Exploring Effective Strategies for Promoting Physical Activity among Japanese Junior High School Students

日本人中学生における身体活動推進方策の検討

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Introduction

      Recent studies indicate that targeting junior high school years may be beneficial to prevent the decline in physical activity (PA) across adolescence, which make it important to design and test PA interventions for this age group. Before developing interventions, it is needed to know what the target PA is and what kind of factors related to the target PA. Because students do activities in different time periods and locations; PA in each time-and location-context (e.g., PA at lunch-recess) might be a target PA. However, previous studies on adolescent PA mostly focus on the total daily or weekly PA at different intensities. Few assess PA participation in a variety of specific context. Moreover, PA is influenced by the interactions of multilevel factors. Each factor might influence PA directly or indirectly. But little is known about both the direct and indirect influences of multilevel factors. To comprehensively understand PA participation in different contexts and the direct and indirect influences of multilevel factors would be helpful to ascertain the appropriate context(s) for intervention efforts and develop tailored interventions and relevant policy. Therefore, the dissertation aimed to explore approaches for PA promotion in Japanese junior high school students based on the following two studies: 1) measured current patterns of PA participation in various contexts and the gender and grade differences in it; 2) examined direct and indirect influences of multilevel factors on PA in the targeted context(s).

Methods

      Participants were 761 junior high school students aged 12-15 years old (boys n=417, girls n=344). The frequency and average time per day of PA occurring in the following contexts was assessed subjectively: total leisure time, lunch-recess, inside-school after-class, outside-school after-class and home. Possible multilevel correlates were examined using a self-report questionnaire: age, gender, grade, weight, height, self-efficacy, social support from parents, teachers and friends, and school physical environment (facility, equipment, and safety). In the first study, descriptive statistics were used to assess the characteristics of participants and rates of PA participation in each context; to assess gender and grade differences of PA participation in each context, independent t-test and ANOVAs was conducted, respectively. In the second study, structural equation models controlling for age were developed to test direct and indirect associations of body mass index (BMI), self-efficacy, social support (family, friends and teachers) and school physical environment (facility, equipment and safety) with the target PA for boys and girls separately.

Results & Discussion

In the first study, first, boys were significantly more active than girls in each context (p<.05). Second, participants were inactive during lunch recess across three grades, and the rates of participation at none of days in lunch recess were very high. Finally, significant grade differences in the average minutes of PA per week were observed in the total leisure-time and inside-school for both genders, outside-school for boys, and home for girls (P<.05). The first study implies that different models for activities should be developed for different genders. Because (1) the low PA participation in lunch recess, (2) the significant grade differences in inside-school for boys and girls, and (3) school can maximize access to the targeted population group, a better understanding of multilevel factors related with lunch-recess and after-class PA at school should be given first priority to investigate.

In the second study, during lunch-recess: for boys, self-efficacy directly influenced PA; BMI, facility and safety indirectly influenced PA by self-efficacy; for girls, facility, safety and self-efficacy indirectly influenced PA by friend support. After-class in school: for boys, BMI, equipment, safety and self-efficacy indirectly affected PA by family support; for girls, both friend and family support directly affected PA; facility, safety and self-efficacy indirectly influenced PA by family and friend support. The second study suggests that different approaches for PA should be developed for boys and girls in the lunch-recess. Specifically, increasing boys' self-efficacy and girls' perceived friend support might be a means of directly increasing lunch-recess PA. Moreover, this study implies that increasing the perceptions of family support for both genders and the girls' perceived friend support might serve as a beneficial strategy for increasing after-class PA in school. Furthermore, this study indicates that different environmental interventions for increasing perceptions of support and self-efficacy should be developed in boys and girls.

Conclusion

The dissertation is, perhaps, the first to examine patterns and correlates of PA in specific contexts in Japanese adolescents, and provides support for relevant school-based interventional research, practice, and policy initiatives. Findings imply that encouraging Japanese junior high school students to engage in lunch-recess and after-class PA in school would be useful for them to achieve health-enhancing levels of PA. For increasing lunch-recess and after-class PA in school, enhancing the self-efficacy and perceived support from friends and families through improving perceptions of activity-friendly environment could be an important approach.