AUTHORS

Rebecca Hasson, PhD - Dr. Rebecca Hasson is an Assistant Professor in the Schools of Kinesiology and Public Health and Director of the University of Michigan Childhood Disparities Research Laboratory. Dr. Hasson’s work focuses on the causes and consequences of childhood obesity, the psychosocial determinants of ethnic differences in obesity-related disease risk, and the design and implementation of behavioral interventions. She is the Principal Investigator of InPACT and other studies including the Health & Culture Project, the Stress, Obesity and Diabetes in Adolescents Study, and Stress Reactivity in Adolescents Study.

U. Sean Vance, MArch - Sean Vance is an Assistant Professor of Architecture in the Taubman College of Architecture and Urban Planning, teaching both graduate and undergraduate students in the Design and Health program. His diverse projects have included design of elementary and secondary schools, design of commercial spaces, research on the use of products and built environment by people with disabilities, medical innovations for pediatric cancer treatment, and led the Center for Universal Design at North Carolina State University, among other projects. Sean serves as consultant on InPACT and will work with teachers to successfully implement Physical Activity Guidelines for School Architecture in their classrooms.

Ben Ransier, M.Ed - Ben is a Curriculum and Training Coordinator for University of Michigan Project Healthy Schools (PHS). Prior to joining the PHS team, Ben spent the last 10 years working with students to develop healthy habits and achieve academic excellence as a physical education teacher and student advisor in Arizona and Michigan schools. Ben is a Co-Investigator on InPACT and will serve as the primary liaison between the InPACT research staff and schools.
Darin Stockdill, PhD - Dr. Darin Stockdill is the design coordinator for the University of Michigan’s Center for Education Design, Evaluation, and Research (CEDER) and is responsible for managing the instructional and program design projects of CEDER. Before joining the staff of CEDER, Darin was the content area literacy consultant for the Oakland (Michigan) Schools Intermediate School District for four years. He serves as consultant on InPACT working with research staff and teachers to link activity breaks to existing school curricula.

Tiwaloluwa Ajibewa, MS - Tiwa is a second year PhD student studying Movement Science in the School of Kinesiology. His academic interests focus on the relationships between physical activity and cardiometabolic outcomes in children and adolescents. Tiwa is a graduate research assistant in the Childhood Disparities Laboratory working on the InPACT intervention.

Lexie Beemer, BS - Lexie is a second year masters student studying Movement Science in the School of Kinesiology. Her academic focus centers on the role of physical activity and nutrition in combating pediatric obesity. Lexie is a graduate research assistant in the Childhood Disparities Research Laboratory working on the InPACT intervention.

We would like to thank the additional members of the InPACT study team including Jean DuRussell-Weston, Natalie Colabianchi, Molly O’Sullivan, Christopher Locke, Meichen Ai, YNhi Tran and Christopher Maj for their thoughtful input on different versions of this document.
STUDY RATIONALE

The crucial role of schools in promoting physical activity in children

School environments have historically provided many opportunities for children to be physically active through comprehensive programs, including recess, intramural physical activity clubs, interscholastic sports and physical education. However, with recent cuts to public school funding and an increased emphasis on standardized test scores, school districts across the country have reduced time allocated for structured physical activity in favor of additional academic instruction time. The typical school day is spent engaging in sedentary behaviors where children are required to participate in 5-6 hours of seated academic instruction. This is troubling as uninterrupted prolonged sitting time is associated with increased disruptive behavior, lower academic achievement and increased obesity risk in children.

Targeting prolonged sitting in classroom-based interventions

The restructuring of the school day provides a unique opportunity for teachers and administration alike to develop innovative strategies for integrating physical activity in a classroom setting. Classroom-based physical activity interventions have been successful at increasing physical activity, improving physical fitness, cognition and academic achievement among children and adolescents. Preliminary data from the University of Michigan Childhood Disparities Research Laboratory suggests interrupting prolonged sitting with moderate-to-vigorous intensity intermittent activity elicits similar levels of cognitive performance compared to intellectually active computer games and was rated as enjoyable in elementary school-age children. Hence, incorporating short bursts of activity throughout the school day may increase movement and learning in the classroom.

Making a difference with InPACT

InPACT is a classroom-based physical activity intervention emphasizing children’s natural physical activity patterns (short, intermittent bouts of activity) to reduce sedentary behaviors in children. Through simple adjustments in teaching curriculum and classroom design, our intervention provides a low cost strategy to increase structured physical activity opportunities throughout the school day. InPACT builds on important preliminary studies and the extensive relevant experience of the study team, which includes prominent scholars across five disciplines: kinesiology, education, architecture, public health, and medicine. By creating “active” classrooms that facilitate both movement and learning, we aim to significantly improve obesity-related outcomes as well as academic achievement in children. Last year InPACT was implemented in three schools in Southeast Michigan. Check out the preliminary results of the next page!
Interrupting Prolonged Sitting with Activity (InPACT) is a classroom-based physical activity intervention that emphasizes children’s natural physical activity patterns through the implementation of short, intermittent bouts of activity throughout the school day. Teachers are uniquely positioned to create a culture of health and wellness in their schools. InPACT is a feasible, low-cost strategy to reduce prolonged sitting time while simultaneously increasing structured physical activity opportunities and improvement on-task behaviors in the classroom.

99% of students were on-task within 30 seconds of completing an activity break.

Students reported an 8 out of 10 on their confidence to complete 30 minutes of physical activity every day at school.

On average, teachers were able to implement 5 activity breaks per day in their classrooms.

75% of teachers were exercising at a moderate-to-vigorous intensity.

85% of students were exercising at a moderate-to-vigorous intensity.

Children reported a 4.2 out of 5 on an enjoyment scale during activity breaks.

Teachers preferred fewer breaks that lasted 4 minutes.

Average transition time to activity breaks was 1 minute.

The shortest time was 2 seconds.

Learn more at impact.kines.umich.edu!
Active School Days
Let's help children get 60 minutes of physical activity at school!

Increasing academic pressure in the school system has led to the removal of physical activity from the school day. With recess being shortened or eliminated and physical education programs being cut, children are not given the chance to be active during an otherwise sedentary day. Physical activity, however, has shown a wide variety of benefits such as preventing obesity, improving behavior and social cohesion, and even facilitating academic achievement. By engineering physical activity into the class space, children will still be able to benefit from the increased movement without disrupting the learning environment. Here are some quick ways to get kids moving!

**Active Transport**
Form a Walking School Bus!
Walking school buses are an organized way to get students to walk to school. They include a fixed route with designated stops where students can be "picked up" by an adult leading the group.

**Active Breaks**
Get up and move!
Extended periods of sedentary activity can be harmful to your health. Break up your day with short bursts of physical activity. Do jumping jacks, dance, or even just stretch.

**Active Learning**
Restore Physical Education!
There is a great number of social, behavioral, and cognitive skills children learn in Physical Education. Let's bring back P.E. to improve the health and well-being of children.

Learn and move!
Physical activity doesn't always have to be separate from learning. Develop fun activities and games where students can learn while they're moving.

**Active Classrooms**
Utilize the room!
Rearrange the furniture so students have to weave through rows of desks to be seated. You could also set up learning stations around the room so students have to move between lessons. Every step counts!

Switch up the space!
Field trips are a great way for students to engage in learning outside of the classroom and often include more walking activities.

**Active Hallways**
Don't just walk!
Take advantage of the time students are switching rooms by making more effective movements. Skipping, marching, or intentionally taking a longer route are great alternatives to make activity more beneficial.

**Active Playgrounds**
Promote play!
Playgrounds are the perfect place for kids to get moving and work their muscles. Redesign outdoor space or utilize the one you already have! It is important to keep the grounds safe, available, and fun to use to encourage play.

www.cdrl.kines.umich.edu
(734) 936-8774
Childhood Disparities Research Laboratory
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ACTIVITY BREAKS

Study Protocol

InPACT is a 20-week study where classrooms will complete one, 4-minute moderate-to-vigorous physical activity (MVPA) break per day, thereby accumulating 20 MVPA minutes per week. Each week the number of activity breaks incorporated into the classroom day will increase by one until classrooms have incorporated 5 activity breaks in a school day, totaling 100 MVPA minutes per week. Preliminary data generated in our laboratory along with feedback from elementary school teachers suggests 5 MVPA breaks is a feasible dose of exercise to elicit cognitive benefits. The intensity of activity will be calculated as a percentage of maximum heart rate (220-age) with students and teachers exercising at 60-75% HR\text{maximum}. You will be asked to engage in the activity breaks to model the active behavior for your students. The incremental protocol is presented below.

<table>
<thead>
<tr>
<th>Study Week</th>
<th>Month</th>
<th>Days of the Month</th>
<th># of breaks/day (3 minutes each)</th>
<th># of breaks per week</th>
<th>MVPA minutes/week</th>
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<tbody>
<tr>
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<td>January</td>
<td>8-12</td>
<td>Baseline data collection-stress questionnaires</td>
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<td></td>
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<tr>
<td>2</td>
<td>January</td>
<td>15-19</td>
<td>1</td>
<td>5</td>
<td>20</td>
</tr>
<tr>
<td>3</td>
<td>January</td>
<td>22-26</td>
<td>2</td>
<td>10</td>
<td>40</td>
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<tr>
<td>4</td>
<td>Jan/Feb</td>
<td>29-2</td>
<td>3</td>
<td>15</td>
<td>60</td>
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<td>5</td>
<td>5-9</td>
<td>4</td>
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<td>80</td>
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<td>6</td>
<td>12-16</td>
<td>5</td>
<td></td>
<td>25</td>
<td>100</td>
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<tr>
<td>8</td>
<td>Feb/Mar</td>
<td>26-2</td>
<td>5</td>
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<td>9</td>
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<td>23-27</td>
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<td>17</td>
<td>Apr/May</td>
<td>30-4</td>
<td>Spring break</td>
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<td>18</td>
<td>Apr/May</td>
<td>7-11</td>
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<td>100</td>
</tr>
<tr>
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<td>Apr/May</td>
<td></td>
<td>End-of-study data collection-stress questionnaires</td>
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</tbody>
</table>

InPACT: Interrupting Prolonged Sitting with Activity
www.inpact.kines.umich.edu
InPACT Negotiables/Non-Negotiables

The purpose of the InPACT study is to improve movement and learning in the classroom by incorporating 5, 4-minute activity breaks through changes in teaching curriculum and space modifications. With that being said there are certain procedures that must be followed to while implementing InPACT in your classroom. We have made every effort to reduce teacher burden of this project as we value the time and energy you put into designing your curriculum and teaching your students. For questions pertaining to the negotiables and non-negotiable outside of this document, contact the Principle Investigator Dr. Rebecca Hasson at hassonr@umich.edu.

Non-Negotiables

1. Teachers should participate in all activity breaks in order to model the active behavior for the students in their class.

2. Teachers should encourage all students to participate in each activity break. If for some reason a student cannot participate due to one or more physical, mental, or emotional limitations, the teacher should aim to modify the activity for such students as best as possible.

3. Teachers must follow the 20-week InPACT incremental protocol as it relates to the number of activity breaks per day, per week and per month.

4. Activity breaks must be 4 minutes in duration (not including the time it takes to set up or cool down after the activity).

5. Activity breaks must be performed at a moderate-to-vigorous intensity level.

6. Teachers should complete study questionnaires to the best of their ability throughout the course of the study.

7. Teachers should administer questionnaires to their students to the best of their ability at the beginning and conclusion of the study.

8. Teachers should use the Active Learning curriculum when appropriate throughout the course of the study.

9. Teachers should not use the Active Learning activities presented in the “Academic” section of the Compendium of Physical Activities. These activities are performed at a lower intensity and should only be used to supplement the prescribed number of activity breaks.
ACTIVITY BREAKS

Additional Non-negotiables

1. _______________________________________________________________________

2. _______________________________________________________________________

3. _______________________________________________________________________

Negotiables

1. You and your students can create your own activity breaks. The InPACT Compendium of Physical Activities is a suggested list of 200 MVPA activity breaks.

2. Classroom set-up (rearrangement of tables, seats, black/white boards along with any other teaching resource or equipment) is at your discretion. The floor plans provided in this manual are suggestions on how you can redesign your classrooms to promote learning and movement.

3. You can implement the activity breaks at any time throughout the day but should have at least 20 minutes of sedentary time in between each break.

4. Activity breaks and active curricular lessons can be completed in areas outside of the classroom (hallways, cafeteria, etc.)

Additional Negotiables

1. _______________________________________________________________________

2. _______________________________________________________________________

3. _______________________________________________________________________
ACTIVITY BREAKS

Potential Risks

The InPACT study team has taken steps to minimize the risks of this study. The known or expected risks are:

- **Activity breaks**: During any type of exercise there are slight health risks, however in healthy children they are small. Specifically, children may become tired during exercise or develop sore muscles, but this will be temporary.
- If a child gets injured during any portion of the study, their participation in the activity breaks for the day will be immediately terminated. If the child still desires to participate in the activity breaks, and it is deemed that participation is not harmful to their health (e.g., the child had a light stomach ache vs. the child felt dizzy during exercise), the participant may be allowed to continue to participate in the activity breaks.
- **Questionnaires**: These carry a minimal risk for emotional discomfort and stress. However, in the case of discomfort from completing paper questionnaires your students can refuse to answer any questions.
- **Confidentiality**: It is very unlikely that anyone outside our study team will know what a study participant said because their name will not be attached to their data. All research data generated from the proposed work will be kept in locked files and on secure servers at University of Michigan by a study investigator (Hasson), with access restricted to study staff. Identifiable information, such as name, will not appear on these materials. The key linking the participant’s identity to their unique code identifier will be kept in a confidential manner in a locked file cabinet in the Childhood Disparities Research Laboratory, with access only by the InPACT study team.
ACTIVITY BREAKS

How to Prevent Injuries During an Activity Break

Classroom-based physical activity interventions are fun and engaging ways children can move, play and learn. But they can be dangerous if children are unsupervised, activities are not age-appropriate or if the classroom is not properly arranged for activity. Accidents happen for many reasons, but you as the teacher can prevent them! The following tips can help you keep your students safe.

Conduct a quick survey
Before allowing children to play, make sure:

- The classroom is arranged in a way that you and other adults can supervise children at all times.
- The floor is free of hazards. For example, make sure the ground is free of trash, books, pencils, etc.
- There is adequate space to exercise. Make sure there are no sharp corners of desks, bookshelves where children can injure themselves. Please see the “Classroom Design” section of this manual for suggestions.

Use age-appropriate activities
Physical activities are often designed for multiple age groups. Help children stay safe by using activities from the Index of Activities that is age-appropriate for them.

Be alert
Experts estimate that nearly half of all injuries at school are related to inadequate supervision.

- Watch children at all times. Position yourself in the classroom where you can see all children exercising and offer instruction or correction when necessary.
- If there is more than one adult in the classroom at the time of the activity break (a student teacher is present), split up so you each can watch the students from a different perspective.

Discuss classroom safety
Discuss safety measures with children.

- Work with students to reinforce the InPACT classroom guidelines.
- Post the guidelines on the classroom wall and discuss them periodically.
Injuries are much more common with intense exercise and competitive sports than with the moderate intensity exercises usually done in the classroom. Many exercise-related injuries are preventable, most are mild, and the majority will respond to treatment at home. Although many injuries feel the same, there are important differences among them.

- **Sprains** are injuries to ligaments. In *first-degree sprains*, the ligament is stretched; in *second-degree sprains*, some fibers are torn; in *third-degree sprains*, most or all of the fibers are torn.
- **Strains** are injuries to muscles or tendons. A strain is also known as a pulled muscle.
- **Tendinitis** is the inflammation of a tendon, often caused by overuse or poor body mechanics. Pain is the major symptom, but warmth, swelling, and redness may also occur.
- **Muscle cramps and spasms** are strong and sustained muscle contractions. Gentle stretching will help relieve cramps; hydration and good conditioning help prevent them.

If any of the above-mentioned injuries occurs as the result of an activity break completed in the classroom, the injured child should be sent to the school nurse’s office for immediate treatment. The INPACT study team suggests using the PRICE program to handle the child’s injuries:

- **Protection**. Protect small injuries by applying bandages, elastic wraps, or simple splints.
- **Rest**. Injured tissues need time to heal. Children should avoid vigorous activity, but they can still walk or jog.
- **Ice**. Ice is an excellent anti-inflammatory, reducing swelling and pain. For best results, apply an ice pack for 10 to 15 minutes after an injury. Repeat each hour for the first four hours, then four times a day for the next two to three days.
- **Compression**. Pressure will help reduce swelling and inflammation. In most cases, a simple elastic bandage will suffice.
- **Elevation**. Elevating an injured leg or arm drains fluid away from injured tissue and reduces swelling, inflammation, and pain.
Health Concerns and Special Considerations

“How Ways to Get Any Kid to Exercise”, WebMD Feature

How do I know if one of my students is overweight or obese?

If a student in your class is overweight or obese, this means that they are carrying excess body fat. Doctors, nurses and other healthcare professionals can look to see whether the child is overweight or obese by calculating their body mass index (BMI). BMI is a measurement of a child's weight in relation to their height. BMI is calculated by dividing the child's weight in kg by their height in meters squared (weight (kg)/ height m\(^2\)). However, it is important to know that a child's BMI is not interpreted in the same way as an adult's BMI. Instead, their BMI is charted on special growth charts. These charts can show how a child's BMI compares with the normal range for children of a similar age, sex and ethnic background.

Special considerations for overweight and obese children

A child who is overweight or obese has an increased risk of:

- **Joint problems** - weight bearing joints (ankles, knees, hips, feet, pelvis, low back and spine can become damaged or diseased potentially making exercise painful and challenging.
- **Breathing problems** - worsening of asthma, difficulties with their breathing whilst asleep and feeling out of breath easily when exercising.
- **Lower fitness levels** - feeling too out of shape to keep up with other kids their age.
- **Lower self-esteem and a lack of confidence** - being the subject of bullying because of their weight resulting in the child becoming withdrawn and avoiding social contact or exercise.

Tips to increase physical activity participation and enjoyment in overweight and obese children

- **Start small.** Experts say kids should get about an hour of exercise every day -- but that doesn’t mean they have to get it all in one session. If exercising for 30 minutes feels like too much to kids, they're not going to do it. Instead, INPACT is designed to get kids to commit to a tiny amount of exercise time, 4 minutes. Data from the Childhood Disparities Research Laboratory demonstrated that overweight/obese children felt worse at during the initial activity breaks compared to normal weight children but
ACTIVITY BREAKS

their enjoyment improved over time after successfully completing additional breaks. When children commit to even a small amount of exercise, they’ll likely feel better about themselves and reflect back and say, ‘I did it.’ That will inspire them to do more and more over time.

“Asthma & Physical Activity in the School: Making a Difference” National Institutes of Health

Lifelong physical fitness is an important goal for all students. Yet students with asthma frequently restrict their physical activities. Much of this restriction is unnecessary—children with asthma can and should be physically active. About 1 child in every 15 has asthma so you will likely have 1-2 students in your classroom with this condition. The National Heart, Lung, and Blood Institute’s National Asthma Education and Prevention Program encourages a partnership among students, families, physicians, and school personnel in managing and controlling asthma so that students can be active.

What is asthma?

Asthma is a chronic lung condition with ongoing airway inflammation that results in recurring acute episodes (attacks) of breathing problems such as coughing, wheezing, chest tightness, and shortness of breath. These symptoms occur because the inflammation makes the airways overreact to a variety of stimuli including physical activity, upper respiratory infections, allergens, and irritants. Exposure to these stimuli—often called triggers—creates more swelling and blocking of the airways. Asthma episodes can be mild, moderate, or even life-threatening. Vigorous exercise will cause symptoms for most students with asthma if their asthma is not well-controlled. Some students experience symptoms only when they exercise. However, today’s treatments can successfully control asthma so that students can participate fully in physical activities most of the time.

Asthma varies from student to student and often from season to season. This is why you need to understand what asthma is and what the individual needs of your students are. At times, programs for students with asthma may need temporary modification, such as varying the type, length, and/or frequency of activity. At all times, students with asthma should be included in activities as much as possible. Remaining seated while the rest of the class is participating in an activity break can set the stage for teasing, loss of self-esteem, unnecessary restriction of activity, and low levels of physical fitness.
Helping students control their asthma

Getting control of asthma means recognizing asthma triggers (the factors that make asthma worse or cause an asthma episode). You should avoid or control these triggers, follow an asthma management plan, and have convenient access to asthma medications. It may also mean modifying physical activities to your students’ current asthma status.

Recognize asthma triggers

- Exercise—running or playing hard—especially in cold weather
- Upper respiratory infections—colds or flu
- Laughing or crying hard
- Allergens
  - Pollens—from trees, plants and grasses, including freshly cut grass
  - Animal dander from pets with fur or feathers
  - Dust and dust mites—in carpeting, pillows and upholstery
  - Molds
- Irritants
  - Cold air
  - Strong smells and chemical sprays, including perfumes, paint and cleaning solutions, chalk dust, lawn and turf treatments
  - Weather changes
  - Cigarette and other tobacco smoke

Should asthma triggers be avoided or controlled? Some asthma triggers—like pets with fur or feathers—can be avoided. Others—like physical exercise—are important for good health and should be controlled rather than avoided.

Actions to consider

- Identify students’ known asthma triggers and eliminate as many as possible. For example, keep animals with fur out of the classroom.
- Use wood, tile or vinyl floor coverings instead of carpeting.
- Schedule maintenance or pest control that involves strong irritants and odors for times when students are not in the area and the area can be well ventilated.
- Adjust schedules for students whose asthma is worsened by pollen or cold air. Indoor activities may allow more active participation.
- Help students follow their asthma management plans.
ACTIVITY BREAKS

Frequently Asked Questions

• How long should the activity breaks be? How many activity breaks per day? Per week?
  - The activity breaks will be 4 minutes long. The number of activity breaks per day/week changes. Please refer to the “Study Protocol” section of this manual.

• What are the benefits of the activity breaks?
  - Research has consistently demonstrated that students who engage in regular physical activity both in and out of the classroom tend to show better academic performance along with better emotional, mental and physical health outcomes.

• Will the activity breaks have planned/established times or will they be flexible?
  - Activity breaks do not have planned/established times. It will be up to you, the instructor to determine the right time to implement the activity breaks in your classroom. However, we have included suggestions as to the best times to transition into the activity breaks so that it may be easier to integrate the activities. See the “Teaching Curriculum” section of this manual.

• How can I accommodate and include students with disabilities and or special needs?
  - It is important that all students have an opportunity to participate in the activity breaks because “the more you burn, the more you learn”! If your students can participate in activities at a lower intensity, they should do so. Students can also engage in the activity breaks while seated only doing the upper body activities. See the instructional videos on the InPACT website for examples of seated activities.

• Can students be more physically active outside of the time they spend at school with the activity breaks?
  - Absolutely! Students should get the recommended 60 minutes of physical activity on a daily basis. The activity breaks are meant as a means to supplement their physical activity during the school day.
ACTIVITY BREAKS

• What if a student gets hurt during the activity break?
  o Safety comes first, and proper precaution should be taken by the instructor prior to the beginning of all the physical activity breaks. However, if in the unfortunate circumstance that a student is hurt during the activity break, make sure to follow the school’s appropriate guidelines to deal with the injury.

• Can activity breaks be personalized?
  o Yes, certainly activity breaks may be personalized at your discretion. We have included a list of suggested activities, but you are not limited to these activities alone, but please remember to follow the list of non-negotiables.

• What age students are activity breaks designed for?
  o The activity breaks listed in the Compendium of Activities are designed for students in grades 3-6.

• What if I run out of time and cannot fit in all 5 activity breaks?
  o Try to incorporate as many prescribed activity breaks as you can and document the reasons you were unable to achieve the recommended goal in a weekly questionnaire.

• What if a student is absent one of the days of the study?
  o Student absences are a reality of the scholastic year. There is no need to worry about absent students as it pertains to our study.

• Why do I need to incorporate these activity breaks when there is already a PE teacher/program at my school?
  o Activity breaks are important regardless of whether PE teachers or a PE program exists at school. Activity breaks not only increase physical activity but also reduce time spent in prolonged sitting both of which are important for cognitive function.

• What if I don’t exercise myself (teachers)?
  o The activity breaks are meant to integrate everyone, regardless of skill level. You don’t have to be an expert, just get up and move! Activity breaks are fun ways to integrate everyone in the class, regardless of skill level and by participating in the activity breaks you will improve your own health by meeting the physical activity guidelines for adults.
CLASSROOM MANAGEMENT

INTRODUCTION AND TECHNIQUES

“The Kinesthetic Classroom: Teaching and Learning Through Movement” by Lengel and Kuczala

Introduction:

Some teachers and administrators share a belief that using movement in classrooms could lead to a lack of control and an increase in discipline problems. Although this is a possibility, it is no more likely than issues that could arise when using other teaching methodologies. The success of teaching and learning is highly dependent upon the teacher’s ability to effectively manage the classroom. In fact, according to Harry Wong, effective teachers MANAGE (proactive approach) their classrooms and ineffective teachers DISCIPLINE (reactive approach) their classrooms. The foundation of classroom success is built upon high expectations and the effective utilization of classroom procedures and routines. When physical activity breaks are used purposefully, movement can lead to a more focused, productive, and efficient classroom. The following are techniques that can be used during kinesthetic learning and movement activities to maintain teacher control and empower students to work at their best throughout the instructional day.

Techniques:

1. **Define expectations**
   - Let students know that you have high expectations for them while participating.
   - Share with students what you want accomplished and then give procedures to help them do so.
   - Jointly develop class rules based on expectations and needs. List of rules should not exceed 5. Replace rules as they become mastered by students.
   - Display rules/consequences in a prominent location that can easily be referred to during activity breaks.
   - Discuss logical consequences. Consequences should be reasonable and relevant to the misbehavior.
2. **Be firm with your expectations**
   - Set high standards and expectations from the beginning and revisit with students before activities.
   - Respond swiftly with previously stated consequences for off-task students. If too many students are off task, you need to revisit the rules with students and practice the procedures associated with misbehaviors.
   - Remain calm during times of misbehavior and avoid arguments and power struggles with students. Provide students with behavior choices to avoid power struggles. Discuss misbehaviors with students individually and privately.

3. **Prepare the room**
   - Establish routines for preparing the room prior to activity breaks. One possible way to do this is to assign students to be “safety inspectors” to prepare the room and identify possible hazards before activity begins.
   - Have students practice the procedure(s) repeatedly to minimize transition times.
   - Have all materials associated with each activity ready prior to initiating the physical activity breaks. This includes activity descriptions, technology and visual aids, equipment needs, and preparing the room for activity.

4. **Use basic cues**
   - Utilize simple and clear signals.
   - Have students practice the procedure of responding to these cues repeatedly.

5. **Use partners effectively**
   - If the activity requires students to work in pairs or in a small group, you can assign partners/groups, allow students to choose, or use creative ways to select partner/groups. Some classes will have a more difficult time selecting appropriate partners than others, so consider what will work best in these situations.
   - Students should work productively and cooperatively with their partners. If they are not, change partners and consider revising your methods of choosing partners/groups.
6. **Provide time limits**
   - Keep students on task by setting time limits before (set-up of activity), during (activity), and following physical activity (return to task).
   - Use a timer that students can all see and follow. [http://www.online-stopwatch.com/](http://www.online-stopwatch.com/)
   - Set all limits with expectations and consequences.

7. **Prepare a step-by-step approach**
   - Have a consistent plan for how you will present the activity.
   - Be proactive and continually work to identify potential problems before they occur. Use a specific procedure to avoid potential situations and practice it with the students.
   - Use your planning checklist to ensure that everything is in place to facilitate productive, time-efficient activity breaks.

8. **Start small**
   - Start with simple activities with specific, straight-forward directions. Simple activities will allow students to also focus on the procedures associated with the activity breaks.
   - Begin with simple movements that won’t embarrass students with limited exposure to physical activity.
   - Start with activities that can be performed alone and progress to partner work before engaging in whole group activities.

9. **Move continuously**
   - Actively participate with students. Alternate the location within the classroom where you participate to maintain effective proximity control.
   - Let students know you are watching.
CLASSROOM MANAGEMENT

InPACT’s Recommended List of Procedures Students Should Master:

Pre-activity:
- Safety checks
- Moving classroom furniture/equipment before/after
- Non-participation (i.e. illness/injury/etc.)
- Receiving classroom observers
- Exiting desk/workstation to begin activity
- Student positioning throughout space
- Choosing partner/groups
- Checking for student understanding

During activity:
- Quiet/stop signals
- Moving with a voice level conducive to an inside environment
- Requesting help
- Movement intensity during activity
- Maintaining personal space
- Injury during activity
- Peer-to-peer feedback/Working cooperatively
- Teacher’s individual request to stop activity due to student non-compliance

Post-activity:
- Returning to task
- Returning classroom furniture to original position
- Peer-to-peer feedback/Working cooperatively
CLASSROOM MANAGEMENT

Planning Checklist

General:
☐ Know and understand how physical activity is beneficial to learning.
☐ Outline your teacher expectations for student outcomes related to activity breaks.
☐ Become familiar with the negotiable and non-negotiable factors of implementing physical activity into the classroom.
☐ Identify appropriate resources and sources of support to help implement physical activity breaks.
☐ Familiarize yourself with the compendium of physical activities.
☐ Work with the students to create a list of rules (5 or less) and consequences during activity breaks.
☐ Create a plan to allow students to practice procedures.
☐ Establish a list of student jobs to help facilitate the activity breaks (i.e. safety inspectors, furniture movers, etc.) and how you will decide how you will assign these jobs on a daily basis.

Daily:
☐ Create a plan to implement the appropriate number of physical activity breaks into your daily instruction.
☐ Have all materials associated with physical activities cued up for use.
☐ Identify how you will introduce the physical activity breaks.
☐ Assign safety inspector roles to students.
☐ Anticipate potential issues and have a plan to proactively address them.
☐ Determine a plan for non-participants.
CLASSROOM MANAGEMENT

Safety:
- Ensure all students participating in activity are appropriately dressed for physical activity.
- Be aware of pertinent information about any physical limitations a student may have (i.e. asthma, Type I diabetes, etc.) and adopt appropriate modifications to ensure that all students can participate in daily physical activity. Refer to information in the IEP for students with special needs.
- Work with the school health coordinators to create an action plan for responding to student injuries during physical activity.
- Create a plan to identify and address potential hazards within the classroom during physical activity breaks.

Scheduling:
- Identify various times during the instructional day you plan to incorporate physical activity breaks (i.e. transitions, before/after lessons, curriculum breaks, etc.).
- Include PA break times into your long-term and short-term planning documents.
- Include daily PA break times on your class schedules.
- Incorporate opportunities for kinesthetic learning into all subject areas.

Assessment:
- Encourage students to assess their own progress.
- Plan time for students to become familiarized with heart rate monitors and their use.
- Create a procedure for welcoming observers into the classroom.
- Outline some time in your daily work schedule to complete project surveys.
Student Motivation

Strategies to increase motivation:

1. Plan for every physical activity break; never try to wing it.
2. Model each activity and participate with the students.
4. Work to make the classroom as comfortable as possible; check air circulation, temperature, lighting, and humidity.
5. Vary your instructional strategy.
6. Move around the room during activity breaks. Move energetically and purposefully.
7. Be expressive with your face – SMILE.
8. Be enthusiastic and encourage students.
9. Add some excitement into your speech; vary your pitch, volume and rate.
10. Be accepting of students’ ideas and comments, even if they are incorrect; correct in a positive manner.
11. Ensure that all students feel comfortable asking questions and discussing concerns.
12. Provide opportunities for students to lead activity breaks.
13. Involve students in planning physical activities.
14. Be aware of those students requiring assistance, and then see that they get it.
15. Be a model of your classroom expectations.
16. Recognize appropriate behavior and reward it on a continual basis.
17. Praise students in front of the class and reprimand in private.
18. Make the activity breaks enjoyable.
19. Start with simplistic activities to allow students to build confidence before progressing to more challenging ones.
20. Provide students with special needs appropriate accommodations to provide them an opportunity to be successful during physical activity breaks.
21. Emphasize a cooperative environment over a competitive one.
Seven-Step Approach for Teaching/Modeling Classroom Procedures

“What is Interactive Modeling?”, Responsive Classroom Feature

As with any educational endeavor, the teacher plays a significant role in the attainment of expected student outcomes. Teacher attributes such as: subject knowledge, enthusiasm for the subject, high expectations, detailed preparation, effective use of assessment, and effective teacher modeling will provide students with the best chance to succeed. Use of these traits will be monumental in effective use of activity breaks to prepare the brain for learning and reinforce learned concepts through kinesthetic learning activities. This section will focus on the teacher’s role in effectively modeling the skills and procedures associated with the incorporation of physical activity in the classroom.

To increase levels of student engagement during the learning process of the routines and procedures associated with physical activity breaks, we recommend using interactive modeling in lieu of the traditional model.

How does Interactive Modeling differ from traditional modeling?

In traditional modeling, the teacher describes and shows the students how to perform a specific procedure and then expects them to learn it immediately. Interactive Modeling engages students in higher-level thinking skills to first analyze the procedure before attempting it. Students also:

- Learn exactly why the skill, routine, or procedure is important to their learning and how it relates to the respectful, smooth functioning of the classroom.
- Are asked what they noticed about the teacher’s modeling (rather than told by their teacher what to notice).
- See a few classmates additionally model the routine or procedure after the teacher’s initial modeling.
- Practice the routine or procedure right away.
- Receive immediate feedback and coaching from their teacher while they practice.
Why is Interactive Modeling more effective than traditional modeling?

The distinctive steps of Interactive Modeling incorporate key elements of effective teaching: modeling positive behaviors, engaging students in active learning, and immediately assessing their understanding. Research shows that when we teach in this way, children achieve greater, faster, and longer-lasting success in meeting expectations and mastering skills.

With Interactive Modeling students are provided the necessary opportunities to create the mental schema of what is expected from them. This approach allows each student to take ownership of their own learning by doing the noticing themselves. This approach also helps to build up their powers of observation and their analysis and communication skills. In addition, because of the immediate practice, they gain stronger mastery of the procedure being taught.

The seven steps of Interactive Modeling:

1. Succinctly state what you will model, and why.
2. Model the behavior (without describing) exactly as you expect students to do it.
3. Ask students to describe what they noticed.
4. Invite one or more students to model the same way you did.
5. Again, ask students what they noticed the modelers doing.
6. Have all students model while you observe and coach them.
7. Provide feedback, naming specific, positive actions you notice and redirecting respectfully but clearly when students go off track.
## Troubleshooting Guide

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Strategy</th>
</tr>
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</table>
| **Limited space**                | • Create an action plan to temporarily move classroom furniture to allow for more movement  
• Consult with other campus personnel for ideas  
• Consult with other teachers and/or the InPACT team |
| **Time**                         | • Reteach all appropriate procedures with students for more timely completion of activity breaks  
• Identify and use activity break routines that are less complex  
• Consult with other teachers and/or the InPACT team |
| **Students’ reluctance to participate** | • Continually work to create a classroom culture that is accepting of all students.  
• Refrain from punishing these students or bring undue attention to them. Consult with them individually and address their concerns.  
• Review the list of suggested strategies used to increase motivation.  
• Consult with other teachers and/or the InPACT team. |
## Challenge | Strategy
--- | ---
Transitioning | • Reteach procedures  
• End with a “silent burst” where everyone moves quietly.  
• End with a variation of “Simon Says” such as “Do as I’m doing, follow me; walk back to your seats slowly and quietly”  
• Turn the lights down following the activity break.  
• Ask students to direct their attention to their breath as they gradually slow down and catch their breath.  
• Consult with other teachers and/or the InPACT team.

Students’ boredom with PA | • Create a log of activities previously done and allow students to choose their favorites from the list.  
• Vary the activity breaks used.  
• Have students take turns leading them.  
• Add or change the music that you are using.  
• Consult with other teachers and/or the InPACT team.

Too noisy | • Reteach the procedure associated with moving while using an inside voice.  
• Play music to help students focus on the activity.  
• Consult with other teachers and/or the InPACT team.
<table>
<thead>
<tr>
<th>Challenge</th>
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</tr>
</thead>
</table>
| Poor air circulation           | • Plan activities to occur before lunch, before going to a special, or at the end of the day so that the classroom can be aired out before using it again.  
                                 |   • Keep fans on and windows open if applicable.  
                                 |   • Consult with other teachers and/or the InPACT team. |
| Student injury                 | • Follow the pre-determined action plan created by the teacher, administration, and school health professional.  
                                 |   • Revise procedure for addressing safety hazards within classroom.  
                                 |   • Consult with other teachers and/or the InPACT team. |
| Hyperactive student            | • Make sure you have students’ attention prior to giving directions.  
                                 |   • Provide clear and concise directions and repeat if necessary.  
                                 |   • Check for understanding before the movement begins.  
                                 |   • State consequences for not meeting expectations consistently.  
                                 |   • Respond immediately.  
                                 |   • Identify opportunities for re-teaching procedure(s).  
                                 |   • Avoid giving attention.  
                                 |   • Set goals for changing behavior for following movement activities.  
                                 |   • Consult with other teachers and/or the InPACT team. |
| Floor surface (i.e. slippery, cluttered, etc.) | • Work with school maintenance team to ensure that floors are swept on a regular basis and kept clean. |
Frequently Asked Questions

• Will these activity breaks interfere with students’ learning?
  o No, these activity breaks when integrated correctly in the classroom, should not interfere with the students learning, rather it may improve their learning.

• What makes activity breaks the perfect brain break?
  o Activity breaks are the perfect brain break because they allow students to refocus, to revise what they have been learning in a different manner, and most importantly because it increases the flow of blood throughout the body--more specifically to the brain, providing key nutrients for optimal functioning.

• What are the best times to transition to an activity break?
  o The best times to transition to an activity break are up to you, however transitions between topics and subjects are a good opportunity to include an activity break. See the “Teaching Curriculum” section of this manual.

• What if the student doesn’t know how to do one of the activities?
  o Prior to the commencement of all the physical activity breaks, you should make sure that all students in your classroom understand what they will be doing. Additionally, all of the physical activity breaks are age appropriate for all skill levels.

• How do I encourage students who may not want to participate?
  o You can encourage students’ participation in the activity breaks by using some of the suggestions listed in the “Student Motivation” portion of this manual.

• What if I don’t exercise myself (teachers)_CF?
  o The activity breaks are meant to integrate everyone, regardless of skill level. You don’t have to be an expert, just get up and move! Activity breaks are fun ways to integrate everyone in the class, regardless of skill level and by participating in the activity breaks you will improve your own health by meeting the physical activity guidelines for adults.
Creative Curricular Connections

Are you interested in making your classroom a more physically active place? You can explore using different physical activities to compliment your teaching and/or reinforce ideas and concepts within your lessons.

Physical activity can be used in a few important ways to help you teach. You can use activities as opportunities to use vocabulary and skills from lessons (e.g. calculating total and average quantities of different exercises performed, etc.). You can use activities to more directly reinforce concepts and ideas from instruction (having them alter their speed of movement to mimic particles in different states of matter). You can also use activities more directly as parts of lessons to teach concepts, such as having students learn how to collect and graph data by doing so with data they generate during physical activity.

Why should you do this? Some people will take a learning styles approach and argue that physical activity helps “kinesthetic learners” perform better; however, the idea of using the “learning styles” of visual, auditory, and kinesthetic to guide instruction has no basis in actual education research (see links below for a few takes on the myth of learning styles).

http://www.wired.com/2015/01/need-know-learning-styles-myth-two-minutes/
http://www.pbs.org/parents/expert-tips-advice/2016/03/letting-go-learning-styles/
https://www.theguardian.com/science/head-quarters/2015/apr/24/can-neuroscientists-dispel-the-myth-that-children-have-different-learning-styles-im-a-scientist-learning-zone-wellcome-trust

So… if we’re not trying to reach kids who are kinesthetic learners, why should we include more physical activity? The reality is that kinesthetic learning is likely good for all students, not just students with that one type of learning style. There are some basic common sense reasons that actually tie into neuroscience. Activity increases circulation and oxygenation of the blood, and this increases activity in the brain. Activity also wakes people up and makes them more alert. Activity is also more interesting than just sitting at a desk, and active people are generally healthier… and what kid wants to sit down all day? So… these are some pretty logical reasons to try to get kids up and moving!

There are also research-based reasons to support incorporating activity into the school day that are connected to on-task behavior during instruction after increased activity. A study with 3rd and 4th grade students published in the journal MEDICINE & SCIENCE IN SPORTS & EXERCISE, Mahar et. al. (2006) found
that, “A classroom-based physical activity program was effective for increasing daily in-school physical activity and improving on-task behavior during academic instruction.” Research has also found more general, broad connections between activity and cognition. Penedo and Dahn (Current Opinion in Psychiatry, 2005) carried out a review of the research on the connections between activity, physical health, and mental health, and found a strong research base supporting a positive relationship between increased physical activity and mental well-being, including focus and attention. So... research does seem to show that physical activity can help young people have more focus and attention, and also simply feel better overall. These are probably all the reasons we need!

The ideas below can guide efforts to increase activity by engaging kids in multiple ways with content. Some of these activities might work for your activity breaks as well... as long as they meet the study criteria for the activity breaks (3 minutes of moderate-to-vigorous physical activity, or constant movement that boosts students’ heart rates). If you are interested and trying some of these out, pick one and give it a go! Feel free to reach out to the InPACT team for more ideas or information as well.

• Examples of Reinforcement Activity:
  • 4th grade States of Matter Reinforcement...
    o Particles in a:
      • Gas: vibrate and move freely at high speeds.
      • Liquid: vibrate, move about, and slide past each other.
      • Solid: vibrate (jiggle) but generally do not move from place to place.
    At different intervals, have students do a particular movement (running or jumping in place, high knees, etc.) at different paces/energy levels to mimic particles in the different states of matter. Students would move more freely (but you might choose to set some space limits) and with more energy when acting like particles in a gas, they would slow down to mimic liquids, and stay in one place while shaking or jiggling to be a solid.
  • Geometry Jumps
    o Students do Pogo Hops or small jumps in different ways to match shapes the teacher calls out (square, rectangle, triangle, etc.)
  • Quantifying and Averaging Reps
    o Students use different data collection means and math operations to record the number of reps they engage in, calculate a total for the class, and figure out the average. There are ways to make data collection relatively anonymous and to focus attention on classroom totals and averages rather than on individual outputs.
TEACHING CURRICULUM

• 5th grade: Conversions, general math
  o Calculating and converting different data connected to activity (can be connected to activity planning, for example figuring out the amount of space available and needed for each student for activity, the converting into different units)
  o Other math operations (rounding, going from fractions to decimals, can be learned and carried out with different data collected from activity)

• ELA: Story elements...
  o Introduction, rising action, climax, resolution can be compared to activity flow of instruction and warm up, main activity, and cool-down... what is the storyline of an activity? How can we have students act this out?
  o Persuasive writing... convince others that activity breaks are a good idea, include informal writing by jotting down ideas right before and after activity.

Data Collection and Progress Monitoring:

Consider turning the overall experience of activity break integration into a science experiment and opportunity to collect and analyze data. Possible activities:

Have students develop hypotheses with “if___, then___” statements, such as “If we all do these activity breaks every day, all year, we should then be able to do more activity and be less tired by the end of the year.”

Ask students to think about how they would actually measure the different components of their hypothesis. How would they measure how many activity breaks they do, how many people do them, for how long, and at what intensity? Then, how would they measure their ability to do more activity and be less tired. Encourage dialogue and collaboration and have students work to create actual experimental designs with a limited set of procedures and variables. Then, build into each day a procedure for collecting and recording data, giving students responsibility for these tasks either in groups or across the classroom.

Imagine having one set of students, for example, monitor and record attendance, the number, duration, and intensity of activity breaks in a day. Meanwhile, all students fill out some sort of simple system to record their perceived comfort or energy level (maybe a simple 5 point scale) for the day, and they record this somewhere. Different configurations of students then organize the data, calculate weekly totals and averages, and look for patterns in the data. If the above hypothesis is true, for example, you would expect that
TEACHING CURRICULUM

students on average would have higher comfort or energy levels at similar levels of activity over an extended period of time. This type of exercise could be done individually, in small groups, or with the data of the whole class.

The Michigan GLCEs for health education provide obvious connections to building both physical and socio-emotional health through physical activity. Review excerpts from the expectations below:

**Health Education Expectations Grade Three (excerpts)**

**STRAND 1: Nutrition and Physical Activity**

**Standard 1: Core Concepts**
- Explain the benefits of healthy eating and being physically active.
- Describe the importance of choosing a variety of ways to be physically active.

**Standard 5: Goal Setting**
- 1.5 Describe the elements of a physical activity plan.
- 1.6 Develop a personal plan to be physically active.

**STRAND 4: Social and Emotional Health**

**Standard 1: Core Concepts**
- 4.1 Explain the benefits of positive friendships.
- 4.2 Describe the characteristics of positive role models.
- 4.3 Recognize that each person has unique talents and skills.

**Standard 3: Health Behaviors**
- 4.4 Describe ways people help each other.
- 4.5 Describe a unique talent or skill of oneself and one other person.
- 4.6 Explain ways to show acceptance of differences.

**Standard 4: Influences**
- 4.7 Analyze how friends influence others' behavior and well-being.

**Standard 7: Social Skills**
- 4.8 Demonstrate ways to express appreciation.
- 4.9 Demonstrate strategies for keeping positive friends.
- 4.10 Demonstrate how to confront annoying behavior.
TEACHING CURRICULUM

Standard 8: Advocacy
• 4.11 Demonstrate the ability to support and respect people with differences.

Health Education Expectations Grade Four

Standard 3: Health Behaviors
• 1.6 Assess one’s ability to include physical activity, rest, and sleep in one’s daily routine.

STRAND 4: Social and Emotional Health
(Note: Teaching these standards is central to the implementation of an effective Positive Behavior Support system.)

Standard 1: Core Concepts
• 4.1 Describe the effect of teasing and bullying on others.

Standard 2: Access Information
• 4.2 Describe the characteristics of people who can help make decisions and solve problems.

Standard 3: Health Behaviors
• 4.3 Apply the use of positive self-talk to manage feelings.
• 4.4 Describe strategies to manage strong feelings, including anger.

Standard 6: Decision Making
• 4.5 Explain the decision making and problem solving steps.
• 4.6 Apply the steps to make a decision or solve a problem, using criteria to evaluate solutions.

Standard 7: Social Skills
• 4.7 Describe characteristics and steps of conflict resolution.
• 4.8 Apply the steps of conflict resolution.
• 4.9 Demonstrate non-violent conflict resolution strategies.
• 4.10 Explain what to do if you or someone else is being teased or bullied.
• 4.11 Express intentions to stop bullying as a bystander, perpetrator, or victim.
• 4.12 Demonstrate the ability to confront bullying and teasing.
InPACT: Interrupting Prolonged Sitting with Activity
www.inpact.kines.umich.edu

Health Education Expectations Grade Five

Standard 5: Goal Setting
• 4.7 Set a personal goal and plan the steps necessary to achieve the goal.

Standard 6: Decision Making
• 4.8 Describe the characteristics of people who can help make decisions and solve problems.
• 4.9 Explain the decision making and problem solving steps.
• 4.10 Demonstrate making a decision or solving a problem using criteria to evaluate solutions.

Standard 7: Social Skills
• 4.11 Demonstrate effective listening strategies.
• 4.12 Demonstrate how to communicate assertively.
• 4.13 Apply the steps of conflict resolution to a real or hypothetical situation.

Standard 8: Advocacy
• 4.14 Advocate for a caring school environment.

Health Education Expectations Grade Six

STRAND 1: Nutrition and Physical Activity

Standard 1: Core Concepts
• 1.1 Analyze the benefits of healthy eating and being physically active.
• 1.2 Identify the causes of foodborne illness.
• 1.3 Explain how weight management is influenced by healthy eating and being physically active.

Standard 3: Health Behaviors
• 1.4 Describe the federal dietary guidelines and the amount of physical activity recommended for one’s age in order to achieve health benefits.
• 1.5 Describe strategies for dealing with personal preferences, restrictions, and barriers related to healthy eating, adequate sleep, and physical activity.
• 1.6 Describe environmental influences that encourage or discourage physical activity.
• 1.7 Develop a dietary and physical activity plan for a week that is consistent with the dietary guidelines.
• 1.8 Demonstrate the ability to support others to choose healthy foods and be physically active.

Standard 6: Decision Making
• 4.6 Describe the decision making and problem solving steps.
• 4.7 Demonstrate the ability to make a decision or solve a problem using criteria to evaluate solutions.

Standard 7: Social Skills
• 4.8 Describe the characteristics of conflicts that can be resolved and the steps of effective conflict resolution.
• 4.9 Demonstrate the ability to use the steps of conflict resolution.
• 4.10 Demonstrate effective listening strategies.
• 4.11 Demonstrate the ability to use assertive communication skills appropriately.

In general, math presents multiple opportunities to engage students in reinforcing physical activity. Review the 4th grade math overview with suggested activities below, and think about how similar approaches might work for 5th and 6th grades.

EXAMPLES OF INPACT ACTIVE LEARNING LESSONS ARE AVAILABLE ON OUR WEBSITE: WWW.INPACT.KINES.UMICH.EDU
### Overview Operations and Algebraic Thinking
- Use the four operations with whole numbers to solve problems.
- Gain familiarity with factors and multiples.
- Generate and analyze patterns.

#### Possible Activity Connections:
- Use math problems to help determine the number of repetitions of different exercises that students should do.
- Use addition and then division to calculate class totals and averages for different exercises (number of jumping jacks, etc.).
- Patterns... students can explore data collection and activity, as well as patterns, by learning how to measure their own pulse. Students do low level activity, chart their pulse; do moderate activity, chart their pulse; and then more strenuous activity and chart their pulse. They can then analyze patterns and make connections between exercise level and pulse using data. They can also graph data in this mini-investigation.

### Number and Operations in Base Ten
- Generalize place value understanding for multi digit whole numbers.
- Use place value understanding and properties of operations to perform multi-digit arithmetic.

#### Possible Activity Connections:
- With numbers lines on the floor and spaces representing the different place values, students can hop or jump to the right place value when the teacher calls out a decimal (e.g., teacher calls out “0.06” and students should hop from 0 to 100ths space).
### Measurement and Data
- Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.
- Represent and interpret data.
- Geometric measurement: understand concepts of angle and measure angles.

<table>
<thead>
<tr>
<th>Measurement and Data</th>
<th>Geometry</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Have students measure spaces for activity and use conversions. Have students measure different activity results (distance of hops, height of jumps, etc.), discuss what unit is best for measuring different activities, and then have them collect data over time.</td>
<td>See idea for Geometry Jumps above.</td>
</tr>
<tr>
<td>• Have students perform exercises like jumps and hops at different angle vectors. For example, students can be asked to complete series of three small jumps, first at 90 degrees, then at 45, and then at 180.</td>
<td></td>
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</tbody>
</table>

### Geometry
- Draw and identify lines and angles, and classify shapes by properties of their lines and angles.

Using the ideas above as models, jot down your own ideas for activities that connect to math content you might teach for 3rd, 4th, 5th or 6th grade:
### 3rd grade Math Overview

<table>
<thead>
<tr>
<th>Activity Connections:</th>
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<tbody>
<tr>
<td>Develop understanding of multiplication and division and strategies for multiplication and division within 100.</td>
</tr>
<tr>
<td>Develop understanding of the structure of rectangular arrays and of area (area and perimeter and determining the areas and perimeters of two-dimensional shapes).</td>
</tr>
<tr>
<td>Describing properties of two-dimensional shapes and classifying three-dimensional shapes.</td>
</tr>
<tr>
<td>Developing an understanding of fractions.</td>
</tr>
</tbody>
</table>

**Geometry**

- Graph points on the coordinate plane to solve real-world and mathematical problems.
- Classify two-dimensional figures into categories based on their properties.

### 5th grade Math Overview

<table>
<thead>
<tr>
<th>Activity Connections:</th>
</tr>
</thead>
</table>

**Operations and Algebraic Thinking**

- Write and interpret numerical expressions.
- Analyze patterns and relationships.

**Number and Operations in Base Ten**

- Understand the place value system.
- Perform operations with multi-digit numbers.
### 6th grade Math Overview

<table>
<thead>
<tr>
<th>Activity Connections:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ratios and Proportional Relationships</strong></td>
</tr>
<tr>
<td>• Understand ratio concepts and use ratio reasoning to solve problems.</td>
</tr>
<tr>
<td><strong>The Number System</strong></td>
</tr>
<tr>
<td>• Apply and extend previous understandings of multiplication and division to divide fractions by fractions.</td>
</tr>
<tr>
<td>• Compute fluently with multi-digit numbers and find common factors and multiples.</td>
</tr>
<tr>
<td>• Apply and extend previous understandings of numbers to the whole numbers and with decimals to hundredths.</td>
</tr>
</tbody>
</table>
system of rational numbers.

<table>
<thead>
<tr>
<th>Expressions and Equations</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Apply and extend previous understandings of arithmetic to algebraic expressions.</td>
<td></td>
</tr>
<tr>
<td>• Reason about and solve one-variable equations and inequalities.</td>
<td></td>
</tr>
<tr>
<td>• Represent and analyze quantitative relationships between dependent and independent variables.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Geometry</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Solve real-world and mathematical problems involving area, surface area, and volume.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Statistics and Probability</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Develop understanding of statistical variability.</td>
<td></td>
</tr>
<tr>
<td>• Summarize and describe distributions.</td>
<td></td>
</tr>
</tbody>
</table>
Social Studies:

• 3rd and 4th grade: Michigan geography
• 4th and 5th grade: United States geography
• 6th grade: World geography

➢ What connections can you make?
➢ How can you use movement to reinforce different concepts from geography?

Science:

• States of matter
• Structure and properties of matter
• Chemical reactions
• Solar system
• Lunar cycle
• Ecosystems, food webs
• Weather and climate
• Forces and motion
• Energy, energy transfer
• Waves

➢ What connections can you make?
➢ How can you use movement to reinforce concepts related to science content?

ELA

• Figurative language
  o Metaphor
  o Analogy
  o Onomatopoeia
  o Hyperbole
• Narrative elements
  o Story line... introduction, rising action, climax, resolution
• Structure (sentence, paragraph, essay)

➢ What connections can you make?
TEACHING CURRICULUM

- How can you use movement to reinforce concepts related to science content?

So… if you shift your room so that students are sitting in groups, how can you capitalize on this new formation to engage students in cooperative group learning? There are many, many ways to do this as you already know. Most elementary teachers already use a variety of groups and grouping strategies, but we thought it might be helpful to provide some links to helpful online resources to generate new ideas, or to re-invigorate strategies you’ve already explored.

**Overviews of cooperative group work:**


[http://www.co-operation.org/what-is-cooperative-learning/](http://www.co-operation.org/what-is-cooperative-learning/)

[http://www.thirteen.org/edonline/concept2class/coopcollab/index.html](http://www.thirteen.org/edonline/concept2class/coopcollab/index.html)

**General Discussion Strategies:**


**Specific strategies that can be integrated with group seating:**

1) Jig Saw

[https://www.jigsaw.org/#steps](https://www.jigsaw.org/#steps)

2) Learning Stations


[http://www.educationworld.com/5-types-learning-stations-your-classroom](http://www.educationworld.com/5-types-learning-stations-your-classroom)

3) Chalk Talk


4) Shared writing

Enter the Zone

The challenge of doing activity breaks in the classroom is determining the appropriate amount of space to participate in the planned activities that will not result in disruptive behavior or injuries. In and effort to meet this challenge we have calculated the range of motion of exercising children ages 6-12 years and have determined how much space each child will require to move at the appropriate intensity. This section focuses on how to rearrange your classroom using zoned areas to complete each activity break. Whether you choose to arrange the desks in your classroom using a standard grid, U-shape, or small group format all of the floor plans are designed to help you and your students move!
Definition: Individual Zone

Guidelines:

• Children are going to move around and bump into each other, make sure they are aware of their surroundings and maintain adequate clearance zones for their body.

• Have them wave their arms and legs to make sure they are not bumping into each other or the desk.

• When possible space each student 36-48 inches apart asking them to maintain at least 6 inches between each other with arms extended in front and to their sides.
Definition: Active Zone

Guidelines:

• When using cones to space the children, have the children stoop into a crotched position and extend their arms the full length forward, and backward to place their clear zone.

• When placing the locators for children make sure to maintain 36-48 inches between location dots.

• For linear movements buffer zones of 48 inches or greater should be maintained for jumping activities, and 60 inches or greater for linear displacement activities that include but are not limited to marching or running while not in place.
Zoned Activities: Grid Scheme 1

Guidelines:

- Maintain a minimum clearance of 32 inches between the backs of chairs situated at each desk and other objects, and provide additional buffering from desk to wall or other fixed items when possible.
- Maintain a minimum clearance of 12 inches between the desk and the Activity Zone defined by Zone# in the diagrams.
- During activities for this configuration students are capable of linear movement and activities where they maintain a fixed location.
- Linear movement activities are possible along the left in the plan. Maintain a 12-inch buffer zone adjacent to desk.
- The number of desks per classroom is optional and based on attendance.
Zoned Activities: Grid Scheme 1

Notations in Diagrams:

B  Buffer Zones
D  Location of desk on axis
Z  Zones
#  Number of desk per the configuration
Zoned Activities: Grid Scheme 2

Guidelines:

- Maintain a minimum clearance of 32 inches between the backs of chairs situated at each desk and other objects, and provide additional buffering from desk to wall or other fixed items when possible.
- Maintain a minimum clearance of 12 inches between the desk and the Activity Zone defined by Zone# in the diagrams.
- During activities for this configuration students are capable of linear movement and activities where they maintain a fixed location.
- Linear movement activities are possible along the right in the plan above. Maintain a 12 inch buffer zone adjacent to desk.
- The number of desks per classroom is optional and based on attendance.
Zoned Activities: Grid Scheme 2

Notations in Diagrams:

B  Buffer Zones
D  Location of desk on axis
Z  Zones
#  Number of desk per the configuration
Guidelines:

- Maintain a minimum clearance of 32 inches between the backs of chairs situated at each desk and other objects, and provide additional buffering from desk to wall or other fixed items when possible.
- Maintain a minimum clearance of 12-24 inches as shown between the desk and the Activity Zone defined by Zone# in the diagrams.
- During activities for this configuration students capable of linear movement and activities where they maintain a fixed location.
- Linear movement activities are possible along the bottom in the plan above. Maintain a 24 inch buffer zone adjacent to inside desk.
- The number of desks per classroom is optional and based on attendance.
Zoned Activities: Intersecting Scheme 1

Notations in Diagrams:

B  Buffer Zones
D  Location of desk on axis
Z  Zones
#  Number of desk per the configuration
Zoned Activities: Isolated Scheme 1

Guidelines:
- Maintain a minimum clearance of 32 inches between the backs of chairs situated at each desk and other objects, and provide additional buffering from desk to wall or other fixed items when possible.
- Maintain a minimum clearance of 12 inches between the desk and the Activity Zone defined by Zone# in the diagrams.
- During activities for this configuration students are expected to maintain their location to a fixed spot.
- Linear movement activities are possible along the left and right in the plan above but discouraged based on inadequate buffer zones adjacent to desk.
- The number of desks per classroom is optional and based on attendance.
Zoned Activities: Isolated Scheme 1

Notations in Diagrams:

B  Buffer Zones
D  Location of desk on axis
Z  Zones
#  Number of desk per the configuration
Guidelines:

- Maintain a minimum clearance of 32 inches between the backs of chairs situated at each desk and other objects, and provide additional buffering from desk to wall or other fixed items when possible.
- Maintain a minimum clearance of 12 inches between the desk and the Activity Zone defined by Zone # in the diagrams.
- During activities for this configuration students are expected to maintain their location to a fixed spot.
- Linear movement activities are possible along the left and right in the plan above but discouraged based on inadequate buffer zones adjacent to desk.
- The number of desks per classroom is optional and based on attendance.
Zoned Activities: Isolated Scheme 2

Notations in Diagrams:

B  Buffer Zones
D  Location of desk on axis
Z  Zones
#  Number of desk per the configuration
Zoned Activities: Linear Scheme 1

Guidelines:

- Maintain a minimum clearance of 32 inches between the backs of chairs situated at each desk and other objects, and provide additional buffering from desk to wall or other fixed items when possible.
- Maintain a minimum clearance of 12 inches between the desk and the Activity Zone defined by Zone# in the diagrams.
- During activities for this configuration students are capable of linear movement and activities where they maintain a fixed location.
- Linear movement activities are possible along the left in the plan above. Maintain a 12-inch buffer zone adjacent to desk.
- The number of desks per classroom is optional and based on attendance.
Zoned Activities: Linear Scheme 1

Notations in Diagrams:
- **B**: Buffer Zones
- **D**: Location of desk on axis
- **Z**: Zones
- **#**: Number of desk per the configuration
Guidelines:

- Maintain a minimum clearance of 32 inches between the backs of chairs situated at each desk and other objects, and provide additional buffering from desk to wall or other fixed items when possible.
- Maintain a minimum clearance of 12 inches between the desk and the Activity Zone defined by Zone# in the diagrams.
- During activities for this configuration students are capable of linear movement and activities where they maintain a fixed location.
- Linear movement activities are possible along the right in the plan above. Maintain a 12-inch buffer zone adjacent to desk.
- The number of desks per classroom is optional and based on attendance.
Zoned: Activities: Linear Scheme 2

Notations in Diagrams:

B  Buffer Zones
D  Location of desk on axis
Z  Zones
#  Number of desk per the configuration
**Guidelines:**

- Maintain a minimum clearance of 32 inches between the backs of chairs situated at each desk and other objects, and provide additional buffering from desk to wall or other fixed items when possible.
- Maintain a minimum clearance of 12 inches between the desk and the Activity Zone defined by Zone# in the diagrams.
- During activities for this configuration students are capable of linear movement and activities where they maintain a fixed location.
- Linear movement activities are possible along the left in the plan above. Maintain a 12-inch buffer zone adjacent to each desk.
- The number of desks per classroom is optional and based on attendance.
Zoned Activities: Turning Scheme 1

Notations in Diagrams:

B  Buffer Zones
D  Location of desk on axis
Z  Zones
#  Number of desk per the configuration
Zoned Activities: Turning Scheme 2

Guidelines:

- Maintain a minimum clearance of 32 inches between the backs of chairs situated at each desk and other objects, and provide additional buffering from desk to wall or other fixed items when possible.
- Maintain a minimum clearance of 12 inches between the desk and the Activity Zone defined by Zone# in the diagrams.
- During activities for this configuration students are capable of linear movement and activities where they maintain a fixed location.
- Linear movement activities are possible along the right in the plan above. Maintain a 12-inch buffer zone adjacent to desk.
- The number of desks per classroom is optional and based on attendance.
Zoned Activities: Turning Scheme 2

Notations in Diagrams:

B = Buffer Zones
D = Location of desk on axis
Z = Zones
# = Number of desk per the configuration
Frequently Asked Questions

• Will I need to rearrange the classrooms before the activity breaks?
  o Depending on the activity break, you may need to rearrange your classroom. However, it is our goal to make sure that the activity breaks are easy to incorporate, with relatively little to no rearrangements needed.

• Are activity breaks only designed for the classroom?
  o Activity breaks within this manual are designed for the classroom, but can be performed in other spaces as well (hallway, cafeteria, etc.).

• What kinds of equipment do we need for the activity breaks?
  o Many of the activity breaks have been designed to be easily incorporated into the classroom, using equipment such as playing cards, chairs, and maps, along with many other equipment commonly found in most classrooms.

• What if I cannot play music in the classroom or do not have a sound system available?
  o If a classroom does not have a sound system available, there are still several other activity breaks that do not need music or a sound system.
Data Collection

Questionnaires

Before, during and after completing the 20-week pilot study, teachers will answer a few brief surveys that will assess the feasibility of implementing activity breaks into the classroom curriculum. Students will also complete a brief questionnaire prior to, during and after completing the study. A copy of each survey is presented in this section.

Students will also monitor their mood throughout the day answering a simple one-item questionnaire in the morning, after lunch and at the end of the day.

Fidelity-assessment of physical activity

Heart rate monitoring

Physical activity intensity will be assessed throughout the school via heart rate monitoring. Children and teachers will be instructed in proper procedures on how to measure their own heart rate. The main outcome variable of interest is how many activity breaks (at the appropriate intensity, frequency, and duration) each classroom is able to successfully complete.
Weekly Questionnaire

Please complete once per week throughout the intervention

1. How challenging was it to implement the daily activity breaks on the following days?

   1  2  3  4  5
   Monday
   Tuesday
   Wednesday
   Thursday
   Friday

2. How much additional planning was required on the following days?

   0-15min  15-30min  >30min
   Monday
   Tuesday
   Wednesday
   Thursday
   Friday
   Weekends

3. On average how many activity breaks did you incorporate per day?

   1  2  3  4  5
   Monday
   Tuesday
   Wednesday
   Thursday
   Friday

State barriers here if you were unable to reach 5 per day:

4. Did adding activity breaks to instruction improve the student’s behavior (e.g. time on-task, peer to peer relationships)?
   - Yes
   - No

   If so, how?
5. The students were less stressed after completing the activity break.
   - Strongly disagree
   - Disagree
   - Neutral
   - Agree
   - Strongly agree

   Explain answer:

6. Did you incorporate one of the academic lesson plans into the curriculum this week?
   - Yes
   - No

   If yes, state thoughts here:

7. Overall what is your level of satisfaction with incorporating physical activity breaks into daily instruction?
   - Very satisfied
   - Satisfied
   - Neutral
   - Dissatisfied
   - Very dissatisfied

8. Have you increased your own physical activity outside of the classroom?
   - Yes
   - No

   If so, how?

9. Have you used any emotion management strategies outside of the classroom?
   - Yes
   - No

   If so, how?
Daily Questionnaire

Week 1
Did you implement one activity break today?
  - Yes
  - No

Week 2
Did you implement two activity breaks today?
  - Yes
  - No
If no, how many?

Week 3
Did you implement three activity breaks today?
  - Yes
  - No
If no, how many?

Week 4
Did you implement four activity breaks today?
  - Yes
  - No
If no, how many?

Weeks 5-20
Did you implement five activity breaks today?
  - Yes
  - No
If no, how many?
**Perceived Stress Scale (Children)**

The following questions ask you about your feelings and thoughts during the last week. For each question you will be asked to circle the picture that best fits your answer.

Name: 
Date: 
Age: Birthday: 
I am a: Boy Girl

1. Which one has a lot of something?
   
   NEVER ☐ ☐ ☐ ☐
   A LITTLE ☐ ☐ ☐ ☐
   SOMETIMES ☐ ☐ ☐ ☐
   A LOT ☐ ☐ ☐ ☐

2. In the last week, how often did you feel rushed or hurried?
   
   NEVER ☐ ☐ ☐ ☐
   A LITTLE ☐ ☐ ☐ ☐
   SOMETIMES ☐ ☐ ☐ ☐
   A LOT ☐ ☐ ☐ ☐

3. In the last week, how often did you have enough time to do what you wanted?
   
   NEVER ☐ ☐ ☐ ☐
   A LITTLE ☐ ☐ ☐ ☐
   SOMETIMES ☐ ☐ ☐ ☐
   A LOT ☐ ☐ ☐ ☐

4. In the last week, how often did you feel worried about being too busy?
   
   NEVER ☐ ☐ ☐ ☐
   A LITTLE ☐ ☐ ☐ ☐
   SOMETIMES ☐ ☐ ☐ ☐
   A LOT ☐ ☐ ☐ ☐

5. In the last week, how often did you feel worried about grades or school?
   
   NEVER ☐ ☐ ☐ ☐
   A LITTLE ☐ ☐ ☐ ☐
   SOMETIMES ☐ ☐ ☐ ☐
   A LOT ☐ ☐ ☐ ☐

6. In the last week, how often did your mom and/or dad make you feel better?
   
   NEVER ☐ ☐ ☐ ☐
   A LITTLE ☐ ☐ ☐ ☐
   SOMETIMES ☐ ☐ ☐ ☐
   A LOT ☐ ☐ ☐ ☐

7. In the last week, how often did your mom and/or dad make you feel loved?
   
   NEVER ☐ ☐ ☐ ☐
   A LITTLE ☐ ☐ ☐ ☐
   SOMETIMES ☐ ☐ ☐ ☐
   A LOT ☐ ☐ ☐ ☐
8. In the last week, how often did you feel scared or nervous?
   NEVER  A LITTLE  SOMETIMES  A LOT

9. In the last week, how often did you feel angry?
   NEVER  A LITTLE  SOMETIMES  A LOT

   What made you angry?

10. In the last week, how often did you feel happy?
    NEVER  A LITTLE  SOMETIMES  A LOT

   What made you happy?

11. In the past week, how often did you get enough sleep?
    NEVER  A LITTLE  SOMETIMES  A LOT

12. In the past week, how often did you have fights with your friends?
    NEVER  A LITTLE  SOMETIMES  A LOT

13. In the past week, how often did you play with your friends?
    NEVER  A LITTLE  SOMETIMES  A LOT

14. In the past week, how often did you feel that you had enough friends?
    NEVER  A LITTLE  SOMETIMES  A LOT

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Developed by Dr. Barbara P. White

Thank You!
The Feeling Scale
Validated in children by Hulley et al.


How do you feel right now? Circle a number.

<table>
<thead>
<tr>
<th>Very bad</th>
<th>Bad</th>
<th>Fairly bad</th>
<th>OK</th>
<th>Fairly good</th>
<th>Good</th>
<th>Very good</th>
</tr>
</thead>
<tbody>
<tr>
<td>-5</td>
<td>-4</td>
<td>-3</td>
<td>-2</td>
<td>0</td>
<td>+1</td>
<td>+2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>+3</td>
<td></td>
<td>+4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>+5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Heart Rate Monitoring

What is Heart Rate?
Heart rate is defined as the amount of times your heart completes a full cardiac cycle per minute. Or in other words the number of times your heart pumps blood to the rest of your body per minute.

Your heart is a muscle so by exercising, you are helping build your cardiovascular strength.

How do you calculate HR?
You can find your pulse manually on your radial artery (lateral wrist, the inside of your wrist just under the thumb)
Count the number of pulses for 10 seconds and multiply the number you get by 6. This number is your HR!

Tips:
- Use light pressure
- Use your index and middle finger. Never your thumb.

HR Zones

High Intensity: 80-90% of maximum HR
Moderate Intensity: 70-80% of maximum HR
Low Intensity: 60-70% of maximum HR

For the InPACT study we are working in the moderate-vigorous range of 50-75% of max heart rate. This range is where we see the greatest benefit to overall health.

Become self aware!

Rating of Perceived Exertion
Borg RPE Scale

12 13 14 15 16 17 18 19 20
Somewhat hard Hard Very hard Maximum exertion
6 7 8 9 10 Very light Fairly light

How do you feel when laying in bed or sitting in a chair relaxed. Little or no effort.

Target range: How you should feel with exercise or activity.

How you felt with the hardest work you have ever done.

Don’t work this hard!

Borg RPE Scale
RPE Scale is a way to measure physical activity intensity level without actually taking your HR.