Jumpin' Jaguars

Encouraging Physical Activity After School

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The U.S. government's *Physical Activity Guidelines for Americans* suggest that children should engage in moderate to vigorous physical activity for 60 minutes per day (U.S. Department of Health and Human Services [U.S. DHHS], 2008). However, recent data indicate that children in the U.S. are not accumulating enough physical activity (Centers for Disease Control and Prevention, 2014). The concern is deepest for youth of lower socioeconomic status and youth of color (Moore, Davis, Baxter, Lewis, & Yin, 2008; Singh, Kogan, Siahpush, & van Dyck, 2008). As a result, professionals in a variety of fields have pushed for physical activity promotion for youth (Pate et al., 2006).

Schools are promising locations for promoting physical activity; most American children attend school, and schools have the infrastructure to accommodate physical activities (U.S. DHHS, 2000). First Lady Michelle Obama has endorsed physical activity and nutrition for all youth through the Let's Move campaign (Let's Move, n.d.). Let's Move Active Schools outlines the role schools can play in promoting physical activity. Its Comprehensive School Physical Activity Programs include five components: physical education, physical activity during school, staff involvement, family and community involvement, and physical activity before and after school (Let's Move Active Schools, n.d.).

Afterschool programs, because they are attended by 10.2 million youth for an average of eight hours per week, are vital settings for promoting physical activity and health (Afterschool Alliance, 2014). Currently, 14 state-level afterschool organizations have adopted physical activity policies (Beets, Wallner, & Beighle, 2010).

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Those policies vary greatly. Some simply advocate for providing daily play time; others offer more specifics, such as devoting 20 percent of program time to moderate to vigorous physical activity (Beets, 2012). None of the policies either were based on data collected in afterschool environments or include accountability measures (Beets, 2012). Although policies are important, they may not be effective if they are not evidence based or cannot be enforced.

National recommendations would have afterschool participants engaging in moderate to vigorous physical activity for at least 20 percent of program time or 30 minutes, whichever is more (Wiecha, Gannett, Hall, & Roth, 2011). Moderate-intensity activity requires a person to work hard enough to raise the heart rate and break a sweat; vigorous activity significantly increases an individual's heart rate (World Health Organization, 2015). Recent studies have found that afterschool programs contribute between 13 and 24 minutes of moderate to vigorous physical activity for youth (Beets, Rooney, Tilley, Beighle, & Webster, 2010; Trost, Rosenkranz, & Dzewaltowaki, 2008). Other studies suggest that afterschool programs provide less than one-third of the daily physical activity recommended for children (Beets, 2012). Although these figures are disappointing, they show that afterschool programs have a lot of potential to encourage physical activity.

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Many afterschool physical activity programs and curricula are available, but evaluation of their effectiveness is needed (Beets, 2012). Well-marketed programs such as the Child and Adolescent Trial for Cardiovascular Health (CATCH) Kids Club have shown limited effectiveness in increasing physical activity for participants in comparison to control groups (Kelder et al., 2005; Sharpe, Forrester, & Mandigo, 2011). However, other afterschool programs increased the amount of time children spent in physical activity by up to 17 percent (Beets, Beighle, Erwin, & Huberty, 2009). Effective strategies for increasing physical activity in afterschool programs include, for example, allocating time specifically for physical activity and providing professional development to help staff foster physical activity among youth and participate themselves in physical activity (Beets, 2012).

To add to this discussion of the effectiveness of afterschool physical activity programs, we developed, implemented, and studied a physical activity program called Jumpin' Jaguars for elementary-aged children. This paper describes the implementation of Jumpin' Jaguars in one school, outlines our findings on its physical activity outcomes, and offers recommendations, based on our findings, for improving physical activity levels in afterschool programs.

Context

Researchers from the University of Kentucky collaborated with an elementary school in Lexington to develop and implement Jumpin' Jaguars in the 2011–2012 school year. This physical activity and nutrition education program consisted of twice-weekly 90-minute sessions in which the participants engaged in physical activities and ate nutritious snacks provided by local grocery stores. The physical activity lessons, typically 60 minutes long, were usually led by the school's physical education teacher. A local dance studio provided Zumba classes once a month, and the YMCA provided swimming lessons two afternoons a month.

On a typical afternoon, Jumpin' Jaguars participants shared a healthy snack and then went to the school gym for 60 minutes of physical activity programming. On swimming days, they went by bus to the YMCA, which was located close to the school. Zumba was offered in the school gym.

On days when regular physical activities were offered in the gym, the instructor would turn on music for warm-up activities. Next, the instructor led the children through the fitness segment of the lesson, which engaged them in such cardiovascular activities, as running, jumping, galloping, and skipping during tag games. This segment might also work on flexibility or offer innovative ways of doing strength exercises such as push-ups and sit-ups. Most of these activities were offered circuit-training style: Students would do an activity for 30–45 seconds and then rest or stretch for 30–45 seconds. The final portion of the activity session involved a game. Often the game was some form of tag, in which children were eliminated once they were tagged and had to sit on the edge of the playing area. In the sessions we observed,

the game was played several times, so participants were not sitting for long periods of time.

Methods

We studied Jumpin' Jaguar activities and participants to see how successfully the program engaged students in moderate to vigorous physical activity.

Participants

The school from which we recruited study participants was a K–5 elementary school in which 90 percent of students qualified for free or reduced-price meals. The school was 16 percent white, 67 percent African American, 12 percent Hispanic, and 5 percent other. The school ranked in the sixth percentile in the state in accountability performance; it had a classification of "needs improvement."

Jumpin' Jaguars was offered to all students in grades 1–5. The first 40 students who provided parental consent were allowed in the program. However, due to drop-outs and absences, 37 students participated fully. Of these, 38 percent were male. Based on their body-mass index, 24 percent of the children were classified as being of normal weight, 35 percent were overweight, and 41 percent were obese.

Data Collection

To measure the physical activity levels of participants and the context of the physical activity lessons, we utilized a widely used systematic observation system. System for Observing Fitness Instruction Time (SOFIT) is a momentary time sampling and interval recording system designed to quantify factors believed to promote healthy physical activity (McKenzie, Sallis, & Nader, 1991). Following the SOFIT protocol (McKenzie, 2009), a researcher observed program activities in 10-second increments, followed by a 10-second increment for recording. Two researchers observed some sessions to establish observer reliability. Before the start of each session, the observer randomly selected four students to observe that day and watched them in a sequential pattern.

The observations were classified in three areas: physical activity, lesson context, and teacher activity-promoting behavior. The activity, context, or teacher behavior coded was the event taking place when an audio "record" prompt began the 10-second observation interval.

Physical activity was classified by intensity level for one of the four randomly selected students at a time during each 10-second observation interval. The five-point scale coded 1 for lying down, 2 for sitting, 3 for standing, 4 for walking, and 5 for vigorous activity, defined as anything more strenuous than ordinary walking. The category of vigorous activity did not consider body position so that, for example, push-ups and sit-ups could be included.

Lesson context had six possible codes (McKenzie, 2009):

- **Management:** time devoted to general content not intended to be physical education, such as transitions, breaks, and behavior management
- **Knowledge:** time focused on student acquisition of knowledge related to physical education
- **Fitness:** time spent on activities whose purpose was cardiovascular endurance, strength, or flexibility
- **Skill practice:** time spent on practice with the primary goal of developing skills
- **Game:** time spent in application of skills in a game or competitive activity
- **Other:** free play time

The third category was teacher activity-promoting behavior. There were three options for this category: promoting physical activity within the lesson, promoting physical activity beyond the lesson, or no physical activity promotion. Promoting physical activity within the lesson meant that the teacher verbally encouraged students, for example, "Jump in there and try to tag him, Johnny!" Promoting activity beyond the lesson would include verbal prompts to be active outside the afterschool program, such as "You can try this at home with your siblings or friends."

We observed eight afterschool physical activity lessons, randomly selected from throughout the school year. Swimming days were excluded. Of the eight selected lessons, six sessions were led by the school's physical education teacher and two by the Zumba instructor.

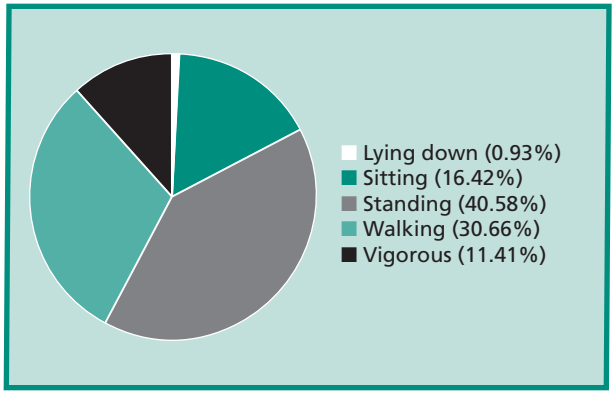
To analyze the data, we calculated frequency counts for each category and then compiled percentages.

Observation Findings

Our findings for physical activity levels across all eight days of observation are summarized in Figure 1. Jumpin' Jaguar participants spent the highest percentage of time standing (41 percent), followed by walking (31 percent) and sitting (16 percent). The total time spent in moderate to vigorous physical activity, which includes walking, was 42 percent of the physical activity time, or about 25 minutes each day.

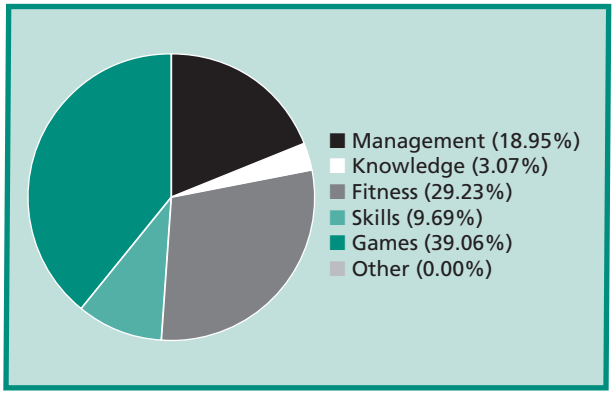
As shown in Figure 2, the most common contexts of the afterschool physical activity lessons were games (39 percent) and fitness (29 percent). Manage-

Figure 1. Levels of Physical Activity



ment took up almost 19 percent of the time. Skills were emphasized about 10 percent of the time, while knowledge (direct instruction) was rarely observed.

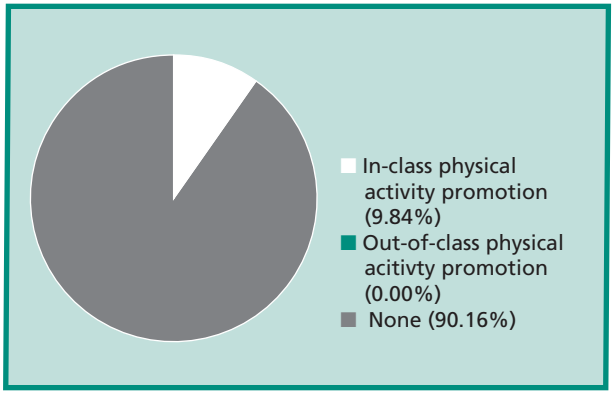
Figure 2. Lesson Contexts



Our findings on teacher behaviors related to promotion of physical activity are shown in Figure 3. Only about 10 percent of observations found the teacher promoting physical activity during the afterschool program. We observed no prompts for participants to be active beyond the afterschool program.

The limitations of our study included the fact that we worked with a small sample of participants who were selected on a first-come, first-served basis. This possible bias is not likely to have affected the outcomes because the participant sample was representative of the entire school population Another limitation was the fact that the program was offered only two times per week. Findings should not have been affected, since we collected data only when youth were actually participating in the program. However, future studies should investigate the effects of afterschool physical activity programs that are offered for different numbers of days each week.

Figure 3. Teacher Activity-Promoting Behaviors



Opportunities to Add Physical Activity Time

Participants spent about 30 minutes, or about 42 percent, of Jumpin' Jaguar program time in moderate to vigorous physical activity, leaving room for improvement during more than half of the time.

Our findings on intensity of activity showed that children spent quite a bit of time standing and sitting. Children do benefit more from short, frequent bouts of intense physical activity followed by short rests (Pangrazi & Beighle, 2016) than from sustained activity. Still, decreasing sitting time would likely have a positive effect on physical activity outcomes. Accomplishing this goal would require training staff so they know how to manage youth in a physical activity setting and can modify activities to maximize physical activity, as described in the box on page 37.

In terms of the lesson context, the fact that approximately 19 percent of the time was used for management offers another area for improvement. Only 3 percent of time was spent providing participants with knowledge that they might use in physical activities outside of the afterschool program. Among the motor activity contexts—fitness, skill practice, and games—the activity that occupied the highest percentage of time is games, at 39 percent. Different games offer different amounts of physical activity for participants. Modifications can be made to games—and to fitness and skills practice activities—to improve physical activity levels, as outlined in the box Strategies for Maximizing Physical Activity Time.

A final strategy for improvement would be increasing teachers' activity-promoting behaviors. In our observation, instructors prompted participants to be active only 10 percent of the time. More prompts throughout the session would be likely to increase the amount of time spent in moderate to vigorous activity. Furthermore, instructors should promote physical activity beyond the afterschool program. Although research has not examined the effect

STRATEGIES FOR MAXIMIZING PHYSICAL ACTIVITY TIME

Our findings, coupled with a large body of research conducted with YMCA programs (Weaver, Webster, & Beets, 2013), suggest strategies for increasing moderate to vigorous physical activity in afterschool programs.

1. **Form smaller teams and provide more equipment.** Instead of one game with two large teams, afterschool staff can set up multiple games with small teams so children don't have to stand or sit while waiting their turn.
2. **Eliminate elimination games.** Children should not sit out if they are tagged. Instead, staff could have them do a quick, fun activity to reenter the game or have two games going on simultaneously, so that children who are "out" in one game can continue in the other.
3. **Modify the space, equipment, or rules.** Staff can change activities with which they are already familiar to make them more active. For example, in traditional Duck Duck Goose, most children sit in a circle, and only two are active. Instead, children can play in pairs, facing each other and saying "duck, duck, duck…" until one of them says, "goose." That player then chases the other to a line at the side of the activity area. This variation keeps all the children active.
4. **Reduce management time by fostering positive relationships.** When staff make personal connections, youth are more likely to be engaged and respectful. Staff can get to know students individually, make them feel valued, and preserve their dignity by, for example, disciplining them privately rather than in public. Mutual respect will go a long way toward decreasing management time and thereby allowing for more activity time.
5. **Encourage staff to be active themselves.** Studies have demonstrated that children who are encouraged by staff to be active during recess are in fact more active (Huberty et al., 2011). A "no-sitting" rule for staff may encourage them to interact with the children and thereby elicit more physical activity.

of teacher prompts beyond the immediate learning environment, participants need to see the value of being active beyond the afterschool setting in order to transfer what they learn to their lives outside the program.

Promoting Lifelong Fitness

Afterschool programs can provide a safe environment for children to engage in much-needed physical activity. As organizations rise to meet providers' demands for guidelines and resources, barriers to implementation, such as untrained staff or the push to address academic standards after school, are becoming more surmountable (After School Programs Office of the California Department of Education, 2009). With a minimal amount of training, afterschool staff can deliver physical activity curricula like CATCH Kids (Kelder et al., 2005) to help children accumulate at least half of their recommended 60 minutes of moderate to vigorous physical activity.

Afterschool programs cannot be expected to end childhood obesity, but they can contribute to decreasing it through a multifaceted approach (Moore, 2008). As in any other behavioral endeavor, consistency is the key. Wherever children are, they should receive a consistent message that physical activity is an important part of their wellbeing. They should be able to enjoy activities in a supportive and safe setting that promotes lifelong physical activity. Afterschool programs that make physical activity an essential component of the program greatly increase the odds that physical activity will persist from childhood into adulthood (Motl, Dishman, Saunders, Dowda, & Pate, 2007). Afterschool staff can adapt our recommendations to their own needs in order to influence children's physical activity levels not only during the program but also beyond.

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