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Review article

PRIDE for PLAY: Personal responsibility in daily effort for participation in life-long activity for youths. A Singaporean context

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Abstract
Singapore, a developed city state of four million people is experiencing the pitfalls that come with rapid modernisation and economic progress- elevated disease risk factors among adults and young people. Weekly compulsory physical education classes of 70 minutes in schools and the associated sports activities after classes are inadequate to meet emergent physical activity guidelines of a daily accumulation of at least 90 minutes of physical activity of at least moderate intensity. Daily play sessions that are exclusive of an active daily recess, physical education classes taught by trained specialists and after-school sport sessions, can provide many developmental and holistic health benefits that may carry over into adulthood. A school environment that is play-encouraging, play-enabling and play-inviting can be a useful, innovative and natural way of inculcating a love for movement and help redress a serious trend of physical activity insufficiency while youngsters engage electronic gaming activities. Pilot initiatives for the PRIDE (personal responsibility in daily effort) for PLAY (participation in lifelong activity for youths) programme is a radicalised approach in a number of primary schools in Singapore to infuse daily physical play of between 20 to 45 minutes during curriculum hours. The hope is that PRIDE for PLAY will reap benefits of improved holistic health of youngsters- better physical, social, emotional and mental attributes. While PRIDE for PLAY is no panacea to all of the ills of modernisation, it will go some way in helping the students of tomorrow to be physically healthy, socially more engaged and tolerant of others, mentally more apt to problem-solve and emotionally more proficient to embrace working life in adulthood.

Key words: Daily play, physical activity, children, Singapore.

Introduction

In Singapore, it is the Ministry of Education policy for schools to have at least 70 minutes of physical education per week for pupils in primary schools and for students in secondary schools and junior colleges. The majority of schools adhere to these guidelines and at least one primary school has embarked on daily physical education sessions. Some schools have extended time for physical activities and sport on some days of the week. The aims and objectives of physical education (PE) are laudable- the development of the young person in the physical, psychomotor, cognitive and affective domains (MOE-Ministry of Education, PE Syllabus 2006,) in the school setting. However, the PE teacher struggles for time to adequately focus on the accomplishments of these aims and objectives. A key expectation of physical education in Singapore is that it equips young people to be well-prepared starters in taking ownership and responsibility for their own health and well-being. Yet, the 70 minutes of compulsory PE sessions per week *per se* fall short of the paediatric and youth guidelines for a daily accumulation of physical activity of at least 90 minutes or more, in order to have a meaningful impact on health. In Singapore, as in many parts of the developed cities in the region, progress, globalization and affluence has resulted in the increased prevalence of physical inactivity and concomitantly, an earlier onset of hypokinetic lifestyle diseases in the population. Already in Singapore, though the prevalence of overweight among school-going children and adolescents hovers nationally at between 9-10%, (MOE, 2006), the prevalence of school children with increased concentrations of low density lipoprotein is apparently on the rise and Singapore apparently has the highest rate of increase in adult-onset diabetes in the world (Chia, 2006).

Fit to play

Play offers a lot to the holistic development of a child. Child-directed play fosters creativity, problem-solving, social interaction, motor development, physical fitness and enhances parent-child relationships. However, the amount of time set aside for play in kindergartens and primary schools requires a rethink. Play can make a significant difference to imbuing a love for lifelong physical activity whilst at the same time providing a viable mechanism for weight maintenance, stress release and vibrancy in young people. Juvenile obesity is an emerging epidemic in the developed and developing nations of the world and physical inactivity has serious consequences on the future health of nations. Physical activity guidelines for infants, toddlers and children need to be publicised and promoted and sedentary activities balanced by physically active behaviours as both are necessary prerequisites for the healthy development of young people. Physical fitness and the functional capacities of overweight children and children with special health care needs can be improved by individualising the exercise mode and making physical activities meaningful for each child. Only then can the future health and vibrancy of young Singaporeans and the citizens of economically emergent nations be adequately and sufficiently ensured.

Achieving optimal development at a young age

Play is very important for the optimal development of the child in the formative years. The importance of play is recognised by the United Nations High Commission for

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Human Rights as a right of very child (General Assembly Resolution 44/25, 1989). In Singapore and elsewhere in many developed countries, the right for play is threatened by hurried and pressured lifestyles, sedentary pursuits and a lack of awareness of the protective benefits of child-driven play. As a consequence, in the absence of adequate amounts of child-directed play and extended periods of physical inactivity, adult conditions like cardiovascular disease and altered glucose metabolism begin in infancy and childhood.

In Singapore, paediatric growth charts had to be revised in the late 1990s to take into account the increased body mass of children aged 1 to 6 years, where there was an average increase of 0.5 kg of body mass for all ages without any corresponding increase in stature. These changes were attributed to increased energy storage because of better nutrition but equally could be attributed to reduced energy expenditure at the paediatric ages.

Another indirect consequence of the lack of activity in childhood is also one of the highest incidence rates of adult-onset diabetes in the world among Singaporeans. In addition, since the 1990s, heart disease and stroke continues to be the leading cause of premature death in adults (Singapore Heart Foundation, 2006). These health warning signals in the adult population are a wake-up call for action that much more needs to be done to motivate our young towards a lifestyle of activity. All children must be given the opportunity to develop their full potential. Teachers and child advocates must press for circumstances that allow all children to reap the benefits of play and physical activity.

Importance of play and physical activity

Modern living lifestyles continually threaten and curtail play. So the arguments for play are based on the premise that play is essential to the physical, cognitive, emotional and social development of children. Time set aside for child-directed play and time spent doing physical activity should not displace entirely time spent in sedentary activities. Academic enrichment opportunities and sedentary activities like reading and writing, group discussions and even time spent on the computer also promote healthy child development. However, the greatest barrier to play and physical activity is passive entertainment. Though the amount of physical activity tends to track from late adolescence into adulthood, relative inactivity tends to track even better than increased activity (Raitakari et al., 1994).

Next to sleeping, television is probably the most common activity among children. No local or international published data are apparently available on the number of hours of TV viewing by toddlers and young children but some data on older children and adolescents show that children who consistently spend in excess of 10 hours per week watching TV are more likely to be overweight, aggressive and lower to learn in school. However, not all data on the matter are unequivocal.

For instance, data published by Wang et al. (2005) in the Singaporean context on 780 children (285 boys, 482 girls and 13 children did not state their gender) and of normal body weight, aged 11 to 14 years, showed that sedentary behaviours among boys and girls could be clustered and were distinctly different. Thirty-six percent or 103 boys spent much of their sedentary time in technology-based entertainment (e.g. computer/internet), while 38 % or 108 boys reported substantial amount of time spent studying and doing homework. The remaining 74 boys spent their time being physically active but they also played a lot of video games. Among the girls, time spent socialising with friends, studying, as well as, engaged in physical activity amounted to 57.3 % or 276 girls. Fifteen percent or 72 girls reported spending most of their time studying and doing homework. A group of girls reported little study time, little socialisation as well as low engagement in physical activity (27.8 % or 134 girls) compared to their peers. Interestingly, 70 % or 546 children in this age group spent 2.3 hours per day or up to seven hours a week doing homework while only 5 % of boys and 6% of girls spent more than 4 hours per day watching TV.

These results demonstrated that sedentary behaviours and physical activity behaviours among normal weight children were not inversely related. This relationship shows that even though children spent substantial amount of time engaged in sedentary activities, they compensated for that by spending time being physically active as well. The results of Wang et al. (2005) support the findings of an earlier study by Chia et al. (2002) that showed that the increased use of information and communications technology among normal-weight children and adolescents did not have a negative impact on self-reported physical activity. It appears that young people of normal body weight knew how to balance physical inactive behaviours with physical activity and exercise (Chia et al, 2002). Nonetheless, the amount of accumulated daily physical activity on weekdays and on weekend days as assessed using heart-rate monitors was inadequate and fell short of physical activity recommendations enunciated by two international consensus statements by between 53 to 83%. A major challenge is to identify these clusters of youth who are predisposed to ‘unhealthy lifestyle behavours’ and to intervene sufficiently early before these behaviours become entrenched.

Collectively, these studies show that young Singaporeans are highly inactive over the weekend and are substantially insufficient in their daily accumulated physical activity on weekdays. These data are affirmed by other research information that show that among young people, it is the total basket of sedentary pursuits (e.g. reading, sitting and talking on the phone, sleeping) and not merely television viewing or computer use that is responsible for juvenile obesity (Jago et al., 2005). Consequently, reducing the time young people spent in all sedentary behaviours, coupled with attractive physical activity alternatives might get young people to be more physically active. Formal and informal play, indulged daily hold such a potential.

Breaking the barriers to play

Barriers to play include our modern lifestyles where excessive energy expenditure to complete tasks is no longer required, and the curtailment of freedom to move about the neighbourhood unsupervised, because parents or caregivers do not consider the neighbourhood sufficiently safe. In contrast, parents may consider that the safest

place for young children is in front of the TV. As a consequence, many young children grow up not recognising or experiencing the simple joys of play or daily physical activity.

Opportunities for play at break time (recess) in elementary schools and kindergartens in the USA, showed a reduction in schools and kindergartens from 96% to 70% over a period of 10 years from 1989 to 1999 (Pelligrini, 2005). It appears that in the USA, in a move to improve academic standards in elementary schools have led to reductions in time committed to recess, the creative arts and even physical education.

In Singapore, sagacious educational policies implemented in schools at ensuring that all children develop holistically have enshrined recess time and time for physical education and physical recreation and sport as important. However, more is being done. Indeed, the Ministry of Education announced in September 2006, a commitment of $690 million dollars, over the next 10 years to build covered sports halls in schools so that there will be increased opportunities for children in schools to be engaged in sports all day long. An Inter-Agency Task Force, chaired by the Senior Parliamentary Secretary for Education on healthy and active children has also been set up to promote and increase physical activity among young children (MOE, via personal communication, author is a member of the Steering Committee, 2006-2007). Physical Education and Sports Science researchers at the National Institute of Education, with funding from the Ministry of Education of under half million dollars are researching on best practices in PE and looking at how lifelong physical activity and physical fitness of children and adolescents in schools can be institutionalised. The MOE is also stepping up efforts to equip primary schools with specialist PE teachers and also ensuring that trained specialist PE teachers in schools are properly deployed.

The inclusion of play and physical activity in the daily lives of young children seeks to strike a balance and create a child environment that is conducive for all-round development so that Singaporean children are well-prepared, well-balanced, healthy and active citizens of tomorrow. Cogent anecdotal evidence among parents of pre-schoolers suggest that at least in the first six months of primary school life, nearly all parents polled cited that outdoor play, a daily routine in pre-school was sorely missed by Primary 1 pupils upon enrolment in primary school. From 2007, a pilot scheme, PRIDE for PLAY (Chia, 2006), is underway to include unstructured and structured play within the school setting where young children will have an additional 20-45 minutes of time set aside daily, over and above formal physical education classes, active recesses, before and after-school play and co-curricular activities.

Characteristics and gains of play

Play is natural and is a simple joy that is a cherished part of childhood. Play fosters creativity, promotes imagination, practices dexterity and encourages emotional, cognitive and physical strength. Indeed play is important for the healthy development of the brain (Tamis-LeMonda et al., 2004). Through play, children can explore the world, interact and engage with peers and adults, practising mastery and resiliency and acquiring competencies that will help them to face future uncertainty.

Play that is undirected by adults allows children to learn to share, to care, to negotiate, to get along in groups, to resolve conflicts and also to learn self-advocacy skills (Hurwitz, 2003). No other medium allows for so much gain for so little investment. When play is child directed, children practise decision-making, move at their own, discover their own interests and children ultimately engage in the passions that they wish to pursue. When play is adult-directed, which is common, children acquiesce to adult standards and this sometimes compromises creativity, leadership and group skills (MacDonald, 1993).

Play builds active and healthy bodies and encouraging unstructured play everyday of the week that is interspersed throughout the day could increase the habitual physical activity of children and help ameliorate childhood obesity or delay it, helps with stress alleviation and allows for ‘good mood’ hormones, which are released into the circulation when physical activity thresholds are achieved, to take effect (Chia, 2006). Parents who spend time at play with young children get a glimpse of the world through the ‘child’s eyes’ and apart from opportunities to offer gentle and nurturing guidance, the interactions also promote enduring relationships between the child and parent (Smith, 1995). Interestingly, play is also used to foster academic and social-emotional learning. Play help children to adjust to the school environment, heightens children’s readiness to learn, enhances positive learning behaviours and fine-tunes problem-solving skills (Fisher, 1992).

Consequences of physical activity insufficiency

The World Health Organisation (WHO) suggested that obesity should be considered as a disease rather than a lifestyle problem. The prevalence of obesity is on the increase in children worldwide, especially in developed cities. A sedentary lifestyle, decreased physical play and over consumption of foods have increased childhood obesity to alarming levels. Data on children aged 6 to 11 years in the USA showed that the prevalence of overweight has increase nearly 200 % from 1984 to 1994- i.e. from 6.5 % to 11.4 % in boys and from 5.5 % to 9.9 % in girls (Wadden et al., 2002). The situation of childhood obesity in the UK is also pronounced. In a sample of 2 630 English children, 22 % were overweight at age 6 years and 31 % at age 15 years. Obese children comprised 10 % at age 6 years and 17 % at age 15 years (Reilly and Dorosty, 1999). Similar trends in increased prevalence were observed in Australian children. In 1985, the prevalence of overweight and obese children was 9.3 % in boys and 10.6 % in girls, with a further 1.7 % and 1.6 % obese in boys and girls respectively. Ten years on, the prevalence of overweight children were 15 % in boys and 15.8 % in girls. The prevalence of obese children was 4.5 % in boys and 5.3 % in girls (Magarey et al., 2001).

In Singapore, the School Health Survey showed that the prevalence of obesity in the year 2000 was 10.8 % in children aged 6-7 years, 14.7 % in those aged 12-13 years, and 13.1 % in those aged 15-16 years (School Health Services, 2000). Press reports in 2005 suggest that the prevalence of overweight in youngsters is 9-10 %.

Nonetheless, concentrations of the bad cholesterol (low density lipoprotein, LDL) in young children appear to be rising and Singapore apparently has the highest rate of increase in adult-onset diabetes in the world (Chia, 2006). LDL is often known as bad cholesterol and high levels of LDL in adults are known to cause heart disease and stroke, which are the leading causes of premature deaths in Singaporeans. Even though the relative incidence of juvenile obesity among Singaporean schoolchildren may appear small and mild, in comparison to countries like the USA, UK or Australia, prudence dictates that preventative measures and programmes must be enforced to prevent a potential problem from escalating (Parizkova, et al., 2007).

Disease consequences of childhood obesity

The main cause of insulin resistance in childhood is obesity. Insulin resistance is singled out as a precursor to a cluster of adverse cardiovascular risk factors such as high blood pressure, high blood fats and alterations in the way the body utilise blood sugar, known as metabolic syndrome X (Andersen et al., 2006). Although short-term mortality is seldom associated with childhood or adolescent obesity, childhood obesity is considered as a significant predictor of long-term morbidity and mortality. Obesity is a complicated disorder that involves many organs in the body, which can lead to many health problems. In children, the common complications arising from obesity include psychosocial problems, hyperlipidaemia, carbohydrate metabolism abnormality and these conditions will usually persist into adulthood. Other rare complications are orthopaedic problems such as joint pains in the feet, knees and hip, which are exacerbated by excessive body weight, sleep apnoea (disrupted sleep due to obstruction of the airflow because of too much fat around the neck).

Obese and overweight children, including those in preschools (Chia, 2006) experience weight-teasing by peers and children are bothered by these teasing episodes. Bruche (1975) summarises the deleterious psychological impact of obesity in the young "*The lot of fat children is a sad one. They are bashful & ashamed of their shapeless figures yet unable to conceal them. Wherever they go, they attract attention...Obesity is a serious handicap in the social life of the child… Obesity does not have the dignity of other diseases, and is not often taken seriously by adults"* (pp. 95).

Weight-teasing in schools is associated with disordered eating behaviours that may place overweight children at risk for weight gain. In a survey of 4746 young people in the USA, 63% of the very overweight girls and 58% of the very overweight boys reported being teased by their peers, while weight teasing by family members was reported by 47% by these girls and 34% by these boys. The results also highlighted that perceived weight teasing was significantly associated with disordered eating behaviours among overweight and non-overweight boys and girls (Neumark-Sztainer et al., 2002), echoing a report published in the Straits Times on eating disorders in all-girl-school in Singapore (Davie, 2006). Chia and Wang (2003) sounded a warning in their published research among primary school children where they reported that even children of a normal body weight were dissatisfied with their body weight and voiced the intention to lose body weight.

Guidelines for physical activity for toddlers and children

To date there are no apparently no universally accepted guidelines for physical activity that are promoted or accepted by all countries for toddlers and young children. This is not surprising since there is a dearth of relevant, reliable and substantial data on dose-response benefits of physical activity (i.e. amount of activity that corresponding results in health benefits) for these age groups. Moreover, the nature and context of physical activity among different communities in different countries are likely to be dissimilar.

Apparently, only the National Association for Sport and Physical Education (NASPE, 2002) in the USA has enunciated physical activity guidelines for infants, toddlers and young children. The guidelines were articulated based upon the premise that adopting a physically active lifestyle early in life increases the likelihood that infants and young children will learn to move skillfully. In addition, promoting and fostering enjoyment of movement and motor skill confidence and competence at an early age will help to ensure healthy development and later participation in physical activity.

The NASPE physical activity guidelines for infants (persons less than 1-year-old) are:

- Infants should interact with parents and/or caregivers in daily physical activity, which are dedicated to promoting the exploration of their environment.
- Infants should be placed in safe settings that facilitate physical activity and do not restrict movement for prolonged periods of time.
- Infants' physical activity should promote the development of motor skills.
- Infants should have an environment that meets or exceeds recommended safety standards for performing large muscle group activities.
- Individuals responsible for the well-being of infants should be aware of the importance of physical activity and facilitate the child's movement skills.

The NASPE physical activity guidelines for toddlers (persons between 2 and 5 years old) are:

- Toddlers should accumulate at least 30 min daily of structured physical activity and pre-schoolers, at least 60 minutes.
- Toddlers and pre-schoolers should engage in at least 60 minutes & up to several hours per day of unstructured physical activity & should not be sedentary for more than 60 minutes at a time except when sleeping.
- Toddlers and pre-schoolers should have indoor and outdoor areas that meet or exceed recommended safety standards for performing large muscle group activities.
- Individuals responsible for the well-being of toddlers and pre-schoolers should be aware of the importance of physical activity & facilitate the child's movement skills.

For persons older than 5 years of age to adolescence, the current physical activity guidelines for the promotion of lifelong physical activity, the improvement in current health, physical fitness and well-being (Pangrazi, 2001) are:

- Children should accumulate at least 60 minutes and up to several hours of age-appropriate physical activity on all or most days of the week. The daily accumulation should include moderate-to-vigorous physical activity of which the majority being intermittent in nature. Brisk walking is considered as moderate intensity. Continuous vigorous physical activity should not be expected for most children, nor should it be a condition for meeting the guideline.
- Children should participate in several bouts of physical activity lasting 15 minutes or more (Note: The majority of children's physical activity will be intermittent in nature. For optimal benefits to accrue, 50 % of the accumulation should be in bouts of 15 minutes or more. These bouts can take place during recess, PE, play periods or sports practices. Bouts of activities typically include activity time interspersed with rest or recovery periods).
- Children should participate each day in a variety or age-appropriate physical activities designed to achieve optimal health, wellness, and fitness and performance benefits.

An important study by Anderson et al. (2006) showed that a daily accumulation of at least 90 minutes of moderate-to-vigourous intensity exercise or physical activity would be necessary for children to prevent insulin resistance and to avoid a clustering of cardiovascular risk factors in European 9 and 15-year-old children (N=1156 girls and N=1045 boys).

In Singapore, the Ministries of Community Development, Youth and Sport, and Education are silent on these physical activity guidelines and in pre-schools, though physical activity sessions are encouraged, there is at the present time, no requirement for specialist physical education teachers to be deployed in pre-schools and in primary schools. There are also no local data on the physical activity of pre-school children in Singapore. However, a study conducted by Chia et al. (2003) in 120 boys and girls aged 9-11 years showed that they were mainly sedentary on a weekday (a median of 86% of time spent at a heart rate intensity of less than 120 beats per minute and on a weekend day (a median of 96% of time spent at a heart rate intensity of less than 120 beats per minute).

Proposal for corrective action and intervention

PRIDE stands for personal responsibility in daily effort, while PLAY stands for participation in lifetime activity for youth. I am proposing that beyond physical education which has many noble aims apart from developing physical fitness and encouraging physical activity, young people in school should take personal responsibility in daily effort for free play and structured play, which is over and above that prescribed for physical education. It is recommended that PRIDE for PLAY (Lee, 2007) be a whole school project that all teachers can own and not be considered as simply a PE project.

This can be done by taking two to five minutes from each of the time-tabled periods for academic subjects and collectively pooled it to a period of extended play, either as part of an extended recess or just prior to recess. I am advocating a "Teach less, Play more" concept that can collectively boost daily physical activity in school, school morale, ethos and school tone, better interaction among staff and pupils, better integration among the various races, higher school attendance and even better academic results. Importantly, PRIDE for PLAY will go some way in allowing young people to accumulate a sizeable proportion of the current recommendations for an accumulation of at least 90 minutes of moderate-to-vigorous daily physical activity.

In some instances, young people may have forgotten how to play or may be ignorant of the joys of movement and intervention programs e.g. novel games, free access to safe playing equipment, and playing spaces, game markings on the playground, or initially, instructor or peer-led activities may be necessary to kick start the PRIDE for PLAY initiative. Alternatively, schools may consider setting aside 20-45-minute slots for free or organized play for all- before school, during school and after school, every day of the school week.

Qualifying and quantifying the success of PRIDE for PLAY is important to ensure that beyond the novelty of the program, there is sustainability of the programme and that the opportunity and academic costs of it are negligible or even non-existent. Contrarily, it is important to craft out questionnaires or use research tools to record improved attitudes toward play and physical activity, better school tone, enhanced integration of the various races, pupil-staff interactions and no significant drop in academic standards.

Conclusion

Education in schools in Singapore is taken very seriously and can be considered as a 'high stakes' activity. After all, staff advancement in school is more easily justified from academic results, which are easier to measure than the holistic and balanced development of the pupil. Any drop in academic standards can be interpreted as serious warning bells that must be immediately rectified; often at all costs- this translates as more time on task in terms of academic subjects and higher stress for both pupils and teachers. Hence the scheme may find great resistance at the onset. However, a certain amount of "managed and considered messiness" may be necessary in the initial stages for the success of PRIDE for PLAY. However, I am confident that when the full programme rolls out, there will be many takers and the pupils who take PRIDE for PLAY will be better for it and something Singapore can be proud of.

References

Anderson, L.B., Harro, M., Sardinha, L.B., Froberg K., Ekelund, U., Brage, S. and Andersen, S.A. (2006) Physical activity and clustered cardiovascular risk in children: a cross-sectional study (The European Youth Heart Study). *The Lancet* **368,** 299-304.

Bruche, H. (1975) Emotional aspects of obesity in children. *Pediatric Annuls* **4,** 91-99.
Chia, M. (2006, January 21) PRIDE for PLAY. Keynote address to1st Singapore Heart Foundation-National Institute of Education National Seminar *Hearty Children-Sturdy Future-managing obesity in schools*. Suntec City, Singapore.
Chia, M. and Wang, .J (2003. Fat, unfit and dissatisfied: relationships among perceived physical self-worth, body weight satisfaction and physical fitness among primary school children. *ACHPER Healthy Lifestyles Journal* **50,** 14-19.
Chia, M., Wang, J., Teo-Koh, S.M, Quek, J.J. and Kumar, G. (2002) Relationships between hours of computer use, physical activity and physical fitness among children and adolescents. *European Journal of Physical Education* **7,** 136-155.
Davie, S. (2006, 23 October) Eating disorders on the rise in all-girls school. *Straits Times* pp. H6.
Fisher, E.P. (1992) The impact of play on development: a meta-analysis. *Play Culture* **5,** 159.
Hurwitz, S.C. (2003) To be successful-let them play. *Child Education* **79,** 101-102.
Jago, R., Baranowski, T., Baranowski, J.C., Thompson, D. and Greaves, K.A. (2005) BMI from 3-6 years of age is predicted by TV viewing and physical activity, not diet. *International Journal of Obesity* **29,** 557-564.
Lee Hui Chieh (2007, 27 April) Play time to get school children here to move more. *The Straits Times* pp H20.
MacDonald, K.B. (1993) Parent-Child Play: Descriptions and Implications. Albany, NY: State University Press.
Magarey, A.M, Daniels, L.A. and Boulton, T.J. (2001) Prevalence of overweight and obesity in Australian children and adolescents: reassessment of 1985 and 1195 data against new standard international definitions. *Medical Journal of Australia* **174,** 561-564.
Ministry of Education. MOE (2006) PE Syllabus. Singapore.
National Association for Sport and Physical Education (NAPE) website (2002) Retrieved 30, August, 2006 from http://www.naspe.com
Neumark-Sztainer, D., Falkner, N., Story, M., Perry, C., Hannan, P.J. and Mulert, S. (2002) Weight-teasing among adolescents: correlations with weight status and disordered eating behaviours. *International Journal of Obesity and Related Metabolic Disorders* 26, 123-131.
Pangrazi, R.P. (2001) Promoting physical activity for youth. *The ACHPER Healthy Lifestyles Journa*l **47,** 18-21.
Parizkova, J., Chin, M.K., Chia, M. and Yang, J. (2007) Obesity, physical activity and health. Journal of Exercise Science and Fitness, **5**, 7-13.
Pelligrini, A.D. (2005) Recess: its role in education and development. Mahwah, NJ: Erbaum Associates.
Raitakari, O.T., Porkka, K.V., Taimela, S., Rasanen, R. and Viikari, J.S.A. (1994) Effects of persistent physical activity and inactivity on coronary risk factors in children and young adults: the Cardiovascular Risk in Young Finns Study. *Amsterdam Journal of Epidemiology* **140,** 195-205.
Reilly, J.J. and Dorosty, A.R. (1999) Epidemic of obesity in UK children. *Lancet* **354,** 874-875.
School Health Services, Health Promotion Board website (2000) Retrieved 30, August, 2006 from http://www.hpb.gov.com.sg.
Singapore Heart Foundation website (2006) Retrieved 30, August, 2006 from http://www.shf.org.sg.
Smith, D. (1995) How play influences children's development at home and in school. *Journal of Physical Education and Dance* **66,** 19-23.
Tamis-LeMonda, C.S., Shannon, J.D., Cabrera, N.J. and Lamb M.E. (2004). Fathers and mothers at play with their 2- and 3-year-olds: contributions to language and cognitive development. *Child Development* **75,** 1806-1820.
United Nations High Commission for Human Rights General Assembly. (1989) Resolution 44/25.
Wadden T.A., Brownell, K.D. and Foster, G.D (2002) Obesity: responding to the global epidemic. *Journal of Consulting and Clinical Psychology* **3,** 510-525.
Wang, J., Chia, M., Quek, J.J. and Liu, W.C. (2005) Patterns of physical activity, sedentary behaviours and psychological determinants of physical activity among Singaporean school children. *Journal of Sport and Exercise Psychology* **4,** 227-249.

Key points

- Physical play is natural among young people and a daily dose of play can help young people meet daily requirements for accumulated physical activity of at least 90 minutes and at least of a moderate intensity.
- Play is critical for child development and provides a healthy balance for many sedentary lifestyle activities.
- Parents, care-givers and teachers should emphasise and partake in daily play with young people.

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