

Healthy Moves Trainer-in-Residence Program: Results of a Feasibility Study Conducted among 4th and 5th Grade Classrooms

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Introduction

Children need physical activity for healthy social, cognitive, and physical development. The current national recommendation is that elementary school children get between 60 to 120 minutes of moderate-to-vigorous physical activity each day. Yet, research shows that today's school-aged children are failing to reach even minimal benchmarks for age appropriate physical activity. The increasingly sedentary lifestyles that children are developing early in their lives will likely continue into adolescence and ultimately adulthood.

Physical education (PE) classes, one opportunity for schools to boost child activity and play, have been increasingly phased out among many schools nationally due to growing pressure on student academic achievement, coupled with consistent cuts in K–12 operating budgets. Classroom teachers have increasingly assumed the role of developing and conducting physical education classes—often without the training or supports they need to integrate that instruction into their regular curriculum objectives for students. To support the mission of schools in providing physical education, new models of support are needed that realistically address teacher instructional needs and time demands, and the diversity of student activity interests and aptitudes.

The Healthy Moves Trainer-in-Residence program was developed to respond to these needs of youth and schools in conducting fun and active physical activity instruction for students. The program engages volunteer professional trainers from the local community to present lessons in PE classrooms for a 6-week period, two sessions per week. Instruction is aimed at improving student movement skills and confidence while providing elementary teachers a model for conducting future lessons.

During the 6-week program, trainers conduct an activity with a standard warm-up and cooldown. The warm-up and cooldown are designed to strengthen the body's small muscles that control fine body movement and coordination. The "activity for the day" varies based on the trainer's preferences and specialty in their practice, in consultation with principals and classroom teachers. Examples of physical activity lessons include Pilates, dance, tumbling, stretching or aerobic conditioning, and other specialty activities. Classroom teachers are responsible for participating in PE classroom activities and monitoring student behavior during classroom instruction periods.

The overall goal of the Healthy Moves Trainer-in-Residence Program was to provide physical education support for elementary school teachers and students that:

- Required minimal instructional effort from teachers during the 6-week training period.
- Offered teachers an opportunity to learn movement activities that could be applied to PE classes in the future.
- Offered fun activity experiences to students that could enhance their enjoyment and abilities in movement activities.
- Drew on the expertise and interest of professional trainers in the community for promoting active lifestyles among youth.

Expert trainers in Healthy Moves were local professionals with fitness expertise who were all members of a professional fitness organization, had a CPR Card, passed the school district volunteer screen (background check), committed to a 6-week assignment at a local elementary school, wrote six (6) activity plans, and attended two 1-hour orientation training meetings.

Overview of the Healthy Moves Trainer-in-Residence Feasibility Study

A feasibility study of the Healthy Moves program was conducted from January to March in 2012 in order to (1) examine the feasibility of conducting the program in school PE programs with classroom teachers, and (2) examine student physical fitness and health behaviors in relationship to program outcomes and academic performance. The study involved six community physical activity instructors and two district Adaptive PE Specialists as trainers-in-residence with fourth and fifth grade classrooms and their teachers in the Bethel School District in Eugene, Oregon.

Measures used in the study included a student fitness assessment on strength, flexibility, and endurance at the beginning and end of the program, conducted by trained trainer-in-residence volunteers and Oregon Research Institute (ORI) staff volunteers, and a one-page student questionnaire asking for child self-report of fast food and fruit/vegetable consumption, moderate-to-vigorous physical activity outside of PE, mode of transport to and from school, and sedentary screen time (see Appendix for measures and scoring procedures used in the study). Surveys were completed by students in their classrooms and retrieved by ORI staff for data entry.

The program evaluated individual student changes that took place over the 6-week period. Data from this study were linked with other assessments conducted by the Communities and Schools Together project (CAST) in order to examine the association between student participation in the Healthy Moves study, child Body Mass Index measures (BMI), and academic achievement. Student participation in classroom assessments was voluntary. Data included in this study was drawn on students passively consented into the Communities and Schools Together child obesity prevention study funded by the National Institutes of Health (grant R01 HD057839). The study was approved by ORI's Institutional Review Board. The remainder of this report briefly describes the evaluation methods and results of the Healthy Moves study.

Methods

To complete school-based Healthy Moves assessments, 26 assessors were recruited to help collect pre- and post-program information on and from students. Thirteen assessors were recruited from a pool of research assistants and researchers from ORI, each of whom had previous training and experience with data collection. The other 13 assessors were either Healthy Moves Board members or community volunteers interested in supporting the program.

Before the start of classroom assessments, a staff member explained the assessments that would be conducted that day and at the end of the program. Students were called by name to receive a numbered placard to wear for assessment scoring. These placard numbers were recorded on the student classroom roster that was maintained by the Assessment Coordinator in the study. Because this individual was also a school district employee, she was permitted to see student names and oversee the tracking of student identifiers for research purposes in the study.

For the fitness assessment, data included: (1) a test of core body strength using a timed “plank” position, (2) a test of flexibility that measured how far students in a standing position could bend and reach towards the floor, and (3) a test of cardiovascular conditioning involving a timed 600-yard walk/run. Student data included self-report information about diet/physical activity behaviors over the last month, including how many times they had (a) consumed fast food, (b) spent two or more hours a day doing sedentary screen-time activities, and (c) exercised for 30 minutes or more; standardized academic proficiency measures (math and reading scores from the Oregon Assessment of Knowledge and Skills, OAKS testing); and child BMI.

Prior to each round of data collection, assessors completed a brief training based on the Healthy Moves fitness assessment description (see Appendix for additional details). During the training, assessors learned the proper alignment for the plank and forward bend. They also reviewed procedures for the 600-yard run and discussed requirements for each type of position, as did the timer, recorder, and a volunteer who floated between stations to coordinate the movement and transition of students in the assessment processes. During the training assessors also participated in group role-playing to become more familiar with the procedures. In pre-program data collection, 18 assessors participated, of which 11 were experienced research observers and 7 were community volunteers. In the post-assessment, 22 assessors, 11 research observers, and 11 community volunteers participated.

Each assessor was assigned to one of three stations at both the pre- and post-data collection: the plank, the forward bend, or the 600-yard walk/run. The plank required two assessors. One assessor demonstrated the proper alignment for the plank to students and was responsible for watching the timer. The second assessor observed students and recorded the time (up to one minute) when students fell out of the plank position. Two more assessors were assigned to the forward bend. One assessor demonstrated the forward bend while the other assessor recorded each student’s level of flexibility.

At least two trained research assistant assessors were assigned to the 600-yard walk/run—this was the only assessment station requiring trained research assistants, rather than community volunteers. After describing the walk/run procedures to students, a lead research

assistant started the race and watched the timer. The second research assistant called out student IDs as they completed each lap. The lead assessor tallied the laps for each student and recorded the final time when students had completed the required distance. Any remaining assessors helped track run laps, marked the boundaries for the course, or served as floaters to help students navigate between stations.

Results

The Healthy Moves feasibility study collected data on 681 fourth and fifth grade students, including 355 fourth graders and 326 fifth graders, from 25 classrooms in six elementary schools in the district (Table 1).

Table 1. Healthy Moves School Assessment Participation: Winter 2012									
School*	Grade	# Classrooms	Total Student Participants	# Survey Participants			# Physical Health Participants		
				Pre	Post	Both	Pre	Post	Both
Clear Lake	4th	3	42	41	37	37	13	14	10
	5th	2	55	51	45	42	41	36	27
Danebo	4th	2	64	57	57	51	58	59	56
	5th	2	46	43	39	38	37	42	35
Fairfield	4th	2	55	49	47	45	48	45	43
	5th	2	51	44	23	21	44	46	41
Irving	4th	2	53	50	47	44	46	45	39
	5th	1	31	-	28	-	30	28	27
Malabon	4th	2	54	54	41	41	51	49	48
	5th	2	48	43	48	43	17	46	17
Meadow View	4th	3	87	81	84	79	81	84	79
	5th	3	95	82	86	75	80	86	78
District Total		25**	681	595	582	516	546	580	500

*Prairie Mountain participated in the Healthy Moves Trainer in Residence Program but the school's 4th and 5th grade students were not included in pre-post assessments due to time constraints in securing parent consents for the study.

**District Total number of classrooms is equal to one less than the sum of classrooms (sum = 26); one classroom included both 4th and 5th grade students and was counted as one classroom in the district total.

Pre- to Post-Intervention Changes in Student Health Behaviors and Fitness

Repeated measures paired *t*-tests were used to evaluate pretest and posttest changes in student health behaviors. Significant decreases in fast food consumption and screen time were found post Healthy Moves Program (see Table 2). As these health behaviors were not directly targeted in the program, it is unclear what factors were at work in these changes. There was, however, also a significant increase in the frequency of student self-reported moderate-to-vigorous physical activity from pre- to post-intervention. Regarding fitness measures, student

plank strength scores and flexibility as measured in the forward bend increased significantly from pre- to post-intervention assessments. No significant differences were found pre-post program for student scores on the 600-yard lap run. The study found no significant differences for children from classrooms taught by district Adaptive PE Specialists and community fitness volunteers.

Table 2. Changes in Self-Reported Health Behavior and Physical Assessment Measures by Assessment (Pre- to Post-Intervention, 7 Weeks Apart)

	Baseline		Follow up		<i>t</i>	<i>df</i>	<i>p</i>
	M	SD	M	SD			
Survey Measures							
Fast Food	1.58	1.14	1.42	1.10	3.71	513	<.001
Screen Time	2.44	1.37	2.22	1.33	4.44	514	<.001
Fruit/Vegetables	2.43	1.29	2.44	1.24	.17	515	.866
Exercise 30 min	2.58	1.31	2.72	1.27	-2.25	504	.025
Walk to School	1.69	1.72	1.66	1.75	.53	505	.596
Physical Health Assessment							
Laps Ran	7.07	3.20	7.11	1.20	-.09	435	.932
Plank	36.12	18.84	41.38	30.71	-3.55	492	<.001
Flexibility	4.10	.90	4.21	1.20	-2.48	470	.013

Note: Test conducted is a repeated measures, paired t-test, *df* = degrees of freedom,

Relationship of Academic Achievement to Student Health Behaviors and Fitness Measures

The study found that ratings of fast food consumption at the beginning of the program was negatively correlated with both math ($r = -.19, p < .001$) and reading scores ($r = -.24, p < .001$), screen time was negatively correlated with reading ($r = -.11, p = .01$), and reported exercise was positively correlated with both math ($r = .16, p < .01$) and reading scores ($r = .12, p < .01$). Ability to maintain the plank position longer was also associated with both math ($r = .14, p < .01$) and reading scores ($r = .09, p = .05$). Having a BMI of less than 85% (not overweight or obese) was associated with better performance on the plank, $t(483) = 5.52, p < .001, d = .51$, and lap run, $t(433) = 4.32, p < .001, d = .43$. Finally, Hispanic/Latino ethnicity was associated with poorer performance on the lap run, $t(432) = -3.31, p = .001, d = .43$.

Conclusion

This study confirmed the feasibility of conducting the Healthy Moves Trainer-in-Residence Program in fourth and fifth grade classrooms, and mobilizing trained volunteers to measure student physical fitness on a small set of measures. These preliminary findings point to a need among elementary school children to boost physical activity experiences, and the potential of the Healthy Moves program to support schools and communities in fostering greater activity opportunities for youth.

APPENDIX

Healthy Moves

Description of student fitness assessment for training and testing

1. Upper body strength: Plank
Beginning position is lying prone on a mat with elbows under shoulders and forearms on mat. On signal, student will raise torso, hips, and legs off the floor balancing on toes and elbows/forearms. Body is held in a straight position (like a plank). When hips sag or elevate, timing stops. The number of seconds the student is able to hold the plank position is recorded.
2. Flexibility: Forward bend with reaching toward feet
Beginning position is standing, feet shoulder-width apart. On signal bend at waist with legs straight and reach downward as far as possible. Scoring rubric:
 - a. 5 points if fingers, knuckles or palms touch floor
 - b. 4 points if fingers touch tops of shoes
 - c. 3 points if finger tips are even with ankles
 - d. 2 points if fingertips are even with shins
 - e. 1 point if fingertips are even with knee caps
3. Cardiovascular conditioning: 600 yard walk/run
Can be done inside in gym or around school track. Standing at the start line, students will start to walk or run when told to "GO." Students will have 4 minutes to complete the course. Whistle will alert students to stop walking or running around track/gym. Time and distance will be recorded.

Testing will be done in the following classroom procedures:

- A. Cardiovascular conditioning assessment (600 walk/run), Flexibility, and strength assessment: Circuit
The class will be divided into three groups. Groups will rotate 3 times when each test is completed.

Pre testing: Completed by HM volunteers/ ORI staff the week before the start of the 6 week program.

Post testing: Completed by HM volunteers / ORI staff the week after the 6 week program concludes.

Equipment needed:

- Whistles
- 3 Stop watches
- Healthy Moves diagram boards (to depict proper plank and forward bend technique)
- Cones (if the gym is used for testing in the cardiovascular assessment)
- Mat for plank

Training will be conducted with all assessors prior to the beginning of student pre-program assessment.

Healthy Moves Student Questionnaire

Office Use Only:

Student ID: _____

Name of School _____

Teacher Name _____

Date ____/____/____

Student Name _____

Grade _____

Please mark how many times you have done each of the following in the LAST MONTH (4 weeks). Place an **X** on your answer for each question below.

1. Ate at a fast food restaurant (McDonald's, KFC, Burger King or other)?

- Never
- Once or twice
- 3-5 times
- 6-10 times
- More than 10 times

2. Spend 2 hours or more in one day on any combination of the following activities?

 **Watch TV, play video games, or use a computer for something besides school work**

- Never
- Once or twice
- 3-5 times
- 6-10 times
- More than 10 times

3. Eat fruits or vegetables 5 or more times in a day?

- Never
- Once or twice
- 3-5 times
- 6-10 times
- More than 10 times

(please answer questions on the back of this page, too)

In the LAST MONTH (4 weeks), how many times did you . . .

4. Exercise for at least 30 minutes, hard enough to sweat or breathe harder than usual?

- Never
- Once or twice
- 3-5 times
- 6-10 times
- More than 10 times

5. Walk to or from school (or both)?

- Never
- Once or twice
- 3-5 times
- 6-10 times
- More than 10 times