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Get Fit With the Grizzlies: A Community-School-Home Initiative to Fight Childhood Obesity

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ABSTRACT

BACKGROUND: Professional sport organizations in the United States have notable celebrity status, and several teams have used this ''star power'' to collaborate with local school districts toward the goal of affecting children's health. Program effectiveness is unknown due to the absence of comprehensive evaluations for these initiatives. The Memphis Grizzlies, the city's National Basketball Association franchise, launched ''Get Fit with the Grizzlies,'' a 6-week, curricular addition focusing on nutrition and physical activity for the fourth and fifth grades in Memphis City Schools (MCS). The health-infused mini-unit was delivered by physical education teachers during their classes. The purpose of this study was to evaluate the ''Get Fit'' program effectiveness.

METHODS: Survey research was employed which measured health knowledge acquisition and health behavior change using a matched pre/posttest design in randomly chosen schools ($n = 11$) from all elementary schools in the MCS system ($N = 110$). The total number of matched pre/posttests ($n = 888$) equaled approximately 5% of the total fourth-/fifth-grade population. McNemar's test for significance ($p < .05$) was applied. Odds ratios were calculated for each question.

RESULTS: Analyses confirmed that there was significant health knowledge acquisition (7 of 8 questions) with odds ratios confirming moderate to strong associations. Seven out of 10 health behavior change questions significantly improved after intervention, whereas odds ratios indicated a low level of association after intervention.

CONCLUSIONS: This community-school-home initiative using a professional team's celebrity platform within a certain locale is largely overlooked by school districts and should be considered as a positive strategy to confront childhood obesity.

Keywords: child and adolescent health; community health; physical fitness and sport; nutrition and diet; evaluation; organization and administration of school health programs.

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It is no secret that obesity has become an epidemic among America's youth. Despite indications of this epidemic slowing down, too many US children remain obese. Prevalence for overweight children aged 6 to 11 years has almost tripled in 25 years, increasing from 6.5% to 18.8% between 1980 and 2004.[1] Childhood obesity has been linked with numerous chronic health conditions, such as heart disease, cancers, and sleep apnea.[2] Also, excess weight has been noted to negatively influence a child's quality of life psychologically[3] as well as socially.[4]

The southern region of the United States registers the nation's highest childhood obesity rates, with the state of Tennessee ranked fourth nationally.[5] Specifically, national data indicate that the children of Memphis are at severe risk. The Youth Risk Behavior Survey, a self-report surveillance system sponsored by the Centers for Disease Control and Prevention (CDC), revealed an overweight prevalence rate of 18.1% for Memphis City Schools' (MCS) high-school-aged students and 21% for middle-school-aged students, which compares to US rates of 15.8% and 16.2%, respectively.[6,7] Information from one prototypical elementary school in the MCS system during a 2-year period (2004 to 2005) confirmed that 27% of the children aged 6 to 11 years were at risk for overweight (85% body mass index [BMI] for age) which compares to a national rate of 18.8% (L. Reeves-Eakins, unpublished raw data, 2006).

In response to this health dilemma, several professional sport organizations, using their unique celebrity status within their communities, have logically focused on health-related initiatives with the intent of combating childhood obesity. In order to help fund these programs, professional sport organizations have partnered with established corporations as sponsors. Many corporations have found it to be good business practice to give back to the community in which they operate, an unwritten ethical imperative called corporate social responsibility.[8] In order to achieve this social duty, many corporations engage in cause-related marketing (CRM), a strategy to associate their business (or brand) as a visible advocate for positive community initiatives. These positive programs are mechanisms, or CRM tactics, that showcase both the sport organization and the partner corporation's awareness and concern for the community which, in turn, helps to enhance both their reputations and bottom line.[9]

One of these CRM programs is the National Football League's (NFL) ''Play 60,'' a nationwide, Web-based health-based program created in collaboration with major corporations and nonprofit groups (eg, Nike and the American Heart Association, respectively).[10] At this time, there is no evidence to support this popular NFL initiative's effectiveness either on a nationwide scale or at the specific NFL team community level. There have been numerous national and localized community outreach initiatives independently activated by professional sport franchises, and most have been associated with challenges facing youth, primarily education, recreation, and health.[11] Subsequently, there is no evidence to indicate that the involved youth have benefited from any of these programs.

In 2006, business operations staff for the Memphis Grizzlies, the National Basketball Association franchise for the city, approached MCS district staff to collaborate on a CRM health initiative, titled ''Get Fit with the Grizzlies,'' with the intent to decrease obesity among the school district's elementary children. This school-based intervention focused on delivering information concerning physical activity and diet. Therefore, the purpose of this research study was to determine if the Get Fit with the Grizzlies program was an effective strategy to support and improve students' health knowledge and health behaviors regarding physical activity and nutrition.

METHODS

Subjects

The research population consisted of every fourth- and fifth-grade student in MCS during the 2006 to 2007 school year (N = 17,066). These grades were chosen due to MCS data which revealed that these grade levels possessed extremely high BMI statistics compared with other grade levels, and because this age range has been shown to be more reliable to give commentary as well as establish an evaluation on this pilot program.[12] Out of 110 MCS elementary schools, 11 elementary school sites were randomly chosen for the ''Get Fit'' program evaluation, which accounted for approximately 1600 fourth and fifth graders.

Instruments

The Get Fit with the Grizzlies program was evaluated using a pre/posttest protocol. The 18-item ''Get Fit with the Grizzlies Student Questionnaire'' was created using objectives drawn directly from the Get Fit curriculum's 6 lessons and questions from the CDC's Youth Risk Behavior Survey (YRBS).[6] The first 8 questions dealt with knowledge-based information delivered in the lessons, and the last 10 questions asked for the student's current health-related behavior information, specifically eating and physical activity habits within the previous 24 hours. In order to achieve face and content validity, the questionnaire was examined by a panel of experts consisting of a registered dietitian, an exercise physiology professor, 3 veteran elementary physical education (PE) teachers, a university elementary education specialist, and a university-level statistician. Modifications were made based on the panel's feedback.

Procedure

A new 6-lesson supplemental mini-unit focusing on nutrition and exercise was written for fourth and fifth grades by veteran MCS elementary PE teachers. Parents/caregivers were included in the lessons via homework (ie, exercising with their child, discussing healthy foods, eating dinner together), and their signature was necessary on their child's Get Fit activity/food log. The Memphis Grizzlies' community investment department worked closely with MCS administration and teachers to finalize the program, whereas Grizzlies' marketing staff successfully secured sponsors to help fund this unique initiative.

The Get Fit program was principally influenced by the Social Cognitive Theory (SCT), which is based on the Social Learning Theory developed by Miller and Dollard,[13] expanded by Bandura and Walters[14] and Bandura[15] to differentiate learning as a socially driven process. The model has also been used in previous studies involving negative youth health behaviors.[16] The SCT's environmental and personal constructs serve to explain how a typical child can effectively learn in a world made up of school, home, and community, as long as the separate environments collaborate (Figure 1).[17]

Figure 2 illustrates an adaptation of Pajares's[17] framework to reflect the Get Fit with the Grizzlies program's specific features found within the health intervention initiative.

Using the Get Fit version of the conceptual model as an outline, it is apparent that becoming more knowledgeable about health information and changing and/or maintaining personal health behaviors were the program's overall program objectives.

All MCS elementary PE teachers (N = 114) attended a half-day training workshop focused on the new curriculum supplement and special services provided to support the program (ie, Web site support, school site assembly visits by Grizzlies' players/mascot/dancers, a basketball coaching clinic with Grizzlies' players and coaches, and an all-district ''Get Fit with the Grizzlies Achievement Day'' at FedExForum, Grizzlies home arena, at program's conclusion). The Memphis Grizzlies' Community Investment unit, MCS district staff, and PE teachers who authored the Get Fit curriculum were the trainers for the session.

The Get Fit curriculum was delivered to all the fourth- and fifth-grade students during their PE classes. The Get Fit activity/food log booklet had separate, tear-out log sheets for each week, which each child completed with minutes engaged in physical activity and the number of food group servings consumed each day. Parental/caregiver signatures were required on each log. Teachers collected the logs weekly, tracking results, and forwarding information to Grizzlies' staff. Healthy, logoed incentives (ie, jump ropes, water bottles) were provided to children completing the program and were invited to participate in the Get Fit with the Grizzlies Achievement Day.

Also, PE teachers at the 11 evaluation schools were trained during the half-day workshop to administer the pre/posttests using a set protocol in order to achieve reliability. Two extra one-on-one, follow-up training sessions occurred with each evaluation PE teacher at his/her school site when pre- and posttest copies were hand-delivered by the research investigator. A passive consent note was sent to all parents indicating their right to exclude their child from the evaluation and the opportunity to review a copy of the student pre/posttest and Get Fit curriculum in the school office.

Administration of both pre- and posttests happened during PE class. Elementary students in MCS at that time attended PE once a week for a minimum of 30 minutes. Evaluation PE teachers were asked to assign a special identification number to each student in the study to protect respondent anonymity. Also, evaluation PE teachers were asked to administer pre/posttests on a Tuesday, a Wednesday, or a Thursday, and not the day after a student holiday. This recommended schedule was to avoid the high absentee days of Monday and Friday as well as the day after a school district approved day off, and assisted students to remember specifics about the amount of physical activity and food group consumption (eg, the school lunch) that occurred yesterday, which was the time frame that some of the health-related questions on the pre/posttests employed.

Figure 1. **Conceptual Framework Presented by Pajares[17]**

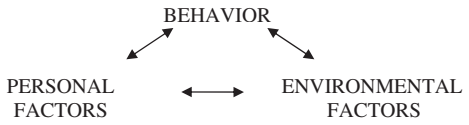
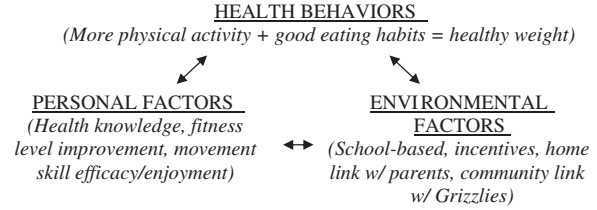


Figure 2. **''Get Fit with the Grizzlies'' Program Characteristics Applied to Pajares's[17] Framework**



Data Analysis

Analysis of data was completed using SAS version 9.2. Responses to questions 1 to 8 (health knowledge items) were dichotomously transformed into the correctly answered response and incorrect responses

for both pre- and posttests. Additionally, remaining test items, all of which were related to nutrition and physical activity behaviors, were also transformed using daily recommendations for children to distinguish correct and incorrect answers.[18,19] Students who met or exceeded these recommendations were coded as ''right'' answers with all other responses considered ''wrong.'' Data were then analyzed using McNemar's test to verify ''right-wrong'' answers for both pre- and posttests; this analysis has been recommended when using data that are dependent upon an intervention and are paired together in a pre/posttest manner.[20,21] In order to determine meaningfulness of the results and strength of association with the Get Fit intervention, odds ratios were also calculated for each question.

RESULTS

There were a total of 1519 completed pretests and 1200 posttests. This study generated 888 subjects with matched pre/posttests, equal to 5.20% of the total fourth-/fifth-grade student population in MCS. Survey item results are presented in Table 1 with percentage of students answering each question correctly on pre/posttest. Odds ratios were determined for each question to further assess the impact of the Get Fit intervention. Only respondents completing both pre- and posttests were included in the analysis.

Table 1. **Pre/Posttest Results for Correctly Answered Survey Items**

Question	Pretest (%)	Posttest (%)	p	Odds Ratio
Knowledge-based questions				
1. A calorie is:	53.8	71.1	.001	2.4
2. The 5 food categories are:	46.3	61.3	.001	2.1
3. How long should a fourth/fifth grader exercise every day?	27.7	24.0	.042	0.8
4. What kind of exercise should you do every day?	63.2	75.1	.001	2.0
5. Why should you stretch before/after exercising?	90.9	93.3	.035	1.5
6. A good stretch for your hamstrings is:	39.7	59.3	.001	2.4
7. Where on the body is the quadriceps muscle?	26.0	48.0	.001	3.2
8. What exercise strengthens the triceps?	50.0	64.6	.001	2.0
Behavior-based questions				
9. Yesterday, how many times did you eat fruit?	56.6	66.1	.001	1.6
10. Yesterday, how many times . . . vegetables/salad?	62.5	66.7	.043	1.3
11. Yesterday, how many times . . . soda/soft drinks?	51.1	45.2	.008	0.8
12. Yesterday, how many times . . . milk, cheese, dairy?	65.5	68.6	.019	1.3
13. Yesterday, how many times . . . bread, cereal, grains?	69.7	77.3	.001	1.5
14. Yesterday, how many times . . . meat, protein?	67.2	72.9	.004	1.4
15. Yesterday, length of time watching TV?	60.0	56.1	.058	0.8
16. Yesterday, length of time on computer/video games?	61.8	58.0	.069	0.8
17. Yesterday, vigorous exercise?	83.6	88.0	.003	1.6
18. Yesterday, moderate exercise?	58.3	64.1	.005	1.4

Students showed significant improvement between pre- and posttest responses on 7 of the 8 knowledge-based items using the standard measure for significance ($p < .05$). In particular, students showed great improvement in their ability to identify the definition of a calorie, recognize the 5 food categories, and identification of large leg muscle groups. Odds ratio results, from 1.5 to 3.2, verify moderate to strong levels of association with the intervention.[22] Regarding the only remaining knowledge question, there was a statistically significant decrease in their ability to identify the length of time they should be exercising daily (question #3). The odds ratio for this particular question was .8, which signifies a lack of association with the intervention.[22]

Results for health behavior-based questions (9 to 18) revealed significant positive change for 7 of the 10 items. Specifically, the number of recommended food servings consumed by respondent relating to fruit, vegetables, dairy, meat/protein, and grains were all improved after intervention. Also, posttest results indicated that both vigorous and moderate physical activity behaviors were significantly healthier and met or exceeded recommended amounts. Although these health behavior-based items yielded significant results, odds ratios were low (1.3 to 1.6) suggesting that the association with the intervention was small.[22]

The health behavior-based item relating to consumption of soda/soft drinks (question #11) did not show improvement, and odds ratio for this item was .8, denoting no relationship with the intervention. Both items that focused on screen time (questions #15 and #16) did not improve after intervention. Again, odds ratios point to a lack of association between the intervention and the amount of screen time subjects reported posttest.

DISCUSSION

The results presented provide useful measures to determine the effectiveness of Get Fit with the Grizzlies program. Overall, posttest measures indicated that students undergoing this special curricular addition gained knowledge of necessary health information to which they had not been exposed. Also, selected health behavior changes after intervention were noted. Both health-related knowledge and behaviors are crucial for life span wellness.[23]

Specifically, results revealed significantly favorable impact on 7 of the 8 health knowledge-related questions that focused on fitness component information delivered through the program. The only knowledge

test item that did not show increased performance was based on the recommended amount of time that children should engage in daily physical activity. This question may have confused each student because the typical length of time that an MCS elementary child spent in PE was 30 minutes, which was the answer chosen by a majority of respondents for both pre- and posttests. Except for this lone question, all other knowledge-based items were significant and, along with moderate to strong odds ratios, verify the Get Fit program's capacity to enhance student health knowledge.

Positive program influence was also found using results from health behavior-related items with 7 of the 10 health behavior questions scoring significant results (consumption of recommended number of daily servings of fruit, vegetables, dairy, meat/protein servings, and grains). Also, respondents' time in daily moderate and vigorous physical activity increased significantly. However, low odds ratios for these items point toward caution when interpreting these health behavior findings. Conservatively, the Get Fit intervention perhaps influenced participants to eat healthier foods and engage in more physical activity. And if the child was eating more nutritious foods, then possibly the parent/caregiver was more inclined to provide their child with healthier food choices. Conversely, the amount of screen time (TV and computer/video games) increased as did soda/soft drink consumption. Overall, these conflicting results may be due to the fact that health behavior change is challenging within the relatively short program time frame of 6 weeks, especially for children.[23] Also, some posttest findings may have been influenced by when it was given, which was during the cold winter season. Inclement weather during the posttest time frame could be one reason why children reported more screen time.

Limitations

This research took place in one large urban school district, Memphis City Schools, and results cannot be considered representative except for that particular school system. Although the number of matched pre/posttest pairs is high ($n = 888$), findings are limited to the specific geographical area and characteristics of MCS.

Also, the research plan did not include a control or comparison group of children or did not allow for a possible matched subjects protocol, which would have strengthened results. Additionally, a follow-up or longitudinal component to this research would have been beneficial. Pre- and posttesting occurred at evaluation PE teachers' convenience and may have led to possible contamination within the school and within grade levels. Finally, demographic and psychographic traits were not measured which might have revealed valuable insights.

The variable of parental influence was not assessed. Research literature has consistently indicated that this variable is of significant importance toward a child's overall health status.[19,20] Realization of this important variable was noted within the Get Fit curriculum by means of homework components for every lesson that required parents/caregivers to complete assignments with their child based on the content learned that day and the weekly activity/food log sheets that were turned in with the parent's signature. Unfortunately, this part of the program was not formally assessed and would be strongly recommended in future research studies.

The instrument used to measure the Get Fit program evaluation was a newly created questionnaire that was based on curriculum objectives and health behavior questions from the YRBS.[6] However, the Get Fit with the Grizzlies Student Questionnaire was closely screened by a panel of experts which helped this instrument to achieve face and content validity. Accuracy of responses from fourth- and fifth-grade students, approximately 9 to 11 years old, is a possible weakness. Children at this age are still developing cognitively and affectively, and might not have felt confident to answer the questions correctly. Despite the fact that the Get Fit with the Grizzlies Student Questionnaire was scrutinized by a university-level reading specialist who evaluated it to be at the third-grade level for readability, many of the fourth- and fifth-grade children might not have been able to read the instrument. Evaluation PE teachers were told to expect this and that they should allow some less confident students extra time as well as they could read the tests out loud if they believed it was necessary.

Conclusions

Findings from this study confirm that the Get Fit with the Grizzlies program was a positive and innovative approach toward motivating children to obtain lifelong health knowledge and change health behaviors. CRM programs that target childhood obesity by local sport organizations using community sponsors to financially support this programming can be a valuable method to better deliver health information to school-aged populations. Further research investigating other professional sport programming similar to Get Fit is strongly recommended.

IMPLICATIONS FOR SCHOOLS

The Get Fit with the Grizzlies program produced promising results within the limited time allowed. Future program administrators should note that the 6-week time frame used for the Get Fit with the Grizzlies intervention was deemed too short for substantial behavioral modification, thus warranting an extended

implementation period. Also, periodic curricular and instructional modifications throughout the year are suggested to enhance student learning. A possible solution might be a designated ''Fitness Day in PE'' every month that is dedicated to reviewing important health information found in the Get Fit program. A better strategy would be a school-wide focus on fitness by integrating physical activity and nutrition information into other content areas (ie, math, literacy, music, and science). Also, there seemed to be a need for periodic process or formative evaluation of the program in order to maximize learning and to keep the program on schedule. Likewise, the results hint that more support is needed outside the school setting to sustain behavioral changes such as those analyzed within this study. Greater engagement among parents/caregivers should be pursued in subsequent programs and evaluation of this important group is suggested.

School health officials are encouraged to capitalize on the public's belief that professional sport organizations must not only actively pursue but also take the lead in activating meaningful social responsibility initiatives.[8,24] Thus, it is important for sports teams, as part of their corporate citizenship obligation, to actively engage in activities such as Get Fit with the Grizzlies. The encouraging results from this study suggest that school systems should seek similar relationships with flagship community partners, such as local collegiate and professional sport teams, who easily and logically connect with young children. The current research suggests that the use of this source credibility, drawn from the organization's celebrity status, will assist in the promotion, delivery, and acquisition of important health information.

Although professional sport organizations frequently engage in community investment programs, with many targeting children, few include a comprehensive evaluation component. Fortunately, the Memphis Grizzlies insisted on this important part of the initiative using an objective university-based research group within the community experienced in health-related program evaluation. The Grizzlies are to be commended for this action, and it is recommended that more sport organizations consider employing this imperative measurement piece. Future programming modifications using the previously suggested methodology changes, such as including a control group of children, extending the program time frame, retesting the children at a later date, and assessing parental variables, should be strongly considered. These program quality measurement features have been noted as steps that should be taken with community program evaluations within the schools in order to avoid ineffective initiatives.[25] From this evaluation, future Get Fit programs can be modified to best fit the children's and the schools' needs.

The use of a systematic program assessment protocol not only yields valuable data for determining program influence on the students but also serves as a key sponsorship servicing component. In today's challenging economy, corporate sponsors are keenly interested in the measurable impact of their investment, whether it is behavioral change such as increased product sales resulting from a mass advertising campaign or improved health behavior from a community relations initiative such as Get Fit. Results such as those generated from the current investigation aid in fulfilling the sponsor's desire to determine if their fundamental sponsorship objective was met and may influence future program financial support.

Addressing critical social issues such as childhood obesity is not only considered a school responsibility but also a community obligation. This compelling health dilemma can be the focal point used to bring community partners such as professional sport organizations to audiences who have a high regard for their sport team and look to them for direction. This celebrity spotlight allows sport businesses to meet the high standard of social responsibility involvement within their community. The Get Fit with the Grizzlies initiative positively connected the home, schools, and community in a productive manner toward the ultimate goal of educating children to become healthier.

Human Subjects Approval Statement

This study was approved by the University of Memphis institutional review board, as well as by Memphis City Schools.

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