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General Article

The Crucial Role of Recess in Schools

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ABSTRACT

BACKGROUND: Recess is at the heart of a vigorous debate over the role of schools in promoting optimal child development and well-being. Reallocating time to accentuate academic concerns is a growing trend and has put recess at risk. Conversely, pressure to increase activity in school has come from efforts to combat childhood obesity. The purpose of this review was to examine the value of recess as an integral component of the school day.

METHODS: A comprehensive review of recess-specific literature was conducted, beginning with a Google Scholar search, to cull definitions, position statements, and policy recommendations from national/international associations and organizations. A multi-database search followed. Additional articles were selected from reference lists.

RESULTS: The search yielded a range of articles, from those focused on specific aspects of recess to those that examined multiple factors, including how to structure and conduct recess. Several themes emerged supporting recess as beneficial for children's cognitive, social, emotional, and physical functioning. Optimal recess was well-supervised and safe. Crucial components were well-maintained playground equipment and well-trained supervisors.

CONCLUSION: Recess serves a critical role in school as a necessary break from the rigors of academic challenges. Recess is a complement to, not a replacement for, physical education. Both promote activity and a healthy lifestyle; however, recess—particularly unstructured recess and free play—provides a unique contribution to a child's creative, social, and emotional development. From the perspective of children's health and well-being, recess time should be considered a child's personal time and should not be withheld for academic or punitive reasons.

Keywords: growth and development; child and adolescent health; physical fitness and sport; policy.

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Recess is at the heart of a vigorous debate over the role of schools in promoting optimal child development and well-being. Reallocating time to accentuate academic concerns is a growing trend and has put recess at risk. A nationally representative survey of districts, conducted by the Center on Education Policy in 2006 to 2007, found that 20% of districts had reduced recess by an average of 50 minutes per week to allocate more instructional time for English and Math.[1] Recess serves as a necessary break from the rigors of concentrated, academic challenges in the classroom, yet in the United States, it is inconsistently offered, and as children age, the opportunity to participate in recess declines.[2,3] Equally important, recess has the potential to affect the whole child—offering academic, cognitive, emotional, physical, and social benefits—that may not be fully appreciated when a decision is made to diminish it. The multifaceted potential of recess to impact a child's growth and development underscores recommendations for regularly scheduled, unstructured recess periods for all children from the Centers for Disease Control and Prevention (CDC), National Association for Sports and Physical Education, and National Association of Early Childhood Specialists in State Departments of Education (Table 1).[4-6] Children should be encouraged, but not required, to be physically active during recess, and as such, recess should complement, not replace or substitute for physical education classes.[5] In addition to curricular decisions to decrease allotted time for recess, it is withheld from students as punishment;[2] a practice which ''deprives students of health benefits important to their well-being.''[7](p 12) Conversely, efforts to combat childhood obesity have emphasized recess as a potential means of increasing physical activity in schools.[8,9] The purpose of this review was to examine the value of recess as an integral component in the education of the whole child during the school day in the United States.

METHODS

This was a comprehensive review of recess-specific literature. Studies, commentaries, and position statements dealing with children's play, fitness, and/or physical activity were all assessed initially, as recess provides an opportunity for children to engage in these endeavors. However, articles were excluded from the review and discussion of the benefits of recess unless they mentioned recess specifically. Also excluded were articles which assumed the occurrence of recess for all children, for example, describing activities and games for recess; measuring students' Moderate to Vigorous Physical Activity (MVPA); or discussing ways to increase or influence MVPA. Inclusionary criteria limited the review to articles discussing the benefits, barriers, policies and implementation or delivery of elementary-school recess in the United States. Peer-reviewed articles as well as commentaries, reports, and position statements written in English were included.

The authors began with a Google Scholar search to cull definitions, position statements, and policy

Table 1. **National Recommendations for Recess**

Organization	Definition	Timing and Duration	Other Considerations
Centers for Disease Control and Prevention[4]	• Regularly scheduled periods during school day for unstructured physical activity and play Target population: elementary school	Timing: recess before lunch Duration: not addressed	• Trained adults enforce safety rules, prevent aggressive, bullying behavior • Provide space, facilities, equipment, and supplies that are appealing to children • Staff encourage students to be active during recess
National Association for Sport and Physical Education[5]	• Discretionary time and unstructured play opportunities to engage in physical activity • Develops healthy bodies, enjoyment of movement • A necessary educational support component Target population: elementary school	Timing: daily, not scheduled immediately before or after physical education class Duration: at least 20 minutes	• Does not replace physical education classes • Should not be denied as punishment or to finish class work • Provide adequate, safe spaces, facilities, equipment • Use outdoor spaces when weather allows • Teach safety rules, conflict resolution • Supervision by qualified adults • Bullying, aggressive behavior not tolerated
National Association of Early Childhood Specialists in State Departments of Education[6]	• Essential component of education • Opportunity to participate in regular periods of active, free play with peers Target population: preschool and elementary school	Timing: daily; require recess time to be part of preschool, elementary-school curriculum Duration: not addressed	• Typically outdoors in designated play area • During inclement weather, may have recess in game room, gymnasium, inside classroom • Support research on effects of recess on development (social, emotional, physical, and cognitive) and academic achievement • Support research on benefits and possible restorative role of recess for children with attention disorders

recommendations from national and international associations and organizations. This search yielded several important documents, including a statement from the 1989 United Nations (UN) Convention on the Rights of the Child which said, ''The child shall have full opportunity to play and recreation, which should be directed to the same purposes as education; society and the public authorities shall endeavor to promote the enjoyment of this right'' (Art. 31).[10] Recess during the school day offers children this opportunity, and for this review, the date of the UN Declaration marked the threshold for inclusion. For this reason, publications prior to 1989 were excluded. The end date of the search was May 2009, when the authors wrote this article.

Following the Google Scholar search, a multi-database search was conducted through the lead author's library OneSearch mechanism of the following categories: ''Education,'' ''Health & Biological Sciences (Incl. Medicine and Pharmacy),'' ''Nursing & Allied Health,'' and ''Psychology.'' The OneSearch tool included CINAHL, ERIC, ProQuest, PsycINFO, PubMed, and Web of Science databases, among others. Key words searched were ''school recess'' which was then refined with additional keywords ''academic,'' ''before lunch,'' ''cognitive,'' ''emotional,'' ''physical,'' and ''social.'' Additional articles were selected from the references of included articles. The broad scope of the search yielded over 200 articles, from those focused on one specific aspect of recess to those that examined multiple factors, including how to structure and conduct recess. Because there were so many articles captured, in addition to the exclusionary criteria previously listed, the authors agreed to additional parameters: position statements were only included if they were from a national organization or association and were recess-specific; commentary were excluded unless the commentary was nationally disseminated and/or cited by others (eg, Robert Wood Johnson Foundation's *Recess Rules*[9]). Fifteen articles (reviews, experiments, or commentary) were identified, which specifically addressed the influence or benefit of recess for the whole child in a school setting in the United States (Table 2).[9,11-24] Other studies and articles are referenced which offer support for one or many aspects of recess.

RESULTS

Recess in the United States

The 2006 School Health Policies and Programs Study found that 96.8% of elementary schools provided recess for at least 1 grade in the school, yet only 74% provided regular recess for all grades in the school.[2] An analysis of food and exercise in elementary schools conducted by the National Center for Education Statistics similarly found that 93% of public elementary schools had scheduled recess for first and second graders, which declined to 87% for sixth graders.[3] Although recess is scheduled regularly in a majority of elementary schools in the United States, there are noticeable disparities by income and location, and as children age, the opportunity to participate in recess declines:

1. Total average minutes per day spent at recess declined from 28 minutes in first grade to 24 minutes in sixth grade.[3]
2. City schools reported the lowest average minutes per day in recess (24 minutes in first grade to 21 minutes in sixth grade).[3]
3. Rural schools reported the highest average minutes per day (31 minutes in first grade to 24 minutes in sixth grade).[3]
4. The lowest minutes per day of recess (21 minutes in first grade to 17 minutes in sixth grade) occurred in schools with 75% or more of the students eligible for free or reduced-price lunch.[3]

Both of these studies utilize self-reported data from administrators, not teachers, even though it was typical for schools to leave the decisions about timing, duration, location, and activities for recess to the teacher's discretion.[3] Neither study included supervisory aspects of recess, of how recess is monitored and by whom, nor did they address what activities occurred during the recess sessions. It was noted elsewhere that teachers are often not on duty for lunch recess, and recess at any time may be supervised by volunteers, aides, and even principals.[9]

The Benefits of Recess for the Whole Child

Just as physical education and physical fitness have demonstrated benefits for personal and academic performance, recess offers its own, unique benefits. Table 2 identifies key studies supporting the benefits of recess upon the development of the whole child. Essentially, recess is a break in the school day, a time away from cognitive tasks.[2,5] The CDC specifies that recess is ''regularly scheduled periods within the elementary-school day for unstructured physical activity and play'' (App. 7).[4] It affords the child a time to rest, play, imagine, move, and socialize.[6,11,17,25] Following recess, children are more attentive and better able to perform cognitively.[9,15,20,21,24] In addition, recess helps children to develop social skills that are not acquired in the more structured classroom environment.[6,18,25] Children should be encouraged, but not required, to be physically active during recess; it should be considered to complement, not to replace or substitute for, physical education classes.[5,8,10,26,27]

Cognitive and Academic Benefits of Recess. Children develop intellectual constructs and cognitive understanding through hands-on, manipulative experiences. This type of exploratory experience occurs regularly during play in an unstructured social environment.[6,26] According to the Cognitive

Table 2. **Whole-Child Benefits of Recess**

Author	Type of Study/Methods	Key Findings
Pellegrini and Smith[11]	Review, defined school recess; examined how recess was experienced by children; the impact of recess on children's social, cognitive development, and classroom behavior; made recommendations for research	Recess is a break in the school day, typically offered daily in elementary schools, with wide variation in policy, delivery, and composition Recess behavior is a positive predictor of social cognitive development, especially for boys Recess has educational value, relevance
Pellegrini et al[12]	Three experiments of children in grades K, 2, 4 of effects of recess timing on playground and classroom behavior; experiments 1 and 2 were outside recess; experiment 3 was inside recess. Timing of recess was varied; some days had longer duration before recess occurred. Direct observation of students before, during, and after recess	Days when recess was delayed had greater inattention in the classroom before recess Inattention in classrooms before recess was greater than after recess, regardless of the activity students engaged in during recess, or whether recess occurred inside or outside Children, especially boys, more interactive on recess when recess was delayed
Getlinger et al[13]	Direct observation and measurement: 67 children, grades 1-3 (33 boys, 34 girls). Food waste at lunch weighed week 1: recess after lunch, week 5: recess before lunch Recess changed from after to before lunch in week 2, so children were accustomed to before-lunch recess in week 5	Overall food waste reduced: 31.7% to 25.6% (of total meal served) Recess after lunch: nausea and dizziness in children Recess before lunch: children came to lunch ready to eat, no rush to finish Recess before lunch: children may perform better in school
Bjorklund and Brown[14]	Commentary, support for Pellegrini and Smith (1998) and Cognitive Immaturity Hypothesis about recess	Recess serves as a facilitator of school learning; provides a break from demanding cognitive tasks Young children particularly may need more breaks from intellectual tasks, such as those afforded by physical play
Jarrett et al[15]	Direct observation of 2 fourth grade classes ($n = 43$) for "Work," "Fidgety," and "Listless" behaviors before and after recess. Children received 15-20 minutes or recess once weekly, alternating days each week. Children did not know the recess schedule and were their own controls. MANOVA of recess exposure on classroom behaviors	The effect of recess on classroom behavior was highly significant [$F(3, 40) = 13.00$, $p < .001$]; children worked more [$F(1, 42) = 10.02$; $p = .003$], and were less fidgety [$F(1, 42) = 31.36$, $p < .001$]. Differences in listlessness before and after recess were not statistically significant
Wechsler et al[16]	Review of environmental factors of healthy behaviors and makes recommendations for components of the school environment which could influence children's physical activity and nutrition	Recess provides opportunities for health-enhancing physical activity Priority for research: assessing effects of a school environment including high-quality recess periods Is the source for CDC's Promoting Better Health through Physical Activity and Sports, Appendix 7, "Recess Periods" (2000)
Jarrett[17]	Review: recess, its relationship to learning, social development, child health	Recess has a positive influence on elementary children's learning, social development, health No research supports not having recess Suggest research: status of recess; effects of no-recess policies on academic achievement and classroom behaviors; to establish best practices for recess
Pellegrini et al[18]	Direct observation of children during recess in the first year of primary school (London) and first grade (Minneapolis) to assess how games predict children's adjustment to school and more general social adjustment	Competence with games forecasted adjustment to school and social adjustment only for the US sample. Peer interactions during recess allow children to develop social skills necessary to interact with peers in a positive way
Robinson[19]	Recess Before Lunch Policy Assessment: plate waste measurement at 3 points (ounces); focus group for student feedback; survey of staff, teachers, administrators. 4 schools: 2 K-2 ($n = 306$); 1 K-8 ($n = 132$); 1 5-8 middle school ($n = 674$)	Decreased average amount of food and beverage waste per student Improved atmosphere, student behaviors at lunch; students had time to relax, enjoy meals, no rushing to get outside Improved student behavior and ability to focus on learning; fewer interruptions of teaching time

(Continued on next page)

Table 2. ***(Continued from previous page)***

Author	Type of Study/Methods	Key Findings
Sibley and Etnier[20]	Statistical review of 44 studies examining children's physical activity and cognition	Physical activity was positively correlated to cognitive performance in children, providing evidence for physical activity during the school day for physical and cognitive benefits
Pellegrini and Bohn[21]	Review of developmental and recess literature on the role of recess in children's cognitive performance and school adjustment	Provide support for primary school recess in experimental and longitudinal data based on developmental theory Children's social competence develops in context of peer interactions Data support cognitive immaturity hypothesis: unstructured breaks from cognitive tasks facilitate learning, social competence, adjustment to school Findings corroborate anecdotal evidence from Asian schools, where children have frequent breaks during school day
Holmes et al[22]	Direct observation of two 4-year-old preschool classes (n = 27) before, during, and after outdoor recess. Recess duration was manipulated for 10, 20, or 30 minutes, to measure the effects of recess duration on post-recess attention in the classroom	Post-recess attention was greatest following the 20-minute period followed by the 10- and 30-minute periods, respectively; a time period of 20 and 10 minutes seems to be sufficient for optimal attention in preschool-aged children
Robert Wood Johnson Foundation[9]	Analysis: identify opportunities for increasing children's physical activity in schools; describe factors supporting or impairing opportunities, including setting, policy, programs, funding Specifically examines and describes lessons learned form implementation of a program developed to increase structured play at recess (games, activities led by a trained adult)	Based on elementary schools' self-report, of the total opportunity for physical activity for children, recess = 42%, PE = 32%, after-school = 26% With recess, time in the classroom was likely to be more productive and children were less disruptive There is very little dedicated funding available for recess; recommend increase Recommendations: make recess an integral part of every school day; put trained adults on the playground
McKenzie and Kahan[23]	Review on the importance of physical activity for children (differentiating physical activity from physical education and physical fitness) and the need for promotion of physical activity in elementary schools	Schools provide safe environments and are attended by almost all children, so have been identified as the institution with the primary responsibility for promoting physical activity Recess is 1 opportunity for physical activity in elementary schools (others include physical education classes, integration in core subjects, extracurricular programs, walking, or biking to school) Recess should not be discontinued or used in place of physical education
Barros et al[24]	Multivariate comparison: classroom behavior of children receiving daily recess to the behavior of children not receiving daily recess. Third graders; n = 10,301 (8 years), n = 11,624 (9 years) (boys: 50.3%) from public-use data set of Early Childhood Longitudinal Study, Kindergarten Class of 1998-1999. Children categorized into 2 levels of recess exposure: none/minimal (<1 break of 15 minutes/day) or some (all others) Classroom behavior, assessed by teacher's rating, compared between the 2 groups	For 8- to 9-year-old children, having ≥1 daily recess period of >15 minutes in length was associated with better teacher's rating of class behavior scores Among children receiving daily recess, teacher's rating of class behavior scores did not differ significantly according to the level of exposure Elementary schoolchildren should be provided with daily recess

Immaturity Hypothesis, optimal cognitive processing in a child necessitates a period of interruption following a period of concentrated instruction.[12,14] It appears that these interruptions are best served by unstructured breaks, rather than merely shifting from one cognitive task to another. The intent of these unstructured breaks is to diminish the stresses and distractions that interfere with cognitive processing.[11,14,21,25]

Additionally, teachers benefit from recess. In terms of classroom behavior and cognitive focus, whether performed indoors or outdoors, recess made children more attentive and more productive in the classroom.[9,12,15,22,24,25] This was found to be true even though, in many cases, the students spent much of their recess time socializing. In fact, a student's ability to refocus cognitively was stimulated more by the break from the classroom than by the mode of activity that occurred during that break: Any type of activity at recess benefited cognition afterward.[20]

Social and Emotional Benefits of Recess. Recess promotes social-emotional learning and growth for children, offering them a time to engage in social interactions and to practice and role-play essential social skills.[6,18,26,28,29] Through play at recess, children learn valuable communication skills, including negotiation, cooperation, sharing, and problem solving.[6,17,25,28] Through these play encounters at recess, children learn to adapt and adjust to the complex school environment, which in turn augments and extends the child's cognitive development.[18,21] Recess acts as a break from challenging mental tasks performed within a confined space. As such, recess offers a child a means for relieving and managing stress. It is a time for learning and practicing other coping skills, such as perseverance and self-control.[6,11,18,21,25] These unstructured, yet supervised, peer interactions facilitate the development of social skills necessary to interact with others positively and productively.[6,17,25,28]

Physical Benefits of Recess. There is a wealth of literature published on the need for and benefit of physical activity and fitness, not only for a child's physical well-being but also for academic and social maturation.[5,7,9,28-38] Although not all children play vigorously at recess, it does provide the opportunity for children to be active in the mode of their choosing, to practice movement and motor skills, and to engage in interactions with their peers. Importantly, recess affords young children free activity for the sheer joy of it.[27] Even minor movement during recess counterbalances the sedentary life at school and often, at home.[7-9,32,35-39]

Considerations for Recess

Safety and Supervision. A child's safety during recess may be a concern for many parents, teachers, and administrators. Some schools have chosen to ban games or activities deemed unsafe and, in some cases, to discontinue recess altogether in light of the many issues connected with child safety.[17,40] There are measures that schools can take to address these concerns and protect children while still preserving recess activities. These measures include:

1. Provision of adequate safe spaces and facilities.[5,7,16,25,27,33,41]
2. Maintenance of developmentally appropriate equipment with regular inspections.[5,7,16,25,27,33,41]
3. Establishment and enforcement of safety rules.[5,7,16,25,27,33,41]
4. Implement recess curriculum in physical education classes to teach games, rules, and conflict resolution.[5,7,16,25,27,33,41]
5. Establishment of a schoolwide, clear policy to prevent bullying or aggressive behavior.[5,7,16,25,27,33,41]
6. Provision of adequate supervision by qualified adults who can intervene in the event a child's physical or emotional safety is in jeopardy.[5,7,16,25,27,33,41]

The Emerging Issue of Structured Recess. Recess is at the heart of a vigorous debate over the role of schools in promoting the optimal development of the whole child. Recent ''calls to action'' by policy makers and funding organizations[8,9,30,35,38] to address childhood obesity have strengthened the argument to keep or reinstate recess as an integral component of the school day. Although this new dimension to the recess debate has increased attention on its role, it has added new tension to the discussion. Because so many elementary children do experience recess, some are advocating that recess time be dedicated to increasing children's physical activity and combating obesity.[9,23,41] If recess assumes such a role, then like physical education it will need to be structured to ensure that all children are participating in the activity—preferably MVPA.[3,9,2,36,38,41] But note that this is in direct conflict with the notion of recess as a supervised but unstructured break for the child, as a time for the child to select between sedentary, physical, creative, or social activities.[4-6,10,11,16,17,26-29,35]

Structured recess is a recess based on structured play, where games and physical activities are taught and led by a trained adult (teachers, school staff, or volunteers). Proponents for structured recess note that children often need help in developing games and require suggestions and encouragement to participate in physical activities. Having trained adults model and lead students in games provides a modicum of protection from unwanted playground aggression and behaviors. Structured recess programs generally require that all students participate.[9] There are several attributes:

1. Older elementary children may benefit from game instruction and encouragement to participate.[9]

2. Children can be coached in and practice appropriate conflict resolution.[9]
3. More children can participate in games and physical activity.[9]
4. Teachers anecdotally reported improved behavior and attention in the classroom after a vigorous structured recess.[9]

A problem arises when the structured activities of recess are required or when recess is promoted as a replacement for physical education. Requiring students to participate in games at recess undermines many of the social, emotional, cognitive, and even physical benefits of recess[5,17,26,27,29] Students lose opportunities to create their own games and/or engage in physical activities of their choosing. The replacement of physical education by recess threatens students' instruction in and acquisition of motor skills and lifelong physical fitness concepts.[5,8,35] To be effective, structured recess requires that school personnel (or volunteers) receive adequate training, so they are able to address and encourage diverse needs of all students.[9,41] Other ways to encourage physically active recess without adding a structured, planned, adult-led recess are to offer well-kept playground equipment; games/boundaries painted on the ground; and instruction for children in games such as four square or hopscotch.[16,23,41-43]

Unstructured recess occurs with supervision, but without adults directing and leading children in specific games or activities. As previously noted, unstructured, free play during recess provides an integral educational opportunity for children's cognitive and social-emotional learning.[6,7,11,14,16,17,20,21,25,28] In addition, unstructured recess supplements the physical skill acquisition of physical education class.[5,7,8,29,38] Regularly scheduled, unstructured recess periods for all children are deemed essential for healthy growth and development.[4-7,16,26,35]

Two key considerations with unstructured recess are safety and physical activity. The former must be addressed at the school level, and must include both a safe environment and staff training to notice inappropriate behaviors, and, if necessary, to intervene.[5,7,16,35,42,43] It has been reported that the number of children participating in games at recess increases with structured activity.[9] However, in both structured and unstructured environments, activity levels vary widely, based on equipment provided, age, gender, and race.[2,3,23,35,41-43] Consequently, not only is it premature to promote structured recess as a substitute for physical education or as a ''magic bullet'' for the inactivity of children, but also the benefits of increased group participation must be weighed against the potential social and emotional risks of eliminating unstructured recess.

Duration and Timing of Recess. In the United States, the duration and timing of recess periods varies by state, district, grade, and even by building.[2,3] The majority of elementary schools which offer lunchtime recess do so after students eat lunch.[2,16] Schools should reconsider this practice and reverse the order: let students have recess first, before lunch.[4,16] The ''Recess Before Lunch'' movement stems from studies that examined food waste by students in relation to their recess.[13,19,44,45] When students had recess before lunch, less food was wasted. Instead of rushing through the lunch to get to their recess, children were able to eat their lunch in full. In addition, teachers and researchers noted an improvement in the student behavior at mealtime, which carried into the classroom in the afternoon.[13] As one pediatrician stated, ''children's hunger for recess is greater than their hunger for lunch'' (D. Worthington, personal communication, 2008). The CDC and the US Department of Agriculture support the Recess Before Lunch initiative.[4,45]

Other peer-reviewed research has examined the timing and type of activity during recess and chronicled the positive effects and benefits of recess for children without confirming the optimal duration of the recess period.[12,15,22,42,43] There is consensus about the need for regularly scheduled daily recess,[4,6,9,26] even though the length of the recess period itself has not been firmly established. The length specified for recess ranges widely, from 20 minutes per day[5] to 60 minutes per day.[35] In other countries, such as Japan, primary school children have a 10-15 minute break every hour,[46] and this is thought to reflect the fact that attention spans begin to wane after 40-50 minutes on intense instruction. Based upon this premise, to maximize cognitive benefits, recess should be scheduled at regular intervals, providing children the break they need to regain their focus before instruction continues.

Economic Considerations. Because recess is offered in most elementary schools on a daily basis,[2,3] it provides most children with a co-curricular educational experience supporting their learning in the classroom and their overall growth and development. Schools do maximize their human resources: It is typical for recess to be monitored by teachers and even principals.[3,9] Many schools utilize alternatives to costly teacher-supervised recess, soliciting community volunteers, class parents, or more affordable paid monitors.[9] However, the fact that recess occurs during the school day but is not a graded subject excludes recess from many funding opportunities earmarked for physical education or after-school programing.[2,9] Schools often share the equipment resources from these two complementary programs, but this option may be prohibited by the nature of the equipment or the type of funding provided. Importantly, funds for professional development or curricular programs are not transferable to

recess; training and pay for adults to supervise recess is not generally available.[9]

DISCUSSION

The purpose of this review was to examine the value of recess as an integral component of the school day in the United States. The literature supports recess as beneficial for the whole child in which it promotes cognitive, social, emotional, and physical development and functioning. In the wake of rising rates of overweight and obesity, community leaders, policy makers, educators, and health care providers are reassessing public and community resources, and schools, like other institutions, have come under increased scrutiny. Each day, 55 million children in the United States attend school, which comprises nearly half of their wakeful hours.[39] Thus, schools offer a unique opportunity to address nutrition and physical fitness. Calls for renewed commitment to physical education and activity in schools are common. At the same time, there are competing calls for stricter standards and greater academic achievement. Even with ample evidence of a whole-child benefit from recess, significant external pressures, such as standardized cognitive testing mandated by No Child Left Behind, have led some to view recess as a ''waste of time that would be better spent on academics.''[47] (p 1) Time previously dedicated to daily activity in school, such as physical education and recess, is being reallocated to make way for academic instruction.[1,40,48]

Ironically, minimizing or eliminating recess may be counterproductive to academic achievement, as evidenced in this review of the literature. Recess can promote not only physical health, but also social, emotional, and cognitive development.[5,7,9,14,28-38] Although recess and physical education have the potential to promote activity and a healthy lifestyle, it is supervised, unstructured recess which offers children the opportunity to actually play.[4,6,7,11,14,16,17,20,21,25-28] Free play is a fundamental component of a child's normal growth and development.[28] Within the school day, supervised, unstructured recess is the most consistent opportunity to address these essential developmental needs and it does so without regard to the child's socioeconomic status.[2-4,9] In sum, ''overwhelming evidence shows that the benefits of recess clearly outweigh its costs.''[25] (p 10).

Limitations

The limitations of this study initiate with the authors' inclusionary and exclusionary criteria. In deciding to include only articles which specifically addressed the influence or benefit of recess for the whole child, important information about the benefits, barriers, or policies for elementary-school recess in the United States may have been overlooked. Similarly, lessons about implementation of recess in the United States may have been neglected by excluding articles that assumed the occurrence of recess for all children, such as those describing activities and games for recess; measuring students' MVPA; or discussing ways to increase or influence MVPA discussing. Another limitation is the exclusion of non-peer-reviewed articles; for schools, there are district-level and organization/association reports about policy and practice that may have informed this review.

Conclusion

Recess should be considered a complement to, but not a replacement for, physical education. Both have the potential to promote activity and a healthy lifestyle. However, recess—particularly unstructured recess and free play—provides a unique contribution to the creative, social, and emotional aspects of a child's development. These benefits need to be fully considered when making decisions to abridge or eliminate time for regular recess. From the perspective of health and well-being of the whole child, recess time should be considered a child's personal time. It should not be withheld for academic or punitive reasons. Optimal recess is safe and well-supervised; environmental conditions, well-maintained playground equipment, and well-trained supervisors are critical components. To support schools in delivering recess, funds must be made available for appropriate equipment and facilities as well as for training and compensation of supervisors. Funding entities should expand their list of eligible school-based programs and services to include recess in their requests for proposals and applications.

IMPLICATIONS FOR SCHOOL HEALTH

Implications for Research

Although the literature on recess seems substantial, there are notable gaps in the body of knowledge on recess in the United States that warrant further investigation:

1. The nature of supervision and monitoring of recess have received almost no attention. In order to provide appropriate training of personnel and to make recommendations for best practices in terms of supervisor-children ratios, there must be reliable data. Future surveys of school programs and policies should include assessments of who is supervising school recess and what kind of training schools are providing or receiving.
2. The implementation of structured and supervised, unstructured recess requires further examination. The calls for recess to be a part of obesity-prevention programs emphasize the need to identify best practices for recess which provide children with safe and

fun opportunities for play and moderate to vigorous activity, yet must be balanced with providing recess which allows children to participate in activities of their choosing.
3. The duration and timing of recess warrants research of greater detail and depth, to provide teachers and administrators with data about scheduling alternatives. Ideally, age and/or grade-level recommendations about when to offer recess during the school day could be made.
4. Research on the benefits and options for recess for older children should be initiated. Although it is widely accepted in the United States that recess is for elementary-school children, the cognitive, emotional, social, and physical benefits of recess warrant evaluation in adolescents. Practical considerations of what type of recess would be appropriate and beneficial in older children should be included.

Implications for Schools

As recess benefits the health and well-being of the whole child, recess time should be considered a child's personal time. Schools should make this explicit, perhaps including recess as a component of the school's wellness policy. However, recess time should not be usurped to fulfill a physical activity requirement; that is, if the school is required to offer opportunities for children to engage in MVPA, recess should only be included as an optional or supplemental opportunity. It should be equally acceptable for children to choose to engage in MVPA as to engage in other types of play. Other ways schools could promote optimal recess include the following:

1. Create schoolwide alternatives for teachers to discipline children other than withholding recess.
2. Offer supervised activities that help students engage in safe play. Include recess-type games and practice conflict resolution in the Physical Education curriculum.
3. Integrate the psychological-social-emotional benefits of recess into the health education curriculum.
4. Collaborate with the school's wellness council, healthy-school team or parent-teacher organization to reinforce policies for recess. Tap these organizations for human resources to monitor recess and for funding to purchase and maintain playground or recess equipment and to train monitors and teachers.

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