

Children's Enjoyment of a Physical Activity Incorporated into the School Day

By

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STUDENT ENJOYMENT OF EXERCISE DURING SCHOOL

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Abstract

The purpose of this study was to assess the experience of 5th grade students in a Mid-Western elementary school (N = 67) participating in a two-week WJR (Walk, Jog, Run) intervention during their school day. Students were given the opportunity to participate in WJR for a daily 10- minute continuous period each day, and they completed surveys prior to the intervention, at the end of the intervention, and a final time 1- week post intervention. Students completed pre and post measures of participation in, and enjoyment of WJR outside the school setting, and post measures of enjoyment and benefit (academic, fitness) of the WJR intervention. Results revealed that students enjoyed the WJR intervention and saw moderate fitness and academic benefit to it. With regard to their enjoyment of the intervention, they reported significantly greater enjoyment 1-week post- intervention than immediately post- intervention. In addition, students reported participating in significantly more WJR outside the school day 1-week post- intervention than immediately post- intervention. Students also indicated they enjoyed participating in WJR outside the school day more immediately post- intervention and 1-week post- intervention than pre- intervention. Lastly the teachers' perceptions of the students' enjoyment of the intervention and the benefit (academic; fitness) to the students was higher a week after the intervention than immediately post- intervention. Overall, the results suggest that the WJR intervention was successful in heightening students' enjoyment of and participation in PA. This intervention was inexpensive, easy to implement and suggests that further implementation of it should occur on a larger scale.

Keywords: exercise, enjoyment, elementary school

STUDENT ENJOYMENT OF EXERCISE DURING SCHOOL

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STUDENT ENJOYMENT OF EXERCISE DURING SCHOOL

Walking, jogging and running (WJR) are some of the best cardiovascular activities for individual health that persons of all ages can perform. Many persons walk, jog or run because they believe the activity is great fun and enjoyable. This study assessed 5th grade students' enjoyment and perceived benefit of WJR.

The beauty and attractiveness of WJR activity is that it provides health and fitness benefit, can be performed in most any location and in general, all people need is a good pair of shoes, climate appropriate clothing and then “off they go” (Reinberg, 2012). The intensity of recreational WJR for improved health will vary from individual to individual but the ease of self-starting the activity (Ebbeling et al., 1992; Morris et al., 2002) makes it a highly desirable lifestyle behavior. The single element that makes WJR most attractive is this cardiovascular activity is self-regulated by each individual as to intensity and effort expended (Ebbeling et al., 1992; Morris et al., 2002).

Walking, jogging and running appears to need a “new image” to become a preferable fitness choice and it seems to be occurring more often for some adult Americans. Almost two-thirds of Americans now say they take regular walks, 62% in 2010 compared to 56% in 2005 (Centers for Disease Control and Prevention., 2010b), an increase of 15 million Americans. The opportunity to create early intervention with children to develop a belief that WJR is fun and can be a great social event while providing health and fitness benefits (Reinberg, 2012) seems too significant and important to ignore. Additionally, the WJR activity allows for one of the best reflection and thinking times that one can find on a daily basis (Reinberg, 2012).

The lack of physical activity (PA) among persons of all ages is considered a public health concern and limited amounts of PA on a daily basis has become a focal

STUDENT ENJOYMENT OF EXERCISE DURING SCHOOL

point of blame for obesity and the decreasing physical fitness of our population (Strong, 2005). Childhood obesity is of significant concern as research reveals that obesity rates more than tripled since 1980 for children and adolescents aged 6 – 19 years (Ogden, et al., 2006). A more recent study notes nearly one-third of children aged 2 to 18 years are now overweight or obese (Schorr Saxe, 2011). Reduction in physical activity (PA) occurs with age, (specifically intensity) as a study by Thomas Klein & Simone Becker (2012) showed 60% of 18 Year olds exercise weekly, however the percentage had dropped to 30% at 33 years of age. The study noted that research showed the likelihood of initiating a weekly PA declines with age, however there is less likelihood to discontinue established exercise habit as one becomes older (Klein & Becker, 2012).

The Center for Disease Control recommends that children and adolescents do moderate and vigorous-intensity physical activity for periods of time that add up to 60 minutes (1 hour) or more each day. This activity should include aerobic as well as age-appropriate muscle and bone-strengthening activities for improved health (U.S. Department of Health and Human Services, 2008).

Researchers estimate that increasing physical education (PE) instruction and activity in kindergarten and first grade by just one hour per week could reduce the number of overweight 5- and 6- year-old girls by as much as 10% nationally (Datar et al., 2004). Other research produces improved obesity rates with intervention of PA for different age groups (Center for Disease Control and Prevention, 2007).

Many experts note that PE/PA courses are transitioning to elective classes competing with music and art and other subjects for a place on the student's daily schedule, upon the student reaching the 7th and 8th grade years. Research concludes the

STUDENT ENJOYMENT OF EXERCISE DURING SCHOOL

core curriculum is absent PA habits, if PE/PA is eliminated (Centers for Disease Control and Prevention, 2010b) and the trend to eliminate PA has become a major point of discussion for professional health care experts, parents, legislators, and school administration officials. Physical education in schools guarantees that children have opportunities to be active during the school day. Quality physical education goes beyond providing activity opportunities and promises to provide children with opportunities to learn through meaningful and appropriate instruction (Le Masurier & Corbin, 2006).

While more research needs to occur to understand the relationship between the increase in childhood obesity and the decrease in PE/PA in school settings, some researchers are suggesting a relationship exists, as a parallel path has been documented in published research for each independent element (Schorr Saxe, 2011; Center on Education Policy, 2007), e.g. childhood obesity is increasing and physical education curriculum is being reduced or eliminated.

Walking and running are popular forms of PA, especially because they are self-regulated and involve no special skills or facilities (Ford et al., 2010). Walking and running use major muscle groups of the body and result in increased energy expenditure (EE; Ford et al., 2010), which can potentially reduce body fatness (Le Mura et al., 2002). Walking appears to be more acceptable in young children because there are lower skeletal stresses than running and therefore less risk of injury (Ford et al., 2010), providing it is performed briskly for significant EE to be achieved (Ebbeling et al., 1992; Morris et al., 2002).

It is estimated that approximately one-quarter of the United States population, students and school employees, spend 6 hours each day in the school setting (Kolbe et al.,

STUDENT ENJOYMENT OF EXERCISE DURING SCHOOL

2004). The Kansas school day is 7 hours or more per day for 36 weeks each year and as noted, similar hours of required instruction exist in the balance of the United States.

While such a long period of time in a controlled environment is needed to meet the educational needs, it appears that the learning environment may be contributing to a sedentary lifestyle. A sedentary lifestyle, is a medical term used to denote a type of lifestyle with no or irregular patterns of physical activity (Centers for Disease Control and Prevention, 1997). While the school day may not include watching television or playing video games, the sedentary activities of sitting, reading and time at the computer for much of the day with little or no vigorous physical exercise are defined components of a sedentary lifestyle. Health care advocates, some educators and researchers believe the lack of a requirement of minimum fitness levels in The No Child Left Behind Act of 2001 (NCLB) (U.S. Department of Education, 2001) and other defined standardized test regulations contribute to a more sedentary lifestyle during the educational day, which creates health and fitness concerns.

A school setting for children and adolescents creates a natural and convenient environment for age- appropriate physical fitness activity (Centers for Disease Control and Prevention, 2010c) and education about the long- term lifestyle value of WJR. The responsibility of creating an environment that does not contribute to a sedentary lifestyle would be an expectation of most Americans, for the school day. The NCLB Act of 2001 has caused schools to become reluctant to eliminate class seat time for even a brief period. It is the responsibility of educators to allow students to become proficient in required educational learning programs of study. Further, while NCLB has no defined requirements for fitness results or measurements, the trend to reduce or eliminate PE as a

STUDENT ENJOYMENT OF EXERCISE DURING SCHOOL

part of the daily curriculum among children does not eliminate the need to educate students about the merits of PA and the improved health and fitness that is a direct result. Without a replacement venue for this educational and participant opportunity, it seems the United States will continue the evolution to undesirable physical fitness levels among its' citizens.

Multiple studies seem to confirm schools need to re-visit the decision to eliminate PA time, not just for the fitness and health benefits it brings, but findings routinely confirm daily PA improves fitness and also improves academic achievement. One study of children from kindergarten through fifth grades reveals girls with the highest exposure to PE scored on average, 2.4 points higher in reading and 1.5 points higher in mathematics than girls who had a lower exposure to PE classes (Carlson et al., 2008). Results from a separate 2008 study revealed that by adding endurance fitness, students had better grades in reading and mathematics, along with the added benefit of a decrease in the time teachers spent correcting student behavior (Trudeau & Shephard, 2008).

Children and adolescents engage in different types of PA, depending on age and access to programs and equipment in their schools and communities. Elementary school-aged children typically engage in free play, running and chasing games, jumping rope, and age-appropriate sports—activities that are aligned with the development of fundamental motor skills. The development of complex motor skills enable adolescents to engage in active recreation (e.g., canoeing, skiing, rollerblading), resistance exercises with weights or weight machines, individual sports (e.g., running, bicycling), and team sports (Sibley & Etnier, 2003); however, the value of learning to enjoy walking, jogging

STUDENT ENJOYMENT OF EXERCISE DURING SCHOOL

or running cannot be underestimated as this learned lifestyle can easily be accomplished in most locations, by most persons (Ebbeling et al., 1992; Morris, et al., 2002).

Quality Physical Education programs for all of our children are recognized as the foundation for healthy, physically active lifestyles as adults (Centers for Disease Control and Prevention, 2010a). The reduction in opportunity for education about PA has steadily decreased and must be replaced with activities that students are taught to enjoy.

A 2007 study reveals that 38% of elementary and 80% of middle schools have significantly decreased the time (>30 minutes per day) allocated to activities such as PE, recess, art, music and social studies (Center on Education Policy, 2007) so again, the student is challenged to self-learn to enjoy PA and look for opportunities to engage in WJR for personal health benefit, “outside the learning environment” during the early educational years when lifestyle habits are learned.

The *2010 Shape of the Nation Report* reveals that in every state and every school, there are still men and women who care about the shape of our nation’s children and adolescents and they work every day to improve their students’ lives and health (National Association for Sport and Physical Education & American Heart Association, 2010). This breath of fresh air does provide hope that learned behaviors will occur and opportunities will exist that allow students to understand the need for a physically active lifestyle; however data and articles seem to suggest that the reverse is true and opportunities are becoming fewer for school children of all ages (Centers for Disease Control and Prevention, 2007).

The earliest entry into the school system is often cited as the starting point and best opportunity to introduce and educate young children about good lifestyle habits. This

STUDENT ENJOYMENT OF EXERCISE DURING SCHOOL

study provided students a 10-minute daily WJR intervention during their school day in order to examine their enjoyment and participation in WJR outside the school day and the students perceived enjoyment and benefits during the school day. It was hypothesized that students' WJR activity and enjoyment of WJR outside the school day would be higher immediately post intervention and 1- week post intervention than prior to the intervention. In addition, it was hypothesized that students would enjoy the WJR intervention and would report academic and health benefits as a result of participating in the WJR intervention both immediate post intervention and 1- week post intervention.

Method

Participants

Elementary school fifth grade students (N= 67 males and female) from a Mid-Western elementary school participated in a free-choice WJR 10- minute daily cardiovascular activity for a 2- week period. The WJR was offered as an independent activity from all other school curriculum activities, including the scheduled physical education (PE) class. Participants were excluded for family/personal choice, illness or any inhibiting medical condition. Approval for this study was obtained from the school administration and staff, and the Human Subjects Committee at the University of Kansas.

Measures

Students completed surveys at three time points: pre- intervention, immediately post- intervention, and one- week post- intervention. The pre-survey included demographic information such as gender, age, race / ethnicity.

STUDENT ENJOYMENT OF EXERCISE DURING SCHOOL

Pre- WJR Intervention Survey

Participation. The pre- intervention survey included three items developed for the purposes of this study to assess the children's perceptions of how often they engage in WJR outside the school day and outside organized sport/physical activities. The items included the following: *I usually WJR more than 3 times per week for at least 10 minutes; Most days of the week I WJR for at least 10 minutes; and I WJR for more than 10 minutes on most days after school and weekends.*

Enjoyment. Students' enjoyment of WJR outside the school day was measured using Duda and Nicholls' (1992) five- item physical activity enjoyment scale (Duda & Nicholls, (1992). The survey was developed to be specific to a particular activity and included the following items: *I usually have fun when I WJR; I usually enjoy WJR; I usually find WJR interesting; I usually get involved in WJR; and When I am doing WJR I usually find time flies.* The scale examines students' perceptions about how much fun they have participating in WJR. Duda and Nicholls reported a reliability alpha coefficient of .94 for the scale.

WJR Documentation During the Intervention

Each day after the WJR activity, the children recorded on a log sheet that they participated in the WJR. The daily log remained blank for the day that students were absent or did not participate on a particular day.

Immediate Post- WJR Intervention Survey. (Students completed this survey on the last day of the WJR intervention.)

Participation. Students completed the participation items again to assess how

STUDENT ENJOYMENT OF EXERCISE DURING SCHOOL

often they participated in WJR outside of school during the 2- week intervention.

Enjoyment. Students' enjoyment of WJR outside the school day was measured by completing the Duda and Nicholls' (1992) five- item physical activity enjoyment scale. The survey questions were identical to the pre- intervention survey enjoyment questions.

Enjoyment of WJR activity. Students completed Duda and Nicholls (1992) five- item enjoyment scale at the conclusion of the 2- week intervention. The items were slightly adapted to assess how much the children enjoyed the WJR intervention. The enjoyment questions were the same as those used for the pre- intervention survey but adapted slightly to refer to their enjoyment of the 2- week intervention, e.g. *I usually had fun WJR during my 10-minute WJR activity.*

Benefit. The students' perceptions of the benefit of participating in the WJR intervention was assessed with nine items developed by the researcher with input from faculty and Graduate Students from the University of Kansas Sport and Exercise Science Laboratory. The self- assessment was administered by asking each student to assess the academic value as well as the physical fitness value of the WJR intervention. Students responded using a 5-point scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). Some sample questions were: *My concentration in class was better after WJR; I had more energy after WJR; and I learned more in class after my WJR activity.*

1- Week Post- Intervention WJR Survey

A third and final survey was completed by participants' 1- week post- intervention, and included three measures: participation in out-of-school WJR, enjoyment

STUDENT ENJOYMENT OF EXERCISE DURING SCHOOL

of out-of-school WJR, and benefit of the WJR intervention. These measures were described previously.

Measures for Teachers

Teacher(s) were asked to complete the survey on the last day of the WJR intervention and 1- week post- intervention.

Enjoyment. Teachers were asked to assess the perception of overall enjoyment of the WJR by the students using Duda and Nicholls (1992) five-item enjoyment scale (Duda et al., 1992). The teachers answered the same questions as the students after slight revision to accommodate the teacher's perceived assessment of the overall class results. A sample question was: *Overall the students had fun during WJR.*

Benefit. Teachers were asked to provide an overall assessment of the benefit of the WJR intervention for the students using the same questions that the students answered after slight revision to accommodate the teacher's overall perceived assessment of the benefit of WJR. A sample question: *Overall the students' concentration in class was better after WJR.*

Procedures

An initial on-site meeting was held with the principal. The administration confirmed the school's willingness to allow the fifth grade students to participate in the WJR study. The principal discussed the program with the Superintendent of Schools and received approval for the curriculum activity of WJR. A follow-up meeting was held to fully explain the WJR intervention to the school staff. Administrators were presented a pamphlet that explained the purpose of the study, procedures, and the classroom instructor's individual role.

STUDENT ENJOYMENT OF EXERCISE DURING SCHOOL

The researcher met with the students and explained the procedure for the WJR intervention after they completed the initial pre- intervention survey. The researcher discussed the benefits of WJR and how the student can choose to do one, two or all three of the activities during the 10- minute period each day. In addition, the researcher attempted to create a caring and task-involving climate focused on the students supporting one another and emphasizing their effort and improvement across the two weeks. Students were asked to praise each other for high effort and it was clearly defined that no students were to be made to feel bad if they choose not to jog or run. The students were encouraged to continue to WJR outside the school day at any opportunity. Teachers were in the survey area but not involved in the data collection during the three brief survey periods. The instructor directed the 10- minute daily WJR sessions as part of the curriculum during the intervention. At the end of each WJR session, the students recorded their daily WJR activity. School administration and staff determined logistics related to WJR including the location for survey assessment and time period for WJR. The researcher read each of the questions aloud to the students for the three surveys.

Statistical Analyses

The age difference for the students was minimal as the study was limited to all 5th grade class students. The means, standard deviation, and Cronbach's alpha reliability coefficients for each of the scales was calculated. See Table 1.

Participation. A series of repeated measures ANOVAs was employed to examine whether students' perceptions changed over the three time points (pre, post, 1- week post). The first ANOVA examined whether students' participation in WJR outside the school day varied across the three time points.

STUDENT ENJOYMENT OF EXERCISE DURING SCHOOL

Enjoyment. A second ANOVA examined whether students' enjoyment of WJR varied across the three time points. One sample T-tests were employed to examine differences in the students' responses with regard to the benefit they perceived from participating in the WJR intervention.

Benefit. The questions relating to academic benefit (better concentration) and physical benefit (e.g., I feel stronger) were analyzed with separate T-tests. Finally, the mean score for enjoyment and benefit rankings by the three teachers participating in the study on their students' enjoyment post intervention and 1-week post intervention was calculated.

Results

The means, standard deviation and Cronbach's alpha reliability coefficients were calculated for each of the scales. These results are presented in Table 1. All scales denote adequate reliability ($> .73$).

A Repeated Measures ANOVA was conducted to examine the students' perceptions of participation in WJR outside the school at three time points: Time 1 (pre-intervention), Time 2 (immediate post-intervention) and Time 3 (1-week post-intervention). Results $[(1, 54)F= 5.46, p < .05]$ revealed a significant linear difference between the time points. Specifically, follow-up pairwise comparisons revealed a significant difference between Time 1 and 3 $[(1, 54)F=2.34, p<.05]$, indicating that the students reported engaging in WJR outside the school day more 1-week post-intervention than prior to the intervention. No significant difference emerged between Time 1 and 2 as well as between Time 2 and 3.

STUDENT ENJOYMENT OF EXERCISE DURING SCHOOL

A second Repeated Measures ANOVA examined the students' enjoyment of WJR outside the school at the three time points: pre- intervention, immediate post- intervention, and 1- week post intervention. Results [(1, 54) $F= 4.05, p < .05$] indicated there were differences in enjoyment across the three time points. Follow-up pairwise comparisons revealed the students reported greater enjoyment of WJR outside the school setting immediate post- intervention [(1, 54) $F=2.58, p<.05$] and 1- week post- intervention [(1, 54) $F=2.02, p<.05$] in comparison to prior to the WJR intervention. No significant differences emerged between immediate post- intervention and 1- week post- intervention.

Three Paired Sample T- tests were performed to examine the students' perceptions of their enjoyment of and perceived benefit (academic, fitness) of the WJR intervention. With regard to the T- test for enjoyment of the intervention, results [$t(55) = -2.49 (56), p < .05$] revealed the students reported greater enjoyment of the intervention 1- week post- intervention than immediate post- intervention. Two Paired Sample T-tests also revealed that the students perceptions of the benefit of the WJR intervention were not significantly different from immediate post- intervention to 1- week post- intervention for either fitness [$t (55) = -1.55 (56), p < .13$] or academic [$t (55)= -1.59, p < .12$] benefits; however, in both cases the trend was for the scores to increase from Time 2 to 3.

Discussion

The purpose of the study was to assess 5th grade students' perception of a 2- week intervention where students were provided 10- minutes during the school day to WJR at their own pace. Students' participation in and enjoyment of WJR outside the school day

STUDENT ENJOYMENT OF EXERCISE DURING SCHOOL

was assessed at three time points (pre- intervention, immediate post- intervention, and 1-week post- intervention) as well as their enjoyment of and perceptions of the fitness and academic benefits of the intervention. Results revealed that the students enjoyed the addition of the WJR activity to their school day for the 2- week period; interestingly, they reported enjoying the WJR intervention significantly more 1- week after it ended than on the day it ended. This suggests that after participating in the WJR activity for two consecutive weeks, and then going a week without the activity, the students perhaps realized even more so how much they enjoyed the WJR daily sessions as a break in their school day. These quantitative results align with the anecdotal comments from the students to the researcher when he was on-site the day the intervention ended and a week later. Both times, students expressed their desire for the WJR activity to continue.

Fun was an important component of the intervention. The theoretical framework for the intervention was grounded in achievement motivation research (Duda & Nicholls, 1992). The researcher described the goal of creating a caring and task-involving climate for the WJR intervention where students were told that the focus of the intervention was for all students to give their best effort, improve over the two weeks, and treat everyone with kindness and respect. The researcher emphasized to the teachers that the WJR activity should be presented in a way to foster intrinsic motivation and enjoyment. Students were encouraged to choose whether they walked, jogged or ran each day, and they did not need to feel obligated to follow the activity of others (e.g., run for the 10 minutes). The teachers also emphasized that no students should be pointing fingers at others or making anyone feel bad. The goal of the WJR activity was for all students to have the freedom to choose their activity level and have fun. Had these aspects of the

STUDENT ENJOYMENT OF EXERCISE DURING SCHOOL

climate not been emphasized to the students, it is possible that they would have experienced less enjoyment of the WJR intervention. The teachers received daily reminders with tips to foster a positive and supportive climate. For example, it was suggested to teachers to have the students give each other high fives or fist bumps at the end of the session, and to encourage students to invite a family member or neighbor to WJR with them later at home.

Not only did the students enjoy the intervention but they also reported enjoying participating in WJR outside the school day significantly more at both times after the intervention in comparison to their pre- intervention scores. These results suggest that the intervention was instrumental in helping the students learn to have fun engaging in WJR. Enjoyment of physical activity has been shown to be a critical variable in helping people adopt active lifestyles over time. The obesity epidemic students' fact sheet indicates that only 35% of students were successful in meeting the standard of 60 minutes of vigorous cardiovascular activity daily (U.S. Centers for Disease Control and Prevention, 2007). Integrating physical activity that is fun into the school day may foster intrinsic motivation that could help students adopt more active lifestyles that would feasibly become a life-long habit and help to curtail the increasing rate of obesity.

In addition to reporting enjoying WJR outside the school day more after the intervention, the students also indicated they were participating significantly more in WJR at both times after the intervention than before the intervention began. These results, while anticipated, are exciting and suggest that a brief intervention (e.g., 10- minutes per day for ten days) has the potential to help children change their attitudes and behaviors with regard to being physically active. Researchers estimate that increasing

STUDENT ENJOYMENT OF EXERCISE DURING SCHOOL

physical activity in kindergarten and first graders by just one hour per week could reduce the number of overweight 5- and 6- year-old girls by as much as 10% nationally (Datar et al., 2004). Perhaps a WJR intervention implemented on a large scale could have the same potential effect for students across the K-12 years.

In addition to students' enjoyment of WJR and specifically the WJR intervention, the investigator was also interested in the students' perceptions of the benefit of the WJR intervention, with regard to the students' fitness levels and academic skills. The day the WJR intervention ended the students reported moderately high perceptions that they benefited from the intervention both from a fitness and academic perspective. Interestingly, a week later the students reported greater fitness and academic benefit of the intervention, yet these increases were not significant. Even so, the trends suggest that after having the WJR activity taken away from the students for a week, they noticed more so how the intervention may have been beneficial in helping them become more physically fit and focus their attention and concentration during the school day. This research parallels other published results related to physical activity and students' academic performance. Physical Activity across the Curriculum (PAAC) is a program that trains teachers to incorporate 90 minutes per week of moderate to vigorous physical activity into their academic lessons in 10- minute sessions delivered intermittently throughout the school day (Donnelly et al., 2009). The PAAC study's three year results showed the Body Mass Index (BMI) for PAAC schools in the intervention group was significantly less than the control group school that had <75 minutes of PAAC and there were documented increases in academic achievement. Overall, the results of the current study suggest that interventions to increase students' physical activity levels during the

STUDENT ENJOYMENT OF EXERCISE DURING SCHOOL

school day may have the additional benefit of heightening their academic engagement as well.

Though assessing the students' perceptions of the WJR intervention was the main focus of this study, it was also of interest to consider the three teachers' views of the intervention. The teachers were asked to rate the overall enjoyment of the WJR by the students and the overall benefit to the students of the WJR at immediate post-intervention and 1-week post-intervention. The teachers were less impressed at immediate post-intervention than 1-week post-intervention that the students benefited from the WJR activity with regard to their fitness levels and academic prowess. However, of interest were the increases in the teacher mean values for both academic and fitness benefit from immediate post-intervention to 1-week post-intervention. These results suggest that after withdrawing the WJR activity from the children for a week, the academic and fitness benefits of the intervention became more apparent to the teachers.

The teachers overall were pleased with the concept of the WJR intervention and expressed a willingness to continue to support physical activity during the school day. The teachers indicated that if they continued the WJR activity, they would prefer to set a specific time in the daily schedule for it so that it was part of the regular schedule. During the WJR intervention, teachers were told to schedule the WJR activity whenever they felt the students needed a break in the day, so there was variability across the two weeks of when the activity occurred daily. One instructor was emphatic that the WJR was valuable to the students and her personally because she noticed the benefit to her own personal physical activity level. This teacher expressed hope that the intervention would become a part of the daily scheduled curriculum.

STUDENT ENJOYMENT OF EXERCISE DURING SCHOOL

While the findings were positive and as hypothesized, the study limitations should be noted as well as future directions for research. This study included a single school in a rural location so generalizations cannot be made to other types of schools (e.g., urban, private). In addition, the study included only 5th grade students and the sample was not large. Future research should include a broader range of grade levels and a larger sample size. Another limitation of the study is that no control group was included. The researcher's Internal Review Board required that parental consent be obtained from the control students' parents, and the participating school preferred not to draw attention to the fact that the control group was not receiving the WJR activity, so no control group was included. It will be important for future research to include a more rigorous research design and include a control group to examine whether differences occur only for the intervention group. Another limitation of the study was that the WJR intervention was brief; the intervention had originally been planned for three weeks, but two of the three teachers were incapacitated the week the intervention was scheduled to begin. Future research should experiment with extending the length of the intervention to a minimum of 21 days, which researchers believe is the number of days needed to form a habit (Maltz 1960). In addition, it will be valuable to also include a longer window to assess the length of time the students continue to benefit from the intervention after its conclusion. In the present study, students' positive responses continued one week later but it is difficult to know how long this continuation would occur.

With regard to future research, it would also be informative to include a wide range of dependent variables. For example, it would be interesting to see if the WJR school intervention influences families' physical activity levels. If children are

STUDENT ENJOYMENT OF EXERCISE DURING SCHOOL

encouraged to WJR at home and to include their parents and siblings, results pertaining to the family units might be evident. It would also be worthwhile to examine the relationship between children's involvement in WJR to their actual fitness and health statuses, as well as their psychological and emotional well being.

In summary, results from this study suggest that a simple WJR intervention can be an inexpensive, easy addition to the curriculum that could be incorporated into schools to increase children's engagement in physical activity both in the schools and outside the school setting. Promotion of physical activity cannot be ignored and specifically in the early habit forming years. Absent physical education classes where students learn about the value of PA, it seems society will be left to discover the educational merits on its own. Engaging in regular physical activity early in life can lead to healthy activity habits later in life, thus reducing the risk of disease and improving the quality of life (Le Masurier et al., 2006). The simple task of making exercise more enjoyable by creating a brief time in each day to engage in PA seems to have significant merit and could contribute to achieving a long time habit of participating in daily PA activities for fitness and enjoyment. The WJR intervention for this population resulted in students enjoying and engaging in more free choice physical activity. The WJR intervention was accomplished with little or no cost or disruption in the normal school day, and can be easily implemented with the support of administrators and teachers. The results suggest that further research should explore the value of adding WJR time to the daily curriculum for school age children.

STUDENT ENJOYMENT OF EXERCISE DURING SCHOOL

References

- Carlson S., Fulton J., Lee S., Maynard M., Brown, Kohl H., & Dietz W. (2008). Physical Education and academic achievement in elementary school: Data from the early childhood longitudinal study. *American Journal of Public Health, 98*(4), 721-727.
- Centers for Disease Control and Prevention (1997). Guidelines for school and community programs to promote lifelong physical activity among young people. *Morbidity and Mortality Weekly Report. U. S. Department of Health and Human Services, 46*. 1-36.
- Centers for Disease Control and Prevention (2007). The obesity epidemic and United States students' fact sheet, combining results from 2007 National youth risk behavior survey and 2006 school health polices and programs study. *U.S. Department of Health and Human Services*.
- Centers for Disease Control and Prevention (2010a). 2010 National Youth Physical Activity and Nutrition study (NYPANS). *U. S. Department of Health and Human Services*.
- Centers for Disease Control and Prevention (2010b). Physical activity, physical education and academic performance: A review of the literature. Atlanta, GA: *U.S. Department of Health and Human Services*.
- Centers for Disease Control and Prevention (2010c). The association between school based physical activity including physical education, and academic performance. Atlanta, GA: *U.S. Department of Health and Human Services*.

STUDENT ENJOYMENT OF EXERCISE DURING SCHOOL

Center on Education Policy, (2007). *Choices, changes, and challenges: Curriculum and instruction in the NCLB era*. Washington, DC: Author.

Datar A. & Sturm R. (2004). Physical education in elementary school and body mass index: evidence from the early childhood longitudinal study. *American Journal Public Health, 94*(9), 1501-1506.

Donnelly J., Greene J., Gibson C., Smith B., Washburn R., Sullivan D., DuBose K., Mayo M., Shmelzle K., Ryan J., Jacobson D., and Williams S. Physical Activity Across the Curriculum (PAAC): A randomized controlled trial to promote physical activity and diminish overweight and obesity in elementary school children. *Preventive Medicine. 2009; 49*: 336-341.

Duda, J. L., & Nicholls, J. G. (1992). Dimensions of achievement motivation in schoolwork and sport. *Journal of Educational Psychology, 84*(3), 290-299.

Ebbeling C., Hamill J., Freedson P., & Rowland T. (1992). An examination of efficiency during walking in children and adults. *Pediatric Exercise Science, 4*, 36-49.

Ford P., Bailey R., Coleman D., Stretch D., Winter E., Woolf-May K., & Swaine I., (2010). Energy Expenditure and Perceived Effort During Brisk Walking and Running in 8- 10 Year- Old Children. *Pediatric Exercise Science, 22*, 569-580.

Klein T. and Becker S. (2012). Age and exercise: a theoretical and empirical analysis of the effect of age and generation on physical activity. *Journal Public Health, 20*, 11-21.

STUDENT ENJOYMENT OF EXERCISE DURING SCHOOL

- Kolbe L., Kann L., Patterson B., Wechsler H., Osorio J., & Collins J. (2004). Enabling the nation's schools to help prevent heart disease, stroke, cancer, COPD, Diabetes, and other serious health problems. *Public Health Report* (pp. 286-302).
- Le Masurier, G. & Corbin, B. (2006). Top 10 Reasons for quality physical education. *The Journal of Physical Education, Recreation & Dance*, 77(6), 44-53.
- Le Mura L. M., & Maziekas M. T. (2002). Factors that alter body fat, body mass, and fat-free mass in pediatric obesity. *Medical Science Sports Exercise*. 34, 487-496.
- Maltz, M. *Psycho – Cybernetics*. New York, New York; Pocket Books, a division of Simon & Schuster, Inc. Prentice-Hall, Inc.
- Morris J., & Hardman A. (2002). Walking to Health. *Journal Applied Physiology* 92, 1045-1052.
- National Association for Sport and Physical Education & American Heart Association (2010). *2010 Shape of the nation report: Status of physical education in the USA*. Reston, VA: National Association for Sport and Physical Education.
- Ogden C., Carol M., Curtin L., McDowell M., Tabak C., & Flegal K. (2006). Prevalence of overweight and obesity in the United States (1999-2004). *Journal of the American Medical Association* 295,(13), 1549-1555.
- Reinberg (2012). *More Americans walking, but still not enough - HealthDay Lifestyle*. A news presentation converted to video and written review presented August 12 on KSTP-TV, LLC, a Hubbard Broadcasting Company.
- Schorr Saxe J. (2011) Promoting Healthy Lifestyles and decreasing childhood Obesity: Increasing Physician Effectiveness Through Advocacy. *Annals of Family Medicine*, 9(6), 546-548.

STUDENT ENJOYMENT OF EXERCISE DURING SCHOOL

Sibley B. & Etnier J. (2003). The relationship between physical activity and cognition in children: A meta-analysis. *Pediatric Exercise Science*, 15(3), 243-256.

Strong W., Malina R., Blimkie C., Daniels S., Dishman R., Gutin B., & Trudeau F. (2005). Evidence Based physical activity for school-age youth. *Journal of Pediatrics* 146(6), 732-737.

Trudeau, F. & Shephard, R. J. (2008). Physical education, school physical activity, school sports, and academic performance. *International Journal of Behavioral Nutrition and Physical Activity* 5(10), 1-12.

U.S. Department of Education (2001). The Elementary and Secondary Education Act (The No Child Left Behind Act of 2001).

U.S. Department of Health and Human Services (2008). *2008 Physical Activity Guidelines for Americans*. Washington, D.C.: Author.

STUDENT ENJOYMENT OF EXERCISE DURING SCHOOL

Table 1
Variation in Participation, Enjoyment and Benefit Assessment of Walking, Jogging and Running

Outside School	Pre-Intervention			Immediate Post Intervention			1Week Post Intervention		
	Mean	SD	α	Mean	SD	α	Mean	SD	α
Participation WJR	3.49 ^a	(.90)	.74	3.60 ^{ab}	(1.07)	.87	3.72 ^b	(.94)	.83
Enjoyment WJR	3.70 ^a	(.77)	.79	3.99 ^b	(.74)	.78	3.93 ^b	(.76)	.84
Intervention – Student Assessment				Immediate Post Intervention			1Week Post Intervention		
Enjoyment- WJR Intervention *				4.12	(.71)	.84	4.27	(.61)	.78
Benefit- WJR Intervention									
Academic				3.69	(.80)	.80	3.88	(.72)	.80
Fitness				3.92	(.71)	.83	4.04	(.71)	.87
Intervention – Teacher Assessment				Immediate Post Intervention			1Week Post Intervention		
Overall Student- Enjoyment - Intervention				4.0	(.00)		4.33	(.58)	
Overall Student- Benefit Intervention									
Academic				2.33	(.00)		3.56	(1.17)	
Fitness				3.33	(.00)		3.72	(.82)	