



Complete Summary

GUIDELINE TITLE

Increasing physical activity in schools: kindergarten through eighth grade.

BIBLIOGRAPHIC SOURCE(S)

Adams S, Bagby K. Increasing physical activity in schools: kindergarten through eighth grade. Iowa City (IA): University of Iowa Nursing Interventions Research Center, Research Dissemination Core; 2005 May. 42 p. [51 references]

GUIDELINE STATUS

This is the current release of the guideline.

COMPLETE SUMMARY CONTENT

SCOPE
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SCOPE

DISEASE/CONDITION(S)

Physical inactivity (sedentary behavior)

GUIDELINE CATEGORY

Counseling
Evaluation
Management
Prevention

CLINICAL SPECIALTY

Family Practice
Nursing

Pediatrics
Preventive Medicine

INTENDED USERS

Advanced Practice Nurses
Health Care Providers
Nurses
Public Health Departments

GUIDELINE OBJECTIVE(S)

To provide school-based strategies to increase the level of physical activity and to reduce sedentary behavior in the kindergarten through 8th grade population in order to improve the fitness level and physical and mental health of the students, and help establish life long patterns of healthy behavior

TARGET POPULATION

Children in kindergarten through 8th grade

INTERVENTIONS AND PRACTICES CONSIDERED

1. Assessment of physical activity using:
 - System for observing fitness instruction time (SOFIT)
 - System for observing play and leisure activity in youth (SOPLAY)
 - Sedentary activities self-report
2. Moderate to vigorous physical activity (MVPA) via daily physical education, activity breaks, and increasing time at MVPA during physical education classes and at recess
3. Teaching skills to increase MVPA or reduce sedentary behavior including the following curriculums:
 - Sports, play, and active recreation for kids (SPARK)
 - Coordinated Approach to Child Health (CATCH)
 - Student Media Awareness to Reduce Television (S.M.A.R.T)
4. Encouraging students to limit TV viewing and other sedentary behavior to fewer than 2 hours daily

MAJOR OUTCOMES CONSIDERED

- Percentage of time spent at moderate to vigorous physical activity (MVPA)
- Percent of students engaged in moderate to vigorous physical activity in recess time
- Percentage of time spent sedentary

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

Not stated

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

The grading schema used to make recommendations in this evidence-based practice guideline is:

- A. Evidence from well-designed meta-analysis
- B. Evidence from well-designed controlled trials, both randomized and nonrandomized, with results that consistently support a specific action (e.g., assessment, intervention or treatment)
- C. Evidence from observational studies (e.g., correlational descriptive studies) or controlled trials with inconsistent results
- D. Evidence from expert opinion or multiple case reports

METHODS USED TO ANALYZE THE EVIDENCE

Systematic Review

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

Experts in the subject of the proposed guideline are selected by the Research Translation and Dissemination Core to examine available research and write the guideline. Authors are given guidelines for performance of the systematic review of the evidence and in critiquing and weighing the strength of evidence.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

External Peer Review
Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

This guideline was reviewed by experts knowledgeable of research on physical activity, school health and development of guidelines. The reviewers suggested additional evidence for selected actions, inclusion of some additional practice recommendations, and changes in the guideline presentation to enhance its clinical utility.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

The grades of evidence (A-D) are defined at the end of the "Major Recommendations" field.

Individuals Needing Increased Physical Activity and Reduced Sedentary Behavior

All school children grades kindergarten (K) through eighth grade should participate in substantial amounts of physical activity (a minimum of 1 hour per day) and limited amounts of sedentary behavior (no more than 2 hours per day) unless medical conditions are present that prohibit these activity levels. Medical conditions should be evaluated on an individual basis in consultation with the primary healthcare provider (Centers for Disease Control and Prevention [CDC], 2004). Students with disabilities should be offered opportunities to increase physical activity levels through individually appropriate adaptive physical education measures.

Guidelines and Assessment Criteria

Students in grades K-8 who are likely to benefit the most from use of this evidence-based guideline are those who:

- Spend less than 30 minutes per school day, or less than 1 hour per 24 hours in moderate to vigorous physical activity (Byers et al., 2002; Koplan, Liverman, & Kraak, 2005; National Association for Sport and Physical Education [NASPE], 2003; Strong et al., 2005. *Evidence Grade = B*)
- Spend more than 2 hours daily in sedentary behavior (American Academy of Pediatrics [AAP], 2001; Koplan, Liverman, & Kraak, 2005; NASPE, 2003; Strong et al., 2005. *Evidence Grade = B*)

- Do not participate in daily physical education classes (U.S. Department of Health and Human Services [US DHHS], 2000; Koplan, Liverman, & Kraak, 2005; NASPE, 2003; Strong et al., 2005. *Evidence Grade = B*)
- Who spend less than 50% of physical education class time in moderate to vigorous physical activity (US DHHS, 2000; Koplan, Liverman, & Kraak, 2005; Strong et al., 2005. *Evidence Grade = B*)
- Have chronic disease risk, such as borderline hypertension, overweight, or obesity (CDC, 1997. *Evidence Grade = B*).

Assessment Tools, Instruments and Forms

Lesson Quality Checklist

This checklist can be used by administrators to generate information on important characteristics often seen in quality physical education (PE) classes. See Appendix A.1 in the original guideline document.

Measuring physical activity in children is challenging. Methods used for research (such as heart rate monitors and accelerometers) may not be appropriate for use in routine measurement of outcomes in the school setting. The following methods are suggested for their ease of use, and adaptability to the school setting. These tools have been tested in populations of school children and have shown good reliability and validity (McKenzie, "System for observing fitness instruction time," 2002, "System for observing play and leisure activity in youth," 2002).

System for Observing Fitness Instruction Time (SOFIT)

McKenzie, T. (2002). *System for observing fitness instruction time*. San Diego, CA: San Diego State University; Department of Exercise and Nutritional Sciences.

SOFIT is designed to assess the quality of physical education. It measures student activity levels, lesson context, and teacher behavior during class time. Student activity codes have been validated on both heart rate monitors and accelerometers. The system for observing fitness instruction time tool and instructions, modified for use with this guideline, are included in Appendix A.2 in the original guideline document.

System for Observing Play and Leisure Activity in Youth (SOPLAY)

McKenzie, T. (2002). *System for observing play and leisure activity in youth: SOPLAY*. San Diego, CA: San Diego State University.

SOPLAY designed to obtain observational data on the number of students and their physical activity levels during free play time in a specified area. This tool can be used to evaluate the level of activity of students during recess. Evaluations should be done at baseline and at regular intervals to evaluate increases in moderate to vigorous physical activity (MVPA). The system for observing play and leisure activity in youth tool and instructions, modified for use with this guideline, are included in Appendix A.3 in the original guideline document.

Sedentary Activities Self-report

Methods for evaluating time spent in sedentary activities may be adapted for each classroom. Students can be assisted in evaluating and recording time spent watching television (TV) and playing video games. Depending on the age of the student, this can be done by having the student record the actual time spent in these activities or asking questions such as (Robinson, 1999, 2001; Robinson et al., 2003):

- What TV shows did you watch yesterday?
- Did you watch TV while eating supper? Breakfast?
- Did you turn on the TV before school?
- Did you turn on the TV when you came home from school?
- Did you play any videogames yesterday? How many? When did you start playing? When did you stop?
- Have student make a classroom graph of total number of TV shows watched or video games played for the class as a whole.

Physical activity and sedentary activity levels should be assessed at baseline and at regular intervals throughout the school years as determined by the individual District.

Description of the Practice

All children and adolescents should participate in 30 minutes of MVPA daily during the school day, and a minimum of one hour total in 24 hours (Koplan, Liverman, & Kraak, 2005; NASPE, 2003; Strong et al., 2005. *Evidence Grade = B*). Current estimates are less than 25 minutes per week during school time are spent in MVPA (Nader, 2003).

Several methods can be used to increase the amount of physical activity in school age children. These include requiring daily physical education, adding activity breaks throughout the day, increasing the amount of time spent in MVPA during physical education classes, and increasing time spent in MVPA during recess breaks. Additionally, there is some evidence that time spent in classroom instruction regarding physical activity and sedentary behavior may increase activity by increasing knowledge and changing attitudes (CDC, 1997).

Certified PE specialists typically produce more activity-based and fitness targeted outcomes than classroom teachers; however, they do not exist in all schools or in sufficient numbers so that children receive PE daily. Classroom teachers have been shown to provide quality PE when they have been provided with structured active PE curriculum, staff development, and on-site support and consultation (McKenzie et al., 2001, 2004. *Evidence Grade = B*).

It is reasonable to assume that comprehensive programs may prove more effective by increasing the likelihood of reaching all possible areas of influence. However, it is known that programs that are difficult to implement and require major alterations in existing schedules are less likely to be successfully implemented and maintained (Rogers, 2003). Therefore, this guideline focuses on three areas that have strong research base, are easy and inexpensive to implement, and show the greatest effect on behavior changes at the current time. These include: 1) increasing time spent in MVPA during PE class, 2) increasing

time spent in MVPA during recess (free play time), and 3) teaching skills to reduce sedentary behaviors.

Increase Time Spent in MVPA in Structured Physical Education Classes

Current recommendations are for students to spend at least 50% of PE class time in MVPA (US DHHS, 2000. *Evidence Grade = B*). It is shown that often less than 10 to 40% of PE class time is spent in MVPA (Burgeson et al., 2001; Simons-Morton et al., 1993). Modifying lesson content and structure can provide an increased opportunity for helping students reach recommended physical activity levels without adding more classes to existing schedules.

Factors affecting time spent in MVPA during PE include (McKenzie et al., 2000):

- Larger class size is associated with more management time and less MVPA.
- Different activities promote different levels of activity; for example soccer provides higher activity levels for more students than softball.
- More objectives in a unit may be associated with more management and instruction time and less MVPA.
- MVPA is reduced in smaller spaces.
- Inclement weather, requiring indoor activities, or very hot, humid or very cold weather reduces MVPA.
- More available equipment is associated with increased MVPA.

To increase physical activity in **structured physical education classes**, the following are recommended:

- Increase managerial efficiency and reduce time students spend in passive learning (Luepker et al., 1996; McKenzie et al., 2004. *Evidence Grade = B*). Suggested strategies include:
 - Students need to know what the teacher expects. Instruct them in how they are to respond to specific situations, such as how to enter and leave PE classes, what the warm-up procedures are, what the signals are to stop and listen, and expected behaviors when in group activities, so that activities do not have to be interrupted to re-instruct students.
 - Consider having students warm-up during attendance checks or other managerial activities.
 - Keep instructions and "talk time" to a minimum in order to provide students with increased activity time. Make instructions quick and not complicated.
- Alter existing activities to encourage participation of all students and reduce waiting time for taking turns. Traditional sports can be adapted so that students who would be waiting are engaged in physical activity. For example, alter softball/baseball by having the entire team run bases after each hit (Gortmaker et al., 1999; Kahn et al., 2002; Koplan, Liverman, & Kraak, 2005; Luepker et al., 1996; McKenzie et al., "Long-term effects," 1997. *Evidence Grade = B*). See appendix E in the original guideline document for New Twists to Traditional Sports in Physical Education.
- Avoid activities where students are "eliminated" or must wait for turns, or consider having those children who are waiting engaged in alternate activities. (Gortmaker et al., 1999; Kahn et al., 2002; Koplan, Liverman, &

Kraak, 2005; Luepker et al., 1996; McKenzie et al., "Long-term effects," 1997. *Evidence Grade = B*).

- Add activities, such as soccer, or other activities designed to increase movement that allow for participation by more students (Gortmaker et al., 1999; Kahn et al., 2002; Koplan, Liverman, & Kraak, 2005; Luepker et al., 1996; McKenzie et al., "Long-term effects," 1997. *Evidence Grade = B*). See Appendix F in the original guideline document Sample Elementary Physical Education Lesson Plan.
- Teach units that provide students with opportunities to perform a variety of physical activities. Spend a proportion of time teaching activities that can be used outside of class time and throughout life, such as aerobics, dance, jogging, Ultimate Frisbee, or Pilates (Gortmaker et al., 1999; Kahn et al., 2002; Koplan, Liverman & Kraak, 2005; Luepker et al., 1996; McKenzie et al., "Long-term effects," 1997. *Evidence Grade = B*).
- Use pre-developed curriculum (listed below) specifically designed to increase levels of physical activity in students during physical education class.

Available Research Based Physical Education Curriculums to Increase MVPA:

Sports, Play, and Active Recreation for Kids (SPARK)

(McKenzie et al., "Long-term effects," 1997. **Evidence Grade = B**)

K-2 Physical Education & Classroom Curriculum

Grades 3-6 Physical Education & Classroom Curriculum

Grades 6-8 Physical Education Curriculum

SPARK programs aim to promote physical activity in young people in school and recreational settings. SPARK PE classes are designed to promote high levels of physical activity for all children that will help improve their health-related fitness movement skills that add to their success and enjoyment and encourage positive socialization.

For more information, see the original guideline document.

CATCH (Coordinated Approach to Child Health)

(Luepker et al., 1996. *Evidence Grade = B*)

K-2 CATCH PE Activity Kit

Grades 3-5 CATCH PE Activity Kit

Grades 6-8 CATCH PE Activity Kit

Classroom Health Education Curriculum also available.

The primary goal of this curriculum is to increase participation levels during class time and build movement skills, sports skills, and improve physical fitness. This curriculum is designed to increase class time spent in MVPA to 50%, which is the current national goal.

For more information, see the original guideline document

Increase Time Spent in MVPA in Unstructured Recess Periods

There is little consistent data available on time spent by elementary and middle school students in MVPA while on the playground. Estimates range from 5% to 40% depending on the age and gender of the child (McKenzie et al., "Long-term effects," 1997; Sallis et al., 2001; Zask et al., 2001). Recess time offers an opportunity to increase levels of MVPA without altering existing schedules.

Several studies have shown that the following low cost interventions on playgrounds can increase MVPA. While research remains somewhat limited, these interventions are easy to implement, show positive results, and are low in cost (Jago & Baranowski, 2004).

To increase time spent in MVPA during **unstructured recess time**:

- Have the physical education teacher instruct all students on proper use of playground equipment (CDC, 1997. *Evidence Grade = B*).
- Offer prompts and encouragement for activity (McKenzie et al., "Physical activity levels and prompts," 1997. *Evidence Grade = B*). Suggested prompts to engage students:
 - How many times can you jump the rope in one minute?
 - How many times can you go across the horizontal ladder?
 - How many baskets can you make in one minute?
- Increase the available permanent equipment on the playground, such as basketball hoops, volleyball nets, tennis courts (Sallis et al., 2001. *Evidence Grade = C*).
- Increase the number of balls on the playground (Jago & Baranowski, 2004; Zask et al., 2001. *Evidence Grade = B*).
- Paint playground equipment with bright fluorescent colors (Stratton, 2000; Stratton & Leonard, 2002; *Evidence Grade = C*).
- Paint playground markings on the playground surface. Examples: letter squares, mazes, hopscotch squares, castles, pirate ships, ladders, giant clock faces (Stratton, 2000. *Evidence Grade = C*).
- Use predeveloped design templates (see below), specifically designed to increase physical activity on the playground.

Available Pre-Developed Playground Markings and Activities Are Available from Peaceful Playgrounds: (See original guideline document for contact information.)

(Stratton, 2000. *Evidence Grade = C*)

Methods to Reduce Sedentary Activity

Recommendations for all K-8 students are to limit TV viewing and other sedentary behaviors to fewer than 2 hours daily (AAP, 2001; Koplan, Liverman, & Kraak, 2005; Strong et al., 2005. *Evidence Grade = B*). Current estimates are that students watch 4.5 hours per day (Roberts et al., 1999). Although studies are still limited, teaching awareness skills and self-monitoring techniques have proven effective.

To **reduce sedentary behaviors** the following are recommended:

- Increase awareness of time spent in sedentary behaviors by teaching self-monitoring techniques to children (Epstein et al., 2000; NASPE, 2003; Robinson, 1999. *Evidence Grade = B*).
- Encourage group reporting of time spent in TV viewing and video playing to motivate children to reduce this behavior (Epstein et al., 2000; Robinson, 1999. *Evidence Grade = B*).
- Challenge students to a 7-day TV turnoff, during which time children are challenged to watch no TV or videotapes and play no video games (Gortmaker et al., 1999; Robinson, 1999. *Evidence Grade = B*). Have students brainstorm a list of fun alternatives. See Appendix G in the original guideline document for suggested ideas.
- Develop a program of short and long-term incentives to comply with a 7 hour per week television or videotapes, video game budget (Epstein et al., 2000; Robinson, 1999. *Evidence Grade = B*).
- Teach students how to watch TV selectively, for example, budgeting TV time in advance for quality shows (Gortmaker et al., 1999; Robinson, 1999. *Evidence Grade = B*).
- Enlist children as advocates for reducing media use (Gortmaker et al., 1999; Robinson, 1999. *Evidence Grade = B*).
- Use available curriculum (see below) specifically designed to reduce sedentary behaviors.

Available Curriculum for Reducing Sedentary Behaviors:

Student Media Awareness to Reduce Television (S.M.A.R.T)

(Robinson, 1999, 2001; Robinson et al., 2003. *Evidence Grade = B*)

3rd-4th Grade curriculum

The goal of this curriculum is to motivate children to reduce their TV watching and video game usage. It is designed to be used over the course of the school year and includes all lesson plans and tools needed.

For more information see the original guideline document.

Definitions:

Evidence Grading

- A. Evidence from well-designed meta-analysis

- B. Evidence from well-designed controlled trials, both randomized and nonrandomized, with results that consistently support a specific action (e.g., assessment, intervention or treatment)
- C. Evidence from observational studies (e.g., correlational descriptive studies) or controlled trials with inconsistent results
- D. Evidence from expert opinion or multiple case reports

CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

REFERENCES SUPPORTING THE RECOMMENDATIONS

[References open in a new window](#)

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is identified and graded for selected recommendations (see "Major Recommendations" field).

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

- Increased levels of physical activity for students
- Improved fitness levels and physical and mental health of students
- Encouragement of life long patterns of healthy behavior

Subgroups Most Likely to Benefit

Students who:

- Spend less than 30 minutes per school day, or less than 1 hour per 24 hours in moderate to vigorous physical activity
- Spend more than 2 hours daily in sedentary behavior
- Do not participate in daily physical education classes
- Spend less than 50% of physical education class time in moderate to vigorous physical activity
- Have chronic disease risk, such as borderline hypertension, overweight, or obesity

POTENTIAL HARMS

Not stated

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

This evidence-based practice protocol is a general guideline. Patient care continues to require individualization based on patient needs and requests.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

The "Evaluation of Process and Outcomes" section and the appendices of the original document contain a complete description of implementation strategies.

IMPLEMENTATION TOOLS

Audit Criteria/Indicators
Chart Documentation/Checklists/Forms
Resources
Staff Training/Competency Material

For information about [availability](#), see the "Availability of Companion Documents" and "Patient Resources" fields below.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Staying Healthy

IOM DOMAIN

Effectiveness
Patient-centeredness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Adams S, Bagby K. Increasing physical activity in schools: kindergarten through eighth grade. Iowa City (IA): University of Iowa Nursing Interventions Research Center, Research Dissemination Core; 2005 May. 42 p. [51 references]

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

2005 May

GUIDELINE DEVELOPER(S)

University of Iowa Gerontological Nursing Interventions Research Center,
Research Translation and Dissemination Core - Academic Institution

SOURCE(S) OF FUNDING

Not stated

GUIDELINE COMMITTEE

Not stated

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

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FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

GUIDELINE STATUS

This is the current release of the guideline.

GUIDELINE AVAILABILITY

Electronic copies: Not available at this time.

Print copies: Available from the University of Iowa Gerontological Nursing Interventions Research Center, Research Dissemination Core, 4118 Westlawn, Iowa City, IA 52242. For more information, please see the [University of Iowa Gerontological Nursing Interventions Research Center Web site](#).

AVAILABILITY OF COMPANION DOCUMENTS

The original guideline document and its appendices include a number of implementation tools, including physical assessment tools, sample activities, outcome and process indicators, staff competency material, and other forms.

PATIENT RESOURCES

None available

NGC STATUS

This NGC summary was completed by ECRI on November 14, 2005. The information was verified by the guideline developer on November 21, 2005.

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