Supervised fun, exercise both provide psychosocial benefit to children with obesity

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Dr. Catherine Davis and Celestine Williams. Credit: Phil Jones, Senior Photographer, Augusta University

A program with clear rules, routines and activities, attentive adults and a chance to interact with peers appears to work as well at improving the quality of life, mood and self-worth of a child who is overweight or obese as a regular exercise program, researchers report.

While regular exercise is clearly beneficial to children—and adults—the psychosocial health of children may benefit as much from other kinds of adult-led after school programs, Medical College of Georgia researchers report in the journal *Translational Behavioral Medicine*.

"For me the take-home message is yes, exercise has many wonderful benefits but some of that is because you are in a program run by caring adults," says Dr. Catherine Davis, clinical health psychologist at MCG's Georgia Prevention Institute and the study's corresponding author.

They looked at 175 predominantly black children ages 8-11 who had overweight or obesity and were previously inactive. Children participated in either a fun-driven aerobic exercise program or a sedentary after-school program where they played board games and did artistic activities.

The investigators hypothesized that they would find that the exercise intervention would be more effective at improving quality of life, mood and self-worth than the sedentary program.

They found instead that, while the exercise program had the additional benefits of reducing body fat, improving fitness, and even improved brain health, there was no mood advantage from the exercise program. Fatness and fitness did not change as much in the sedentary group.

In fact, in the case of the boys, those in the sedentary group reported depressive symptoms actually decreased more over time than their peers in the exercise group.

About 10 percent of children in both groups had symptoms indicating depression at the start of the study. Depressive symptoms in children include things like a sad mood, interpersonal problems and inability to feel pleasure.

Among participating girls, depressive symptoms yielded similar improvements whether in the exercise or sedentary group, says Celestine F. Williams, senior research associate at the Georgia Prevention Institute and first author on the study.

Those sex differences might be attributable to males in the sedentary group not being under the pressure they may feel to participate and succeed in physical activities, and finding instead an opportunity to pursue more artistic and social endeavors, which children of this age tend to prefer, the investigators write.

Countless studies, including some led by Davis, have shown that regular physical activity in children who are overweight or obese and inactive can yield a variety of benefits, including reducing fatness, improving fitness and insulin sensitivity—which reduces the risk of diabetes and other maladies—as well as perhaps less obvious benefits, like improved cognition and improved brain health, and reduced anger and depression.

This time Davis and her colleagues wanted to more directly compare the impact of an exercise program versus a similar sedentary program on the psychosocial wellbeing of these children. While there are often control groups in this type of study, most compare the exercise program to either no program, or a less interactive and fun program. Davis and Williams agree that likely was a big part of the differences they found this time.

All the children were evaluated for depressive symptoms, anger expression, self-worth and quality of life right before starting and after finishing either arm of the study. Depressive symptoms and quality of life were measured again about a year later.

In the exercise program, the instructor led fun aerobic activity for 40 minutes daily based on the interests and abilities of the children. Rather than time on a treadmill, for example, there were more entertaining

strategies to get and keep the heart rate up like a version of the age-old game tag. Children wore heart rate monitors and were rewarded for an average heart rate above 150 beats per minute during the exercise—the average resting heart rate for an 8-year-old is 70 to 110 beats per minute—and they got more points for a higher average.

In the other group, children participated in instructor-led activities like board games, puzzles, arts and music, and were rewarded for participation and good behavior. There were arts and crafts, challenging games like the strategy board game Connect 4, guitar music and singing popular songs, and the children were rewarded with points for being nice and cleaning up behind themselves. The children were free to talk with each other as long as it was not disruptive, which was probably a highlight for the boys, Williams says.

Relationships the children built with each other over the course of both programs likely were beneficial in elevating their mood and quality of life, Williams says. The sedentary program may have given children more time to talk with each other and develop friendships with little competitive pressure.

Other investigators have shown that children in the 8-11 age range may actually prefer just talking or socializing with their friends as a fun activity, rather than some form of exercise, while younger children may think it's more fun to run around, Williams says.

The fact that both programs provided psychosocial benefit to the children led the investigators to conclude that some benefits of exercise found in previous studies, including Davis', resulted from the regular opportunity to be with attentive adults who provide behavioral structure. It also resulted from the children enjoying interacting with each other, sharing snacks and other activities, while spending less time watching television.

Rates of obesity among children and the adolescents in this country have more than tripled since the 1970s, according to the Centers for Disease Control and Prevention, and currently about 1 in 5 school-age children and young people has obesity. Young blacks are disproportionately affected in this country.

There is plenty of evidence that obesity and overweight can impact overall quality of life and that children with these conditions can have increased problems with anxiety, bullying, fatigue, anger and general behavior problems, and that generally higher BMI, or body mass index, a ratio of weight to height, is associated with a lower self-worth in children.

"Exercise is very well demonstrated to improve mood. However, I think you have to consider exercise in the context that it occurs, so the social context counts too," says Davis.

More information: Celestine F Williams et al, Exercise effects on quality of life, mood, and self-worth in overweight children: the SMART randomized controlled trial, *Translational Behavioral Medicine* (2019). DOI: 10.1093/tbm/ibz015

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