundation.

“This is such a wide-ranging disorder, and there is so much that we know now that will help kids and families improve the quality of life for our kids, but there also is so much that we don’t know.”



Cameron Graziano, 10, has Prader-Willi Syndrome, a genetic disorder that causes insatiable appetite, often resulting in life-threatening obesity. But thanks to the vigilance of his parents, he is not obese and “enjoys a typical kid life,” said his mother, Lisa. (Left and center images courtesy Lisa Graziano). Professor Daniela A. Rubin uses a DXA (dual X-ray absorptiometry) machine to measure a youngster’s body fat and bone density.

Prader-Willi Syndrome is part of a growing national health challenge, according to researchers at Cal State Fullerton’s Center for the Promotion of Healthy Lifestyles and Obesity Prevention and the University of Florida’s College of Medicine. Faculty members at both institutions are exploring the disorder’s links with childhood obesity.

Studying youngsters with PWS when they exercise “can help us understand how to use exercise interventions to improve health and quality of life of children and teens with PWS and those who do not have the syndrome,” said Daniela A. Rubin, Cal State Fullerton assistant professor of kinesiology and the study’s lead researcher.

The research, first funded by an \$895,000 federal grant, began last year. Cal State Fullerton’s Center for the Promotion of Healthy Lifestyles and Obesity Prevention helped secure the U.S. Medical Research Agency grant, which was sponsored by U.S. Rep. Ed Royce (R-Fullerton).

Another \$3.1 million to continue the project has been authorized by Congress.

“This research will help with a growing national health problem,” said Royce ’77 (B.A. business administration-accounting). “Prader-Willi Syndrome is a complex and potentially devastating condition that, if studied, may help control obesity and reduce health care costs over the long run.”

The study, Rubin explained, aims to understand how the genetic disorder, which affects one in 12,000 to 15,000 people, can be managed through exercise. “The idea is to see how children with Prader-Willi respond to different kinds of exercise,” she said.

Cal State Fullerton is collaborating with Children’s Hospital of Orange County to carry out the exercise studies in PWS children.

The project also aims to understand the role of parents and family when it comes to their children’s physical activity. “We want to understand the factors that will increase participation in physical activity or interventions from a caregiver’s point of view,” Rubin said. “Thus, we are recruiting parents to talk with us about exercise and their child, the challenges they face and what they think might work.” That part of the study is being conducted by Michele Mouttapa and Jie Weiss, both CSUF assistant professors of health science.

Organizations such as the Prader-Willi California Foundation, Foundation for Prader-Willi Research and Prader-Willi Syndrome Association have been helping to recruit study participants, Rubin said, adding that children ages 8 to 11 who do not have PWS also are being recruited to take part in the study.

Researchers at the University of Florida’s College of Medicine are looking at understanding changes in hormones in PWS and how they are related to eating patterns.

“We are tackling Prader–Willi Syndrome from two key aspects: exercise and nutrition,” Rubin said.



Daniela A. Rubin, assistant professor of kinesiology, is lead researcher for the Prader–Willi Syndrome study being conducted by Cal State Fullerton and the University of Florida’s College of Medicine.

The study’s results will be reported upon completion next year.

It’s a groundbreaking study in the eyes of Roberta E. Rikli, dean of Cal State Fullerton’s College of Health and Human Development.

“Because PWS is the most frequently diagnosed genetic cause of obesity, it provides a valuable tool in the scientific study of obesity for genetically induced and nongenetic obese populations.”

In the past two decades, researchers have established that people with PWS undergo a complex progression of six nutritional stages from infancy through adulthood, said Daniel J. Driscoll, professor of pediatrics and genetics at the University of Florida’s College of Medicine.

Working with Rubin, Driscoll and a team of his colleagues are performing a longitudinal study, as part of the project, to delineate and dissect the six nutritional phases in PWS.

Obesity is a multisystem disorder, and its prevalence is increasing dramatically worldwide, Driscoll said.

“Particularly alarming is the increase in childhood obesity,” he noted. “We believe that by studying the cause of obesity in individuals with PWS and early onset morbid obesity, we will gain invaluable insights into the causes and nutritional pathways for obesity in general. The more we understand about the underlying causes of obesity, the more equipped we will be to treat and prevent this condition.”

Also taking part in the project are Susan J. Clark, director of endocrinology and diabetes at Children’s Hospital of Orange County and head of CHOC’s Prader–Willi clinic, and a team of her colleagues. Other collaborators at Cal State Fullerton include Dan Judelson, assistant professor of kinesiology, and Shari McMahan, chair and professor of health science and director of the Center for the Promotion of Healthy Lifestyles and Obesity Prevention.

This university center was created as a result of the dramatic increase in childhood obesity, which has become one of the country’s most urgent health concerns during the past decade. Recent reports from the U.S. Centers for Disease Control and Prevention estimate that one in three U.S. children will become diabetic – largely due to obesity and inactivity – unless health habits change.

CHOC’s Prader–Willi clinic has experienced a noteworthy increase in patients since it opened about three years ago, Clark said. The numbers double each year, she said, adding that the clinic had 25 patients, from newborns to 21–year–olds last year.

“Keeping these kids active is very difficult, and if Dr. Rubin can determine what is the most effective exercise program for them, that will help us advise our families on activities that will be helpful in maintaining a healthy weight,” Clark said. ■



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# Taking Aim at Obesity

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[Back to story](#)

## Health Tips From a Pro

Anyone can benefit from healthy living, thus avoiding obesity. Here are a few tips, provided by Shari McMahan, chair and professor of health science and director of the Center for the Promotion of Healthy Lifestyles and Obesity Prevention:

- 1** Exercise regularly. This is by far one of the most important things to do to maintain the cardiovascular system and skeletal system. Examples: Walking and strength training, which becomes increasingly important as you get older.
- 2** Get social support. A friend is a great way to make sure you commit to your exercise regimen. If none are available, a dog makes a good exercise companion.
- 3** Start with breakfast. People who have the tendency to maintain their weight always start with a healthy breakfast.
- 4** Keep a food diary. You'd be surprised by your food intake. Keeping a diary helps you think about the food you are eating.
- 5** Do not lose more than two pounds a week. Set realistic goals. Losing too much weight at one time is not healthy or realistic. Yo-yo dieting is hard on the body and could lead to illness.
- 6** Eat without distractions. We consume more calories eating in front of the TV than if we are sitting at our dining table.
- 7** Try spicing up your cooking. Adding different spices enhances the flavor of food and helps you feel more satiated.
- 8** Read food labels. Often, people don't look at serving sizes. How many calories are there per serving and how many servings per container?

## Prader-Willi Syndrome

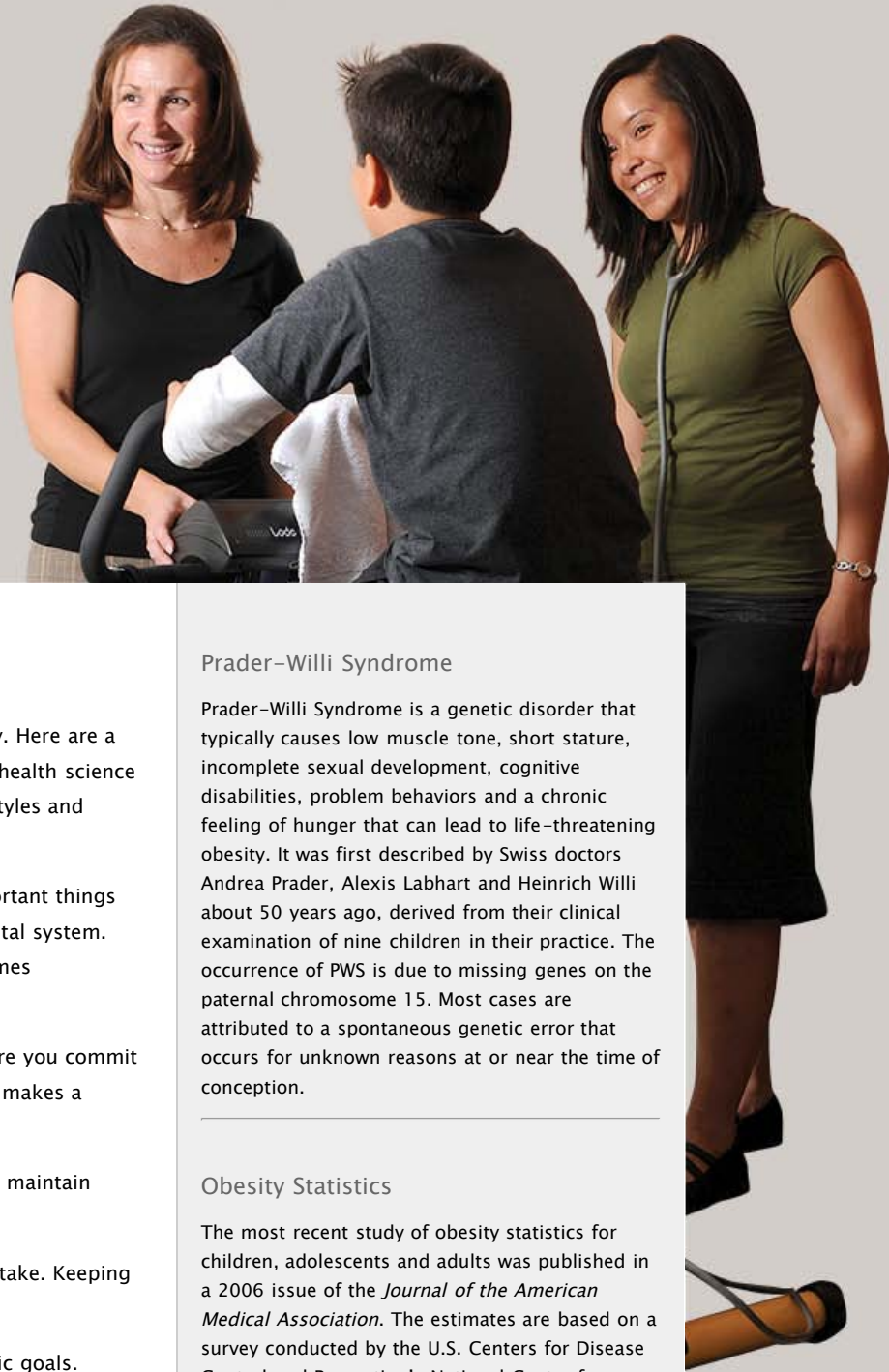
Prader-Willi Syndrome is a genetic disorder that typically causes low muscle tone, short stature, incomplete sexual development, cognitive disabilities, problem behaviors and a chronic feeling of hunger that can lead to life-threatening obesity. It was first described by Swiss doctors Andrea Prader, Alexis Labhart and Heinrich Willi about 50 years ago, derived from their clinical examination of nine children in their practice. The occurrence of PWS is due to missing genes on the paternal chromosome 15. Most cases are attributed to a spontaneous genetic error that occurs for unknown reasons at or near the time of conception.

## Obesity Statistics

The most recent study of obesity statistics for children, adolescents and adults was published in a 2006 issue of the *Journal of the American Medical Association*. The estimates are based on a survey conducted by the U.S. Centers for Disease Control and Prevention's National Center for Health Statistics. Here is a look at the numbers:

- In 2004, 17.1 percent (more than 12.5 million) of American children and adolescents, ages 2 through 19, were overweight, and 32.2 percent (66 million) of adults were obese.
- Of those numbers, about 30 percent of white adults, 45 percent of black adults and 37 percent of Mexican-American adults were obese.

## Cause for Concern



**9** Go low. Foods with a low glycemic index help us regulate blood sugar. That's why eating a healthy breakfast is important so we don't have a second meal before lunch.

**10** Check portion size. Be aware that portion sizes have changed over the past 20 years. What was considered one serving now is several.

**11** Take your time eating. It will help you feel fuller.

The number of overweight Americans has more than doubled in the last three decades, according to the U.S. Centers for Disease Control and Prevention. Being overweight or obese increases the risk of myriad diseases and health conditions, including:

- Hypertension
- Dyslipidemia (for example, high total cholesterol or high levels of triglycerides)
- Type 2 diabetes
- Coronary heart disease
- Stroke
- Gallbladder disease
- Osteoarthritis
- Sleep apnea and respiratory problems
- Some cancers (endometrial, breast and colon)



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