



Adolescence

A time to grow up fit for life

Adolescence is a time of dramatic physical and emotional upheaval. It's also a time when many young people gain weight as their exercise levels and appetites change.

"It's essential to understand that adolescence is a crucial period for weight gain," says Penny Gordon-Larsen, PhD, UNC

nutrition associate professor. In her wide-ranging research on adolescent obesity, Gordon-Larsen has studied a representative group of Americans, starting in their teens and following them through their early 30s. In 1996, 13.3 percent of adolescents were obese; by 2008, obesity prevalence had increased to 36.1 percent. Ninety percent of the adolescents obese in 1996 remained obese in 2008.

"With the vast majority of obese adolescents staying that way into adulthood, it is critical that we develop programs to prevent the problem in adolescence," says Gordon-Larsen. "If we can interrupt that trajectory, we will save money later in terms of cardiovascular and other health risks, and we

will help these young people have healthier and longer lives."

Gordon-Larsen is one of many UNC Gillings School of Global Public Health faculty members who have long been committed to addressing the youth obesity epidemic. June Stevens, PhD, nutrition professor and department chair, was the principal investigator for "Trial of Activity in Adolescent Girls," a pioneering National Institutes of Health-funded study. Known as TAAG, it explored ways to increase physical activity among sixth-grade girls between 2003 and 2006. The program continues to serve as a model for communities throughout the country.

"Get 60," another innovative program, was a partnership between UNC's public health school and athletics department and The Gatorade Company. Designed to



Dr. Penny
Gordon-Larsen

TIP

Leave
off the TV
during
meals.



It's essential to understand that adolescence is a crucial period for weight gain.

(Right) Adolescents don't have to play the most active games to achieve health benefits – as long as they replace TV time with something more active. (Below) Brothers Isaiah and Joe King select fruit for an afternoon snack. The boys participated in research conducted by Dr. May May Leung (see page 13).



PHOTO BY KRIS HOYT



students in kindergarten through grade 12.

As the fight against adolescent obesity continues, UNC researchers turn to newer technologies to help reduce and prevent weight gain. For her doctoral dissertation, Elizabeth Lyons, PhD, and her adviser, Deborah Tate, PhD, associate professor of health behavior and health education and of nutrition, conducted a Robert Wood Johnson Foundation-funded study of video games played by 18- to 35- year olds. The results can be extrapolated to younger teens.

"The study's premise was not only to determine how much energy people can expend playing different

types of video games, but also to consider how much they enjoyed different types of games," says Tate. "The games that use the most energy expenditure may not be the ones that people like playing the most."

Quantifying the impact of school physical education (PE) programs on physical activity patterns was a key part of research by Gordon-Larsen, along with Barry Popkin, PhD, and Robert G. McMurray, PhD, both UNC nutrition professors. They found that students participating in daily PE classes were twice as likely to be physically active than students who were not enrolled in any school PE. Their study offered empirical data used to support passage of the national Physical Education for Progress Act. PEP, as it was called, was passed in 2000 to provide expanded physical education programs for

leverage student athletes' influence as role models, the program brought UNC athletes to local schools to encourage the children to be active 60 minutes each day. The program, now replicated in other parts of the country, provides materials to teachers, parents and student athletes describing how to help young people become more physically active. Nutrition professor Dianne Ward, EdD, led the development of the program.

"People don't have to be playing the most active games to achieve some benefit in terms of a public health impact," Lyons adds, "if they are replacing their TV time with something that is even *slightly* more active."

School researchers are not focused only on exercise as a means of addressing the issue of weight. Noel Kulik, another doctoral student of Tate's, focuses her dissertation research ►►

This may be the first time ever that the next generation of children will have a shorter life span than their parents, on average, and that change would be driven by obesity.

on adolescent social support for weight loss.

Tate has led a variety of studies with adolescents, including “enerG,” which used the Internet to help adolescent girls lose weight. While the researchers found that adding the Internet was not beneficial to adolescents, they realized that the intensive face-to-face program they developed as a control arm of

the study was very effective.

The SNAP (Study of Novel Approaches to Prevention) program – led by UNC principal investigator Tate and currently recruiting people ages 18 to 35 – aims for weight gain prevention through early adulthood. (See www.snapstudy.org.) Even if young people emerge from adolescence at normal weight,

research shows that the average weight gain for Americans in the years between age 18 and 35 is 30 pounds.

Under the direction of Dr. June Stevens, Dan Taber, PhD, conducted dissertation research at UNC that examined whether adolescent weight gain can be influenced by public policy. Taber studied the association between soda consumption and Body Mass Index (BMI) in adolescents in states that changed their policies to

restrict junk food in schools. He also measured differences across racial and ethnic groups. The study suggests that changes in state policies restricting junk food in schools can reduce soda consumption among adolescents, particularly non-Hispanic blacks, but there was no impact on BMI percentile. Taber says the findings support a need for comprehensive policy change – in and outside of schools. He says additional research is needed to evaluate the impact of comprehensive policy change on obesity.

As Stevens notes, “This may be the first time ever that the next generation of children will have a shorter life span than their parents, on average, and that change would be driven by obesity. Obesity is an extremely important public health problem that should have a simple solution: children need to eat healthier diets and be more active. But it’s actually quite complicated and challenging to make that happen. It needs to happen not just in a few individuals, but in the entire population of children in our country, because while not all children are obese, all children need to eat healthy diets and be physically active.”

–Michele Lynn

BODY MASS INDEX (BMI)

The Body Mass Index (BMI) is a measure that determines percentage of body fat based on a relationship of weight to height. A person is considered “overweight” if his or her BMI is between 25 and 29.9, and “obese” if the BMI is 30 or above.

There are many BMI calculators available online,* but here’s one way to determine it:

- A = Your body weight divided by your height
- B = ‘A’ divided by your height
- BMI = B x 703

Therefore a person who weighs 140 pounds and is 5’5” (65”) tall has a BMI of 23.2:

- $140/65 = 2.15$
- $2.15/65 = 0.033$
- $0.033 \times 703 = 23.199$

A more informal way of calculation suggests that someone is “overweight” if he is 10 percent above healthy weight for his height, and “obese” if 30 percent above healthy weight.

*For example, see <http://tinyurl.com/bmi-at-cdc>.

TIP

Try to eat two meals together at home each day.

