CONSENSUS STATEMENT

SINGAPORE INTEGRATED 24-HOUR ACTIVITY GUIDELINES FOR EARLY CHILDHOOD (< 7 YEARS)

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ACADEMY OF MEDICINE SINGAPORE

COLLEGE OF PAEDIATRICS AND CHILD HEALTH, SINGAPORE

INTRODUCTION

Early childhood is a critical period for growth and development, forming the foundation for future and lifelong well-being.(1) Adopting healthy lifestyle behaviours in early childhood can potentially influence and shape behaviours later in life.(2) Frameworks have been developed, such as from the Harvard Centre on the Developing Child, and are advocated for early childhood health promotion and disease prevention;(3) these form key strategies in reducing future non-communicable diseases (NCDs). The World Health Organization's (WHO's) Global Action Plan for the Prevention and Control of Non-Communicable Diseases (2013-2020), highlighted that exposure to risk factors of NCDs often starts in early life and interventions in early childhood often offer the best protection against these NCDs.(4)

The current Singapore guidelines on physical activity for children less than 7 years were updated in 2013.(5) Over recent years, there is emergent evidence surrounding physical activity, sedentary behaviour and sleep for this group of children, and how these concepts relate to one another, within a 24-hour period, for better health outcomes.(6-10) This workgroup also integrated dietary choices and eating behaviours, which are closely linked to movement behaviours in terms of, but is not limited to optimising energy balance, which is important for obesity prevention.(11) Encapsulating all these elements, we developed the Singapore Integrated 24-hour Activity Guidelines for Early Childhood (0 – <7 years).

HEALTH OUTCOMES OF LIFESTYLE BEHAVIOURS

We present the global evidence for health outcomes of physical activity, sedentary behaviour, sleep, and diet and eating habits in children aged 0 to 5 years.

Physical activity provides many health benefits in early childhood, including motor and cognitive development, cardiometabolic, musculoskeletal and psychosocial health.(12) Children in this age group should be encouraged to regularly participate in a variety of activities regularly; those who engage in more physical activity overall and/or at a higher intensity (i.e. moderate to vigorous or vigorous intensity), consistently enjoyed favourable health benefits.(13-15) Tummy time (i.e. prone position) appears to be positively associated with motor development for infants,(16, 17) while outdoor play (under adult supervision) is reported to confer health benefits on preschoolers.(18)

Excessive sedentary behaviour and screen time can have detrimental health effects to children in their early years.(19) Prolonged sedentary screen time is adversely associated with adiposity, poor motor and cognitive development and impaired psychosocial health.(20-22) Indeed, prolonged sitting, reclining or lying are also unfavourably associated with adiposity or motor development.(23, 24)

Sleep is essential for growth and good health in the early years.(25) As a newborn grows, he/she regulates his/her sleep through the establishment of a circadian cycle with less daytime naps and more night-time sleep.(26, 27) Children of different ages require different

optimal sleep durations.(28-30) However, shorter sleep in children could be the result of increased screen time around bedtime and collectively may be associated with higher levels of adiposity, poor growth and emotional dysregulation.(31)

A healthy diet provides optimal nutrition for a child's physical and cognitive development.(32) Nutritional needs and eating patterns change with each progressive stage of the childhood.(33) Setting good eating habits and shaping positive eating behaviours in the early years help form the foundation for a healthy diet, which can reduce the future risks of overweight or obesity, as well as protect against NCDs.(34)

LOCAL STUDIES

The Growing Up in Singapore Towards healthy Outcomes (GUSTO) study is a longitudinal cohort investigation that commenced in 2009, to investigate what influence early development has on body composition and metabolic health.(35) Studies of screen time and sedentary behaviour in the GUSTO cohort showed that the average screen-time for infants (12 months) and toddlers (2 years) was 2.0 and 2.4 hours/day respectively. (36, 37) Screen-time in infants was negatively associated with later cognition (composite IQ and verbal IQ), while for toddlers, higher screen time was associated with less physical activity and greater sedentary behaviour. (36, 38)

The sleep duration of children less than 2 years of age in the GUSTO cohort was significantly associated with body length; shorter sleep duration was also associated with higher body mass index and shorter body length for those at 3 months of age. (39) Infants in the GUSTO cohort who were fed breast milk showed better gross motor skills at 2 years and better cognitive performance at both 2 and 4.5 years of age, when compared to formula-fed infants. (40) Higher intake of sugar sweetened beverages in young children (18 months to 5 years) were associated with higher levels of adiposity and greater risk of overweight or obesity. (41)

A separate cross-sectional study of 78 Singaporean preschoolers, using wrist-worn accelerometers, showed that the children spent a median of 7.8 hours/day in sedentary behaviour and 0.5 hours/day in moderate- to vigorous-intensity physical activity. The same study also revealed that the preschool teachers were not familiar with physical activity guidelines and that parents reported very little outdoor playtime with children after preschool.(42)

GUSTO also reviewed the adherence to (Canada/Australia) 24-hour movement guidelines in 864 children at 5.5 years old and results showed that few children (5.5%) met all of the movement guidelines.(43)

A more recent study examined the proportion of preschoolers meeting the WHO guidelines on physical activity, sedentary behaviour and sleep, and the effect on their quality of life. More than 2000 parents of preschoolers were surveyed and only 9.6% met all of the

recommendations, while 12.6% did not meet any of the recommendations. This study also showed that the health-related quality of life increased as the preschoolers achieved more recommendations.(44) The nationally representative study in terms of ethnicity is apparently the largest prevalence study in Singapore on sleep, physical activity and sedentary behaviour among preschoolers.

AIM OF CONSENSUS STATEMENT

This guidance provides a holistic approach for developing and maintaining good health amongst children in early childhood (i.e. pre-primary schooling age) in Singapore, by integrating physical activity, sedentary behaviour, sleep, and dietary and eating habit advice. It is equally important to understand that these activities are closely related in influencing health outcomes and time-use behaviour, and to organise them within a daily 24-hour period. Incorporating healthy dietary and eating habits with movement behaviours encourage children to practise and adopt these recommended habits and behaviours at a young age thereby conferring good health.

These recommendations are for all healthy infants (0 – <1 year), toddlers (1 – <3 years) and preschoolers (3 – <7 years), regardless of gender, cultural background or socioeconomic status. Children with special needs or medical conditions should consult a qualified medical professional for additional guidance.

METHODS

The consensus workgroup included physicians (neonatologist, paediatrician, sports physician and family physician), allied health professionals (dietitian, exercise physiologist, physiotherapist), academics, educators and researchers from multiple institutions and organisations.

The workgroup assessed the evidence reviews conducted for the WHO Guidelines on Physical Activity, Sedentary Behaviour and Sleep for children under 5 years of age, and the 24-Hour Movement Guidelines for children less than 5 years of age from Canada, Australia and South Africa.(6-9) Relevant evidence for children aged 5 to less than 7 years from WHO Guidelines on Physical Activity and Sedentary Behaviour and the 24-Hour Movement Guidelines for Children and Youth/Young People from Canada and Australia were also reviewed.(45-47) The literature was updated to September 2021 through an electronic search of Medline databases and the keywords used included “infant”, “toddler”, “preschool”, “physical activity”, “sedentary behaviour”, “sleep”, “eating habit” and “diet”. The update included systematic reviews, randomised control trials and cohort studies. Only results in English language were considered. The health outcomes included cardiometabolic health, physical fitness, bone and skeletal health, adiposity, motor and cognitive development, behaviour development and psychosocial health.

The workgroup used the GRADE-ADOLOPMENT approach,(48) which builds on the GRADE Evidence to Decision (EtD) framework,(49) to provide a structured and transparent methodology for healthcare recommendations. It evaluates the strength of recommendations from associated guidelines and the quality of evidence supporting the recommendations. Regular meetings were conducted for workgroup members to discuss and achieve a consensus on the adoption and/or adaption of the WHO guidelines for the local paediatric population.

These recommendations are intended for healthcare professionals providing holistic care to infants, toddlers and preschoolers including education and the promotion of healthy activities that form the foundation for life-long well-being. The full EtD frame work is included as supplementary material.

CONSENSUS STATEMENTS FOR INFANTS (0 – <1 YEAR)

Physical Activity: **Be physically active several times a day, where more is better, in a variety of forms and within a safe and supervised environment. Activities should include non-screen-based interactive floor-based play and tummy time. For those not yet mobile, tummy time should start soon after birth, building up towards at least 30 minutes spread throughout the day. Planning a daily routine of physical activities may be helpful.**

Physical activity in infants is associated with improved measures of adiposity, motor skill development, psychosocial, and cardiometabolic health indicators.(12) For infants not yet mobile, tummy time, defined as awake prone positioning on a firm surface, is positively associated with multiple developmental aspects.(6, 50) Tummy time has positive effects on global development,(51) particularly gross motor development,(52, 53) body mass index and prevention of brachycephaly.(54, 55) Infants can start on tummy time soon after birth and build up from a few minutes towards at least 30 minutes spread throughout the day. Infants above 3 months of age can aim to achieve a minimum of 1 hour of prone activities spread throughout the day. During tummy time, the infant can be encouraged to play and should be supervised by a responsible adult caregiver.

Sedentary Behaviour: **Avoid restraining and leaving infants unattended for more than 1 hour at a time. Any form of screen time, including background screen time, is not recommended. When the infant is seated, reclined or lying down, caregivers are encouraged to engage the infant in singing, reading, storytelling and imaginative play. Having a daily routine for activities, sleep and meals may be useful in reducing the amount of sedentary behaviour.**

Infants should not be restrained (e.g. strollers and high chairs) and left unattended for more than 1 hour at a time. Screen time in infants is associated with unfavourable measures of adiposity and decreased scores on measures of psychosocial health and cognitive

development.(19) Screen time in infants confers no benefits and is unfavourably associated with cognitive development,(19) sleep duration and quality,(56, 57) and gross motor development.(58) Any form of screen time, including background screen time which may cause distractions, is not recommended for infants.(6) When the infant is sedentary, engaging in 'serve and return' activities such as reading, singing, storytelling or imaginative play with a caregiver is encouraged.

Sleep: **Have a daily total amount of 14-17 hours (for 0-3 months of age) and 12-15 hours (for 4-11 months of age) of sleep, including naps, to promote optimal health. It is recommended for infants to sleep on their back in their own cot, in the same room as their caregivers to ensure sleep safety. Develop a regular sleep time routine to help infants fall asleep with ease.**

Infants spend most of their time sleeping, which can be up to 80% in newborns.(59) Good sleep is well known to improve cognitive,(60, 61) physical,(62) and social outcomes,(63) reduce obesity as well as reduce the risk of sudden infant death syndrome.(64-66) Good quality sleep improves family well-being and is an important predictor of maternal health.(67, 68) Although there are cultural differences in sleep duration and practices,(69) you can start developing regular bedtime routines when infants are 2-3 months old and provide a conducive sleep environment to improve sleep duration.(26, 70-74) Good sleep safety practices include infants sleeping supine in their own cot and in the same room as the caregivers.(75-77)

Diet and Eating Habit: **Breastfeeding is recommended for infants when possible. From 4 to 6 months of age, introduce a variety of development- and culture-appropriate solid foods of various textures and flavours, that is prepared with no added salt and sugar. Provide a daily routine of having meals spaced 2-3 hours apart in the daytime to avoid overfeeding.**

Breast milk supports an infant's nutritional requirements during the first 6 months of life, and provides antibodies to support an infant's health, growth and development.(78, 79) It is recommended that infants are exclusively breastfed for at least the first 6 months of life, with continued use of prescribed medication or vitamin and mineral supplementation if recommended by the physician. Mothers should adhere to food safety and hygiene recommendations if breast milk is expressed and stored. Should human milk be unavailable, infants should be provided with formula milk. In support of healthy bone development, vitamin D supplementation of 400IU per day is recommended for fully and partially breast-fed infants due to the low bioavailability in breast milk.(79) With increasing energy and nutrient requirements beyond what breast milk can provide, infants should be started on complementary foods between 4-6 months of age, depending on their developmental readiness.

Iron-containing foods should be encouraged as a first line of defence to prevent deficiency in infants. These can include iron-fortified cereals, pureed meat and poultry, plain tofu or legumes, with textures suited to the infant's stage of development. Salt should not be added to foods for infants as their kidneys are immature and unable to excrete excess salt, thus presenting a safety concern. Food and drinks containing added sugars should be avoided for infants, reducing the risk of dental caries and preventing a learned preference for sugar. Overconsumption of sugar-laden food has been associated with an increased risk of becoming overweight or obese.(41, 79-81) There is no evidence that delaying the introduction of potentially allergenic food prevents food allergies.(79) Therefore, potential allergenic foods such as dairy products, egg, wheat, crustacean shellfish, fish, soy, tree nuts and peanuts should be introduced as part of complementary foods. For infants with a family history of atopy or mild eczema, it is recommended that egg and peanut be introduced one at a time, between 4-6 months of age, once the infant is able to tolerate solid food.(82)

Repeated exposure to a variety of food across all the main food groups (grains and alternatives, lean proteins and alternatives, fruits, and vegetables) is necessary to promote food acceptance and provide infants with the range of required nutrients. Caregivers should strive to recognise an infant's hunger and satiety cues that will support responsive consumption by timely initiation and termination of the feeding process.(82) Evidence reveal non-responsive caregiver feeding practices, such as the use of extremely controlling, restrictive, rewarding or pressure feeding, to be associated with a higher risk of childhood obesity. Thus it is recommended that guidance on responsive feeding be provided to caregivers, so as to promote appropriate weight gain among infants.(83, 84)

CONSENSUS STATEMENTS FOR TODDLERS (1 – <3 YEARS)

Physical Activity: **Accumulate at least 180 minutes in a variety of physical activities, where more is better, at any intensity spread throughout the day within a safe environment. Daily outdoor play for toddlers is highly encouraged. Caregivers should actively participate in all forms of physical play with toddlers.**

Toddlers should engage a spread of physical activities of light, moderate and vigorous intensities. (12) This should include a variety of physical activities that are fun and encourage exploration, involving movement skills such as walking, running, crawling, climbing, balancing, bending, dancing and playing with balls. The more active play the toddlers achieve, the better. Toddlers who engaged in at least an hour of moving freely each day had significantly stronger object and locomotor skills.(85) Caregivers should participate actively with toddler during both indoor and outdoor play, as such positive interactions are associated with better developmental skills, reduced risk for obesity, and accumulate physical activity.(86, 87)

Structured and unstructured play are important for a toddler's global development and these activities can take place in indoor and outdoor environments.(88) In childcare centres, more

than half of toddler's indoor moderate to vigorous physical activities occur in modifiable open spaces and during class transitions. Enhancing childcare structure quality and inclusion of modifiable open spaces can promote physical activity and reduce sedentary time for toddlers.(89, 90) Being outdoors also increases physical activity, with more playtime and time spent engaged in moderate to vigorous physical activities. In turn, these are associated with better sleep outcomes in toddlers.(57) Furthermore, spending at least 2 hours in outdoor play daily can help prevent the early onset of myopia.

Sedentary Behaviour: **Avoid restraining toddlers on a seat for more than 1 hour at a time. Screen time, regardless of the type of device, is not recommended for toddlers younger than 18 months of age, and should be limited to less than 1 hour per day for toddlers 18 months and above. When sitting or lying down, it would be most beneficial to engage the toddler in singing, reading, storytelling or imaginative play.**

Sedentary behaviour amongst toddlers, include the use of any screen device, reading, drawing, eating, travelling in a vehicle, whilst sitting, reclining or lying.(91) Prolonged periods of being restrained in a seat or in a supine position is associated with high levels of adiposity and less favourable motor development.(19, 92) Screen-based sedentary behaviours also have unfavourable effects on motor and cognitive development, psychosocial health, social skills (ability to develop positive relationships and interact with others effectively), physical activity and poor sleep outcomes across early childhood.(19, 57) International guidelines consistently recommend that toddlers should not be restrained on their seats for more than 1 hour at a time, and those of less than 18 months of age should have no exposure to screens.(6-8, 93) Even when sedentary, engaging in interactive activities with toddlers such as reading, singing and storytelling has greater potential for cognitive and social development, compared to screen time and solitary activities.(19, 94)

Sleep: **Have a daily total amount of 11-14 hours of sleep with regular sleep and wake-up times. Develop a bedtime routine and keep to a consistent bedtime. Provide a conducive sleep environment and avoid screen time before night-time sleep.**

Develop a bedtime routine and keep to a consistent bedtime.(95, 96) Provide a conducive sleep environment that is dark, quiet and of comfortable temperature, and avoid screen time 30 minutes before night-time sleep.(97) Recent literature supports that short sleep duration during toddlerhood is associated with greater risk of depressive symptoms and poorer temperament in later childhood.(98, 99) Short sleep duration is also linked to obesogenic eating behaviours.(100-103) Toddlers with short sleep durations also tend to have higher blood pressure later in life. (104)

Regular bedtimes and routines help toddlers to sleep longer and better,(95, 96) and may be important for obesity prevention.(105) Adaptive bedtime activities like storytelling or

cuddling help toddlers sleep longer and have fewer sleep problems.(106) Screens emit blue light that suppresses endogenous melatonin production, in turn resulting in shorter sleep duration, later bedtimes and longer time to fall asleep.(107, 108) Poor quality sleep environment (e.g. crowded, noisy and uncomfortable) is associated with shorter sleep durations, later bedtimes and longer sleep latency.(109, 110)

Diet and Eating Habit: **Continue to increase the variety of foods offered to your toddler and wean off milk as the main source of nutrition. Introduce healthy family meals and offer whole milk and water, while establishing a structured routine for meal and snack times. Avoid screen time during meal times. Using food to soothe your toddler or as a reward is discouraged.**

Toddlers are reliant on caregivers to establish their feeding habits. These include what, when and how food is consumed.(79, 80, 111, 112) Fresh, minimally-processed foods should be prepared with little or no added sugar and salt, with continual exposure and/or provision of foods across all major food groups that are in unison with healthy family eating habits. As established in the latest Dietary Guidelines for Americans,(79) there is no clear evidence that formula milk should be continued beyond 12 months of age. Pasteurised full cream milk, or fortified unsweetened soy milk, can be incorporated in the toddler's diet from around 12 months of age to meet protein, calcium and vitamin D requirements, accompanied by adequate solid foods.(79, 80) Sugar-sweetened beverages (e.g. juice drinks, sports drinks and regular soft drinks) and caffeinated beverages (e.g. tea, coffee and cola drinks) should not be given before two years of age, and avoided as much as possible thereafter.(79, 113) Instead, plain water should be offered to meet hydration requirements.

Establishing a structured routine for meal and snack times for toddlers is an important component of effective responsive feeding practices, where caregivers also recognise and react to hunger and fullness cues of the toddler.(111, 112) Synthesising findings from randomised-controlled trials, Perez-Escamilla et al. (2017) concluded that responsive feeding practices demonstrated improvements in weight outcomes among toddlers 1 to 2 years of age.(112) Picky eating is also a natural occurrence in the feeding process and toddlers should not be pressured to consume new foods.(79, 80) Instead, they should be provided with regular and frequent exposure to non-preferred foods, increasing familiarity and promoting acceptance. Other toddler behaviours that affect feeding habits such as active play, screen time, sleep and techniques to soothe the toddler, are also influenced by caregivers. Poor sleep routines in the first two years of life, as well as the use of food to soothe the toddler have been associated with poor dietary quality and increased risk of obesity in early childhood,(80) and are therefore not encouraged.

CONSENSUS STATEMENTS FOR PRE-SCHOOLERS (3 – <7 YEARS)

Physical Activity: **Accumulate at least 180 minutes of physical activity at any intensity spread throughout the day and within a safe environment. At least 60 minutes should be of moderate– to vigorous-intensity, where more is better, and the physical activities can be accumulative and take different forms. Older preschoolers (5 – 6 years of age) should be exposed to a variety of age-appropriate vigorous-intensity play and engage in muscle- and bone-strengthening activities several times a week. Daily outdoor active play among preschoolers is highly encouraged. Caregivers should participate actively with pre-schoolers during all forms of active play.**

Physical activity engagement amongst preschoolers is associated with multiple health benefits, especially when it is moderate- to vigorous-intensity.(12, 114, 115) Evidence supports a positive association between physical activity and motor and cognitive development.(114) Studies have shown that physical activity is associated with favourable adiposity, motor development, physical fitness, psychosocial, cardiometabolic and bone health in preschoolers.(7, 12) In addition, a strong foundation in childhood movement competence is associated with lifelong participation in physical activity; therefore, preschoolers should be encouraged to participate in a variety of activities encompassing fundamental movement skills and age-appropriate/modified sports in a safe environment.(116-118) Evidence from a local study showed that lower primary children failed to demonstrate age-appropriate movement proficiency, indicating a critical need for physical activity interventions at the preschool age.(119)

The high local prevalence of myopia is a serious health concern and daily outdoor play for at least 2 hours can prevent myopia onset.(120, 121) Moreover, outdoor play confers many other learning opportunities for preschoolers, caregivers and educators.(122) Outdoor play with preschoolers provides respite from excessive 'near work' (e.g. reading and screen time), and also promotes parent-child bonding and creating meaningful memories for both parents and preschoolers that are enduring.(123)

As preschoolers spend several hours in school on weekdays, there is scope to capitalise more on preschoolers' natural tendency for movement and physical play. Policies/guidelines should be developed to encourage physical activity throughout the day, such as incorporating it as part of all subject domains, allowing movement breaks hourly and curating learning environments that facilitate preschoolers to move and stay active in childcare centres and kindergartens.(124)

Sedentary Behaviour: **Limit the total daily amount of sedentary behaviour, such as sitting, reclining or lying down, and take breaks during extended periods of time spent being sedentary. Recreational sedentary screen time, regardless of the type of screen device, should be limited to less than 1 hour per day.**

Recreational screen-based sedentary behaviour such as television viewing and handheld device use is of particular importance.(91) The WHO evidence-based guidelines acknowledged that sedentary behaviour, and in particular recreational screen time among children aged 3-6 years, bore detrimental effects on their fitness, adiposity and behaviour or sleep.(6, 125) The detrimental effects of early-life screen viewing, regardless of the type of screen device, on movement behaviours and adiposity later in life have also been observed in prospective cohort studies among young Singaporean children.(38, 126, 127)

While sedentary behaviour, for instance during educational periods, cannot be completely eliminated, regular movement breaks, such as in the form of active play are essential to minimise adverse health effects.(128) Instead of using screen devices during recreational periods, engaging in reading, drawing, storytelling or imaginative play with a caregiver is encouraged.(19, 94) When engaging in recreational screen time, age-appropriate and engaging content for preschoolers is recommended.

Sleep: **Have a total of 10 - 13 hours (for 3 - 5 years of age) or 9 - 11 hours (for 6 years of age) daily sleep. Older preschoolers may not need to nap if sufficient sleep has been obtained at night. Develop a bedtime routine and keep to a consistent bed and wake-up time. Provide a conducive sleep environment and avoid screen time before bed.**

Achieving the number of recommended hours of sleep is associated with better health outcomes in terms of physical, psychological, and cognitive well-being. Shorter sleep duration is associated with higher adiposity levels,(129-133) poorer emotional regulation,(134, 135) more screen time,(136-138) higher risk of injuries,(139, 140) poorer cognitive development,(141-144) increased hyperactivity-inattention,(145) reduced physical activity,(137, 146) and poorer quality of life.(147) The total sleep duration, includes both naps and nocturnal sleep, but older preschoolers may not need the former if sufficient has been obtained at night. A bedtime routine should be developed that involves a wind-down period and avoiding screen time 30 minutes before sleep. Aim to maintain this consistency across weekdays and weekends. Providing a conducive sleep environment that is dark, quiet and of comfortable temperature can help preschoolers sleep better.(97)

Diet and Eating Habit: **Encourage healthy eating habits as a family, with caregivers as role models. Limit the amount and frequency of sugar-sweetened beverage consumption. Provide a structured routine for meal and snack times in appropriate portions that support growth and development. Avoid screen time during meal times. Teach your preschooler to recognise hunger and satiety cues.**

Dietary habits are shaped at a young age and persist later into life. Through continuous positive caregiver modelling, a regular household eating routine provides opportunities for coordinated family meals and regulation of appetite, therefore influencing the overall diet quality of young children.(79, 148, 149) Limiting consumption of sugar-sweetened foods and beverages (including those naturally present in honey, syrups, fruit juices and fruit juice concentrates) to no more than 10% of total energy intake can curb the risk of overweight or obesity and dental caries in children.(41, 79, 81) Similarly, beverages added with non-sugar substitutes such as sugar alcohol (e.g. sorbitol and xylitol) and intense sweeteners (e.g. acesulfame K, sucralose and aspartame) are discouraged as these sweeteners may also cultivate a preference for sweet food and drinks in their diet. Consuming a nutritious breakfast as part of their daily routine is strongly encouraged, as it has been associated with better diet quality and healthy body weight.(149) Structure-based or limit-setting strategies, such as serving appropriate portions, disallowing screen time during family meals, and exerting some caregiver control to moderate preschoolers' intake, can help children develop self-regulation and autonomy in eating behaviours.(79, 148)

Preschoolers are more likely to overeat when watching television or using a screen device during mealtimes and may learn unhealthy food habits from advertisements and programmes. A balance of allowance and control is needed, as being indulgent to a preschooler's food requests may override his or her ability to eat according to internal hunger and satiety cue. Equally, excessive restrain of a preschooler's food intake may unintentionally teach him or her to use food to manage negative emotions.(79, 148) Both of these may lead to unhealthy effects such as overeating and excess weight gain.(79, 148)

CONSENSUS STATEMENTS FOR ALL GROUPS (0 – <7 YEARS)

Integration: **Aim to achieve most or all recommendations on physical activity, sedentary behaviour, sleep and diet for the best results**

The recommendations for physical activity, sedentary behaviour, sleep and eating habits are closely related in terms of health benefits and making up the 24 hours of a child's day. The greatest health benefits can be achieved by meeting all the recommendations; more physical activity, less sedentary time, longer sleep duration, healthy eating habits and positive dietary choices.(10, 44, 150-152) Equivalent beneficial health outcomes can be obtained by achieving various combinations of the recommendations. Both combinations of

more physical activity with longer sleep duration, and the combination of less sedentary time with longer sleep duration can improve cognitive development and reduce risks of adiposity.(6, 10) Replacing sedentary time with physical activity is associated favourably with fitness and motor development.(6, 10) Healthy and sensible dietary habits promote growth, development and maintenance of a healthy weight.(32, 34)

Conclusion

Recent evidence has shifted the international trend towards integrating physical activity, sedentary behaviour and sleep within a 24-hour period for better health outcomes in young children (i.e. infants, toddlers and preschoolers). The inclusion of diet and eating habits complement these recommendations in supporting growth and development, as well as obesity prevention. Establishing these healthy behaviours in early childhood offers them the best protection against future NCDs. However, local studies have demonstrated that a significant proportion of young children in Singapore do not adopt these recommendations and showed poorer health outcomes. Therefore, it is timely to introduce and promote these guidelines to young children and their caregivers to give them the best start in their lives.

As these young children may be cared for by various caregivers (e.g. parents, grandparents and teachers) and transit through different environments as they grow (e.g. home, infant-care, nursery and kindergarten), there is a role for these recommendations to be adopted as daily habits in family units and also as policies in child-care and preschool centres. In conclusion, infants, toddlers, preschoolers and their caregivers are recommended to adopt all domains of these guidelines to achieve the best health outcomes. Families and schools can start by identifying a domain that they can feasibly embed into their everyday life and aim to achieve all the recommendations in good time.

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WORKGROUP MEMBERS

Authors:	
(1) Dr Benny Kai Guo LOO	*Chair, Singapore Integrated 24-Hour Activity Guidelines for Early Childhood Study Workgroup* *Consultant* *General Paediatrics Service & Sports Medicine Service* *KK Women's and Children's Hospital*
(2) Dr Dinesh SIRISENA	*Consultant* *Sports & Exercise Medicine* *Khoo Teck Puat Hospital*
(3) Associate Professor Falk MÜLLER-RIEMENSCHNEIDER	*Saw Swee Hock School of Public Health* *National University of Singapore*
(4) Professor Michael Yong Hwa CHIA	*Physical Education & Sports Science* *National Institute of Education* *Nanyang Technological University*

(5) Adjunct Associate Professor Benedict Chi'-Loong TAN	*Chief & Senior Consultant* *Department of Sport and Exercise Medicine* *Changi General Hospital*
(6) Associate Professor Ngiap Chuan TAN	*Family Physician and Senior Consultant* *SingHealth Polyclinics*
(7) Clinical Associate Professor Oon Hoe TEOH	*Head & Senior Consultant* *Respiratory Medicine Service* *KK Women's and Children's Hospital*
(8) Ethel Jie Kai LIM	*Dietician* *Nutrition & Dietetics* *KK Women's and Children's Hospital*
(9) Dr Mohammad Ashik ZAINUDDIN	*Head & Senior Consultant* *Sports and Exercise Medicine Service* *KK Women's and Children's Hospital*
(10) Joanne Shumin GAO	*Exercise Specialist* *Sport and Exercise Medicine Service* *KK Women's and Children's Hospital*
(11) Dr Poh Chong CHAN	*Head & Senior Consultant* *Division of General Ambulatory Paediatrics and Adolescent Medicine, Department of Paediatrics, Khoo Teck Puat - National University Children's Medical Institute* *National University Hospital*
(12) Dr Teresa Shu Zhen TAN	*Consultant* *Division of General Ambulatory Paediatrics and Adolescent Medicine, Department of Paediatrics, Khoo Teck Puat - National University Children's Medical Institute* *National University Hospital*
(13) Dr Nirmal KAVALLOOR VISRUTHAN	*Consultant* *Department of Neonatology* *KK Women's and Children's Hospital*
(14) Professor Victor Samuel RAJADURAI	*Senior Consultant* *Department of Neonatology* *KK Women's and Children's Hospital*
(15) Dr Moira Suyin CHIA	*Consultant* *General Paediatrics Service* *KK Women's and Children's Hospital*
(16) Dr Nur Adila Binte Ahmad HATIB	*Consultant* *General Paediatrics Service* *KK Women's and Children's Hospital*
(17) Dr Shirong CAI	*Principal Investigator* *Singapore Institute for Clinical Sciences* *Agency for Science, Technology and Research (A*STAR), Singapore*
(18) Dr Ju Lynn ONG	*Senior Research Fellow* *Centre for Sleep and Cognition* *Yong Loo Lin School of Medicine* *National University of Singapore*

(19) Associate Professor June Chi Yan LO	*Assistant Professor* *Centre for Sleep and Cognition* *Yong Loo Lin School of Medicine* *National University of Singapore*
(20) Associate Professor Mary Foong Fong CHONG	*Assistant Professor* *Saw Swee Hock School of Public Health* *National University of Singapore*
(21) Dr Le Ye LEE	*Senior Consultant* *Department of Neonatology, Khoo Teck Puat -* *National University Children's Medical Institute* *National University Hospital*
(22) Dr Elaine Chu Shan CHEW	*Senior Consultant* *Adolescent Medicine Service* *KK Women's and Children's Hospital*
(23) Dr Ratnaporn SIRIAMORNSARP	*Family Physician* *Tampines Polyclinic* *SingHealth Polyclinics*
(24) Dr Miriam LEE	*Senior Manager* *Division of Children & Youth Programme Development* *Sport Singapore*
(25) Dr Aaron SIM	*Assistant Director* *Division of Physical Activity & Weight Management* *Health Promotion Board, Singapore*
(26) Jean ANG	*IPRAMHO Assistant Manager* *Division of Obstetrics & Gynaecology* *KK Women's and Children's Hospital*
(27) Dr Elaine Phaik Ling QUAH	*IPRAMHO Senior Research Fellow* *Division of Obstetrics & Gynaecology* *KK Women's and Children's Hospital*
(28) Clinical Associate Professor Kee Chong NG	*Senior Consultant* *Children's Emergency* *KK Women's and Children's Hospital*
(29) Professor Kok Hian TAN	*Head & Senior Consultant* *Perinatal Audit & Epidemiology Unit* *Department of Maternal Fetal Medicine* *KK Women's and Children's Hospital*
(30) Dr Chui Mae WONG	*Senior Consultant* *Department of Child Development and Neonatology* *KK Women's and Children's Hospital*
(31) Shelly-Anne SHERWOOD	*Senior Physiotherapist* *KK Women's and Children's Hospital*
(32) Dr Siao Hui TOH	*Senior Physiotherapist* *KK Women's and Children's Hospital*
(33) Professor Yung Seng LEE	*Senior Consultant,* *Division of Paediatric Endocrinology and Diabetes,* *Khoo Teck Puat-National University Children's* *Medical Institute, National University Hospital*

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College of Paediatrics & Child Health of Academy of Medicine Singapore

SINGAPOREAN INTEGRATED 24-HOUR ACTIVITY GUIDELINES FOR EARLY CHILDHOOD

CONSENSUS STATEMENTS FOR INFANTS (0 – < 1 YEAR)

Physical Activity: **Be physically active several times a day, where more is better, in a variety of forms and within a safe and supervised environment. Activities should include non-screen-based interactive floor-based play and tummy time. For those not yet mobile, tummy time should start soon after birth, building up towards at least 30 minutes spread throughout the day. Planning a daily routine of physical activities may be helpful.**

Sedentary Behaviour: **Avoid restraining and leaving infants unattended for more than 1 hour at a time. Any form of screen time, including background screen time, is not recommended. When the infant is seated, reclined or lying down, caregivers are encouraged to engage the infant in singing, reading, storytelling and imaginative play. Having a daily routine for activities, sleep and meals may be useful in reducing the amount of sedentary behaviour.**

Sleep: **Have a total amount of 14 - 17 hours (for 0 - 3 months of age) and 12 - 15 hours (for 4 - 11 months of age) of daily sleep, including naps, to promote optimal health. It is recommended for infants to sleep on their back in their own cot, in the same room as their caregivers to maintain sleep safety. Develop a regular sleep time routine to help infants fall asleep easier.**

Diet and Eating Habit: **Breastfeeding is recommended for infants when possible. From 4 to 6 months of age, introduce a variety of development- and culture-appropriate solid foods of various textures and flavours, that is prepared with no added salt and sugar. Provide a daily routine of having meals spaced 2-3 hours apart in the daytime to avoid overfeeding.**

CONSENSUS STATEMENTS FOR TODDLERS (1 – < 3 YEARS)

Physical Activity: **Accumulate at least 180 minutes in a variety of physical activities, where more is better, at any intensity spread throughout the day within a safe environment. Daily outdoor play for toddlers is highly encouraged. Caregivers should actively participate in all forms of physical play with toddlers.**

Sedentary Behaviour: **Avoid restraining toddlers on a seat for more than 1 hour at a time. Screen time, regardless of the type of device, is not recommended for toddlers younger than 18 months of age, and should be limited to less than 1 hour per day for**

toddlers 18 months and above. When sitting or lying down, it would be most beneficial to engage the toddler in singing, reading, storytelling or imaginative play.

Sleep: **Have a daily total amount of 11-14 hours of sleep with regular sleep and wake-up times. Develop a bedtime routine and keep to a consistent bedtime. Provide a conducive sleep environment and avoid screen time before night-time sleep.**

Eating Habit and Diet: **Continue to increase the variety of foods offered to your child and wean off milk as the main source of nutrition. Introduce healthy family meals and offer whole milk and water, while establishing a structured routine for meal and snack times. Using food to soothe your child or as a reward is discouraged.**

CONSENSUS STATEMENTS FOR PRE-SCHOOLERS (3 – < 7 YEARS)

Physical Activity: **Accumulate at least 180 minutes of physical activity at any intensity spread throughout the day and within a safe environment. At least 60 minutes should be of moderate– to vigorous-intensity, where more is better, and the physical activities can be accumulative and take different forms. Older preschoolers (5 – 6 years of age) should be exposed to a variety of age-appropriate vigorous-intensity play and engage in muscle- and bone-strengthening activities several times a week. Daily outdoor active play among preschoolers is highly encouraged. Caregivers should participate actively with preschoolers during all forms of active play.**

Sedentary Behaviour: **Limit the total daily amount of sedentary behaviour, such as sitting, reclining or lying down, and take breaks during extended periods of time spent being sedentary. Recreational sedentary screen time, regardless of the type of screen device, should be limited to less than 1 hour per day.**

Sleep: **Have a daily total of 10-13 hours (for 3-5 years of age) or 9-11 hours (for 6 years of age) sleep. Older preschoolers may not need to nap if sufficient sleep has been obtained at night. Develop a bedtime routine and keep to a consistent bed and wake-up time. Provide a conducive sleep environment and avoid screen time before bed.**

Diet and Eating Habit: **Encourage healthy eating habits as a family, with caregivers as role models. Limit the amount and frequency of sugar-sweetened beverage consumption. Provide a structured routine for meal and snack times in appropriate portions that support growth and development. Avoid screen time during meal times. Teach your preschooler to recognise hunger and satiety cues.**

CONSENSUS STATEMENTS FOR ALL GROUPS (0 – < 7 YEARS)

Integration: **Aim to achieve most or all recommendations on physical activity, sedentary behaviour, sleep and diet for the best results.**

PRACTICAL REFERENCE FOR ACTIVITIES FOR EARLY CHILDHOOD

Physical Activity

Physical activity for early childhood refers to any activity that gets children moving. All activity counts! This guide provides examples of activities that children in the early years can participate in to accumulate physical activity time throughout the day.

For infants (0 – <1 year), physical activity includes tummy time and floor-based play that are appropriate for their developmental milestones. For toddlers (1 – <3 years) and pre-schoolers (3 – <7 years), physical activity should include a **wide variety of movement experiences**, in **different environments**. This involves activities both **indoors and outdoors**, which take place in various settings **in school and out of school**. **Daily outdoor active play** is highly encouraged as it provides opportunities for toddlers and preschoolers to develop **fundamental movement skills** and to explore their environment.

Types of Physical Activities for Infants

For infants, physical activity includes being carried in an upright position, reaching up to swipe and swat toys when lying in supine, elevating legs off the surface to kick, play in side-lying, rolling from back to tummy and reverse, tummy time, reaching across the body to play when in sitting, crawling, pulling to stand and cruising along furniture. These activities are encouraged on a firm surface and gradually progressed to dynamic surfaces as the infant becomes more confident with the skill. Many of these activities can be incorporated into day-to-day caregiving activities.
It is especially important to remember to limit the number of hours that infants spend in containers or being restraint e.g. rockers, strollers that inhibit their freedom of movement. When infants are allowed to move, they are able to discover their bodies, explore their environment and this further motivates them to learn and move.

Activities	Tips for parents/caregivers
Carried in an upright position (this works on infant's head and trunk control)	• Try carrying infant over your shoulder when burping them after milk time. • At two months, carry infant facing out, you can allow infant to rest the back of their head against your chest if still wobbly, when more stable, slide infant's buttocks up your chest so that their head is not touching your chest. If you use a carrier, face them out when awake.
Reaching up to swipe and swat	• After changing infant's nappy, when lying on their back, allow infant the opportunity to reach up to swipe and swat at toys. Start with 1-2 minutes and gradually progress to 5-10 minutes. • If infant is unable to reach upwards, used a folded blanket under infant's shoulders and upper arm, one on each side.

Elevating legs off the surface to kick	• After changing infant's nappy, dangle a toy at infant's feet and encourage upward kicking of legs. • You may fold a blanket and place under infant's buttocks. This will further help to engage infant's core muscles during kicking.
Play in side-lying (to engage the side abdominal muscles - obliques)	• When infant is awake, perhaps whilst getting their milk ready or doing your household chores – place infant on a firm surface, lying on their side. You may use a bolster or a rolled bath towel behind their back to prevent them from rolling back. Use a book, contrast cards, or a small toy in their hand to engage them. Alternate sides.
Rolling	• When changing infant's nappy, instead of lifting legs up, bend infant's hips and knees up to 90 degrees and roll infant to the side to remove the soiled nappy. Then back again when placing the new one.
Reaching in sitting	• Once infant can sit independently for a few seconds, try placing their favourite toy in front of them so that they reach for it. Progress this by then placing the toy at the sides, encouraging them to reach across their body to get the toy. Consider a cause-and-effect toy or a container where they can put things into and take them out.
Crawling	• Crawling is initially best practiced on a firm play mat. Ensure the environment is safe and large enough to promote exploration. • Progress crawling to varied surfaces and then over pillows and cushions.
Pulling to stand	• Start this activity where infant can grip onto something to pull self-up (e.g. cot rails). • Progress this to places where gripping would be harder (e.g. sofa or a wall).
Cruising along the furniture	• Start this activity where infant can grip onto something, use a toy to encourage side stepping along the furniture. • Progress by making small gaps between the furniture.

Tips on Tummy Time for Infants

- Your infant may start tummy time as soon as they are brought home.
- Place your infant on their tummy when they are awake, relaxed and rested. Place them on a firm surface like a mat or on your chest so that they may see your face. Start with 1-2 minutes per session and lengthen to 5-10 minutes a few times a day as your infant grows and becomes stronger. Face your infant whilst talking or singing to them. If they appear tired or distressed, roll them onto their backs for a rest and try again later.
- If your infant finds it consistently difficult to lift their head when in tummy time, use your hand to place on their buttocks, this can give them more stability and allow them to push up a little longer.
- When your infant is strong enough, they may try to roll over from their back to their tummy. You may place one or two toys on a firm surface around your infant to encourage this.
- You may place the infant's favourite toy just out of reach to encourage them to reach for or creep towards the toy.

- Make tummy time part of your infant's daily routine, for example for a short duration before or after diaper changes.

Types of Physical Activities for Toddlers and Preschoolers

Toddlers and preschoolers can be engaged in a wide variety of physical activities through a range of **fundamental movement skills (FMS**). FMS underpin daily living activities and provide the foundation for participation in sports and other forms of complex movement skills as the toddler/preschooler grow up. The early years are critical for establishing this foundation.

Parents/caregivers play an important role in enhancing the FMS of their toddler/preschooler at home and in school via facilitation, motivation and personal participation. Parents/Caregivers can also facilitate learning of FMS by providing simple cues, demonstration and playing with their todder/preschooler.

FMS are generally categorised into three main themes:

1. **Locomotor Skills** refers to body movement from one location to another. Many locomotor skills are used daily (e.g. running after a bus, leaping over a puddle), in many games and sports (e.g. jumping up to catch a ball) and during active play (e.g. crawling through a tunnel or climbing in the playground). Other examples of locomotor skills include walking, sliding, hopping, and skipping.
2. **Object Control (manipulative) Skills** require the toddler/preschooler to control an object using part of the body or using an equipment. Object control skills involve:
    - Propulsive skills – Sending an object away (e.g. throwing or kicking a ball)
    - Receptive skills – Receiving an object (e.g. catching or dribbling a ball)
3. **Stability (non-locomotor) Skills** involve a toddler/preschooler in maintaining and/or attaining balance. Stability is a key element for every human movement and necessary for all locomotor and object skills. Examples of stability skills include static and dynamic balance, bending and curling, turning, twisting, and stretching.

(Source: Fun Start Move Smart!: Fundamental movement skills for growing active learners)

Other types of physical activities to encourage participation of preschoolers include swimming, cycling and other forms of modified sport or age-appropriate multi-sport.

Older preschoolers should progress towards participating in a range of physical activities that involve age-appropriate energetic play. They are recommended to carry out moderate to vigorous physical activity (MVPA) for 60 minutes, which is a third of the recommended total daily physical activities (PAs) of 180 minutes.

MVPA should include frequent periods of energetic and dynamic play, spread throughout the day. Moderate-intensity activity refers to activity that make the child breathe harder and heart beats faster than at rest or sitting, such as walking to and from school. For vigorous-intensity activity, a useful guide is to observe if the child is huffing and puffing during the activity, or is not able to say more than a few words without pausing to catch a breath, examples include, playing tag (running or chasing playmates), ball games, skating or rapid cycling. Across an exertion scale of 10, these activities will score about 7 or 8. Examples of

MVPA for the preschooler will include, playing tag (running or chasing playmates), ball games, skating or rapid cycling.

In addition to MVPA, preschoolers should also incorporate muscle and bone strengthening activities. These activities require the preschoolers to bear and lift their own body weight to work against a resistance. Examples include running, jumping, climbing activities such as scaling playground obstacles, skipping rope, dancing and playing games such as hopscotch. Dedicated resistance or weight training regimes are not necessary.

Physical activities for the toddler and preschooler may be organised broadly into two categories: i) structured physical activity with planned objectives and focus, and ii) unstructured physical activity that allows for "free" and unguided play. Both genres are synergistic (i.e. deliberate vs. self-regulated way of achieving activity goals) and should be incorporated into the toddler's/preschooler's daily physical activity routine. For example, a Physical Education session with structured and unstructured play covers lesson for a preschooler to balance on a beam and freedom to play alone or with others at a playground.

Physical Activity Out of School		
Different Environments to engage in Physical Activity	**Tips for Parents/Caregivers**	**Suggested Activities/Examples**
At Home (Indoors)	**Create a home environment that encourages movement and exploration**	• Set up safe spaces for movement (e.g. an area for physical play) • Position furniture in a way that allows child to move freely and encourages movement around the house • House rules that encourage safe movement (e.g. a toddler is allowed to climb up and down low furniture or sofa) • Devote spaces in the house for active play (e.g. corridor for shuttle run, hopscotch, underarm rolling to a target) • Make accessible a bucket of foam balls of different sizes for children to play with • Paste pictures of favourite cartoon characters on the wall for child to aim and throw at • Hang balloon or streamers from the doorway to encourage child to jump, reach and strike • Set up obstacle course that incorporates various activities such as balancing, jumping, throwing and etc. for child to play and navigate around

	Make use of household/recycled material for activities	• Create an obstacle course or a fort with cardboard boxes, pillows, chairs, and bedsheets to crawl through or jump over • Rolled up socks, crushed newspaper or soft toys for throw and catch games • Make DIY equipment (e.g. paper plate and short stick as an implement to send and receive a balloon to and fro) • Masking tape on the floor to balance on the line (dynamic balance)
	Play with your child (parent-child games)	• Hide and seek and treasure hunt (use different locomotor skills) • Keep the balloon in the air with different body parts • Pillow fights • Simon Says • Animal movements • Alphabet poses • A game of Twister • Musical statue • Dance to music
	Involve child in household chores (even if a helper is available)	• Clean up after meals (e.g., bring plate back to kitchen or wipe the dining table) • Tidy the house (e.g., put toys/books back, return items after use) • Fold clothes and put it back in wardrobe • Water plants
On-the-go (Outdoors/Indoors)	**Integrate as part of daily activity and commute**	• Walk up and down stairs • Walk, cycle or scoot to and from school
Playground/Play gardens (Outdoors)	**Make it a routine for child to visit the playground; Encourage unstructured play**	Playgrounds present numerous opportunities for children to explore and develop FMS. Some examples include: • Balancing on a balance beam, a log or on an uneven surface • Climbing up a rock wall or rope ladders • Crawling through a tunnel • Jumping/hopping into coloured makers on the floor or on the trampoline • Sliding also involves stability skills such as bending, and transfer of weight to get down the slide
	Facilitate active play: Introduce games resulting in moderate to vigorous physical activity (MVPA)	Introduce games with simple rules and play with your child: • Create an obstacle course to challenge your child • Catching or Tag, Freeze-Tag, The Floor is Lava (use different locomotor skills)

Outdoor Spaces (e.g., basketball court, void deck, open spaces, grass fields)	**Identify available outdoor open spaces in your neighbourhood for your child to participate in MVPA**	• Games with simple rules: Catching or Tag, Freeze-Tag, What's the Time Mr Wolf? (use different locomotor skills) • Ball games (e.g. throw and catch, kicking, bat and ball, badminton) • Bubbles (run, jump and strike or catch) • Scooter, Cycle (tricycle, balance bike, two-wheel bike), Roller skate
Parks/ Nature Parks/Beach (Outdoors)	**Immerse your child in a new environment to engage in active play over the weekend**	• Nature walks or hike • Walk, run, jump, hop, skip bare feet on different surfaces (e.g., grass, sand) • Walk on uneven ground • Balance on logs • Build sandcastles • Water play/ Wade in the water
Sport Facilities (e.g., stadiums, swimming pools, badminton courts, climbing gym) (Outdoors/Indoors)	**Let your child experience a variety of sports according to his/her interest**	• Participating in a range of sports with an age-appropriate programme helps develop FMS. Some examples include: ○ Football ○ Athletics ○ Gymnastics ○ Basketball ○ Tennis ○ Hockey ○ Martial arts ○ Swimming ○ Rock climbing

Physical Activity in School

As toddlers and preschoolers spend many hours in school on weekdays (especially those in childcare centres), preschool educators play a significant role in getting toddlers/preschoolers to be active in physical activity throughout the day. Besides classes that directly involve movement (e.g. Music and Movement, Motor Skills Development), educators should provide other opportunities for toddlers/preschoolers to increase body movements throughout the day. Some suggestions include:

- **Modifying the physical environment to** increase movement of the toddlers/preschoolers as part of their daily routine. Introduce
    - **Active Navigation Routes** – Design spaces and pathways linking different areas of the school using floor markers; install attractive signage to encourage toddler/preschooler to jump, hop, balance etc. to get from one part of the school to another.
    - **Active Play Corners** (e.g., Giant game board that gets toddler/preschooler to perform various FMS)

- Incorporate **movement as part of core curriculum** (e.g., numeracy with movement)
- Introduce **outdoor learning** or **MVPA in a different environment**
- Introduce **Brain breaks** after every hour of sedentary time or when toddlers/prechoolers are restless. This involves quick and simple activities to get toddlers/preschoolers out of their seats to move (e.g., stretching, action songs, animal movements)

Physical Activities within a Preschoolers' Day

There are many ways in which a preschooler is capable of fulfilling the physical activity recommendations on any given day. The following suggestions and examples aim to illustrate a typical school day and a weekend.

On weekdays:

- Preschool: Over 2 hours, 1 hour can be structured physical education class, and the remaining 1 hour covers other curriculum such as music or dance class, active involvement in story-telling
- Home (1 hour)
    - Playground after school (as part of daily routine, 45-60min)
    - Walk to school, climb up/down stairs (20min)
    - Active play at home.

On weekends

- Beach/Park (picnic, walking in nature, cycling); park connector
- Organised sport with modified games
- Playing at activity facilities (playground, water-park, beach)

Resources
Tummy time 1. https://polyclinic.singhealth.com.sg/Documents/GrossMotorSkills.pdf **Play activities for infants** 1. https://polyclinic.singhealth.com.sg/Documents/3month%20DA.pdf 2. https://polyclinic.singhealth.com.sg/Documents/6month%20DA.pdf 3. https://polyclinic.singhealth.com.sg/Documents/12month%20DA_v2.pdf 4. https://www.healthhub.sg/live-healthy/2030/activity-ideas-to-get-tot-moving **Outdoor play for toddlers & preschoolers** 1. https://activeparents.myactivesg.com/activities/ap/lets-go-play-outside-5-unique-playgrounds-around-singapore-to-train-your-childs-fundamental-movement-skill [Video] 2. https://www.ecda.gov.sg/Educators/Pages/Outdoor-Learning.aspx **Active Play for preschoolers** 1. https://activeparents.myactivesg.com/activities/ap/active-family-series-school-holiday-activity-pack-2020 2. https://activeparents.myactivesg.com/activities/ap/word-up-challenges-with-my-1st-coach [Video]

3. https://activeparents.myactivesg.com/activities/ap/father-child-exercises [Video]
4. https://activeparents.myactivesg.com/activities/ap/mother-child-exercises [Video]
5. https://activeparents.myactivesg.com/parent-child-exercises [Video]

ActiveSG programmes for preschoolers

1. https://www.myactivesg.com/programmes/academy
2. https://www.activeparents.myactivesg.com

Active screen-based physical activity for preschoolers

1. https://raisingchildren.net.au/preschoolers/play-learning/screen-time-healthy-screen-use/screen-time-physical-activity

Sedentary Behaviour

Parents, caregivers, and teachers can help young children to reduce their sedentary behaviour and to engage in active lifestyles. Consider the following:

Infant	• Talk and sing gently to your infant whilst holding them. When talking, try using a changing tone of voice and vary your expressions. • Read books that have simple, repetitive words and clear pictures to your infant, especially those with rhymes or songs. • Stimulate your infant with toys that are colourful or make noise, encouraging them to reach out for the toy. Encourage your infant to explore toys of different textures (soft, hard, rough) for exploratory play. Household objects like cups, spoons or boxes can be used. Blocks are useful for open-ended play. • Play peek-a-boo with your infant with your hands or another object like a book or napkin. • You may bring your infant outdoors to explore their surroundings. • When playing with your infant, follow their lead and change activities based on their needs. • Avoid restraining your baby in containers e.g. strollers and rockers for prolonged periods.
Toddler	• Playtime is a powerful way of showing love and connecting with your toddler. • Allow your toddler to take on unstructured, free play. It enables them to develop creativity and learn at their own pace. • A device cannot replace you. Your interaction with your toddler will benefit them extensively. • For toddlers >18 months old, if you allow screen time, consider setting consistent rules and limits (e.g. less than 1 hour of screen time per day). Ensure access to high quality educational programs for your toddlers • Co-view and share screen time with your toddler and talk about what he/she is watching. • Face-to-face interactions is much preferred, which include talking, reading and singing.

	• Avoid screen device use while eating meals, in the hour before bedtime, playing with toys or during family interactions. • Parents should be aware of their own screen usage and avoid using screens while spending time with your toddler.
Preschooler	• Active play and physical activity are important, and curb sedentary time when possible. • When sedentary behaviour cannot be avoided, break up extended periods of sitting or lying down with frequent breaks for movement. • Encourage a variation of postures and avoid sustained positions to avoid muscular aches and pain. • While sedentary, engage in interactive activities together, such as storytelling, playing games and singing. • Minimize the amount of screen viewing as much as possible. • If screen time cannot be avoided, set rules and boundaries and consider setting a family media plan for screen usage, ensure age-appropriate content, avoid screen device use while eating meals, in the hour before bedtime and playing with toys or during family conversations. • Remove TV's and other screen devices from the preschooler's bedroom. • Monitor media content and select high-quality programs appropriate to the preschooler's age, engage in conversations with the preschooler about the media content and co-view with them as much as possible. • Parents should be aware of their own screen usage and avoid using screens while spending time with your toddler.

Resources

Play activities for infants

1. https://polyclinic.singhealth.com.sg/Documents/3month%20DA.pdf
2. https://polyclinic.singhealth.com.sg/Documents/6month%20DA.pdf
3. https://polyclinic.singhealth.com.sg/Documents/12month%20DA_v2.pdf
4. https://www.healthhub.sg/live-healthy/2030/activity-ideas-to-get-tot-moving

Movement/Fun activities at home

1. https://www.nuh.com.sg/our-services/Specialties/Paediatrics/Documents/Activity%20Resource%20Book%20-%20PLAY.pdf
2. https://www.nuh.com.sg/our-services/Specialties/Paediatrics/Documents/Movement%20activities%20at%20home%20for%20your%20child.pdf

Advice about screen time

1. https://www.nuh.com.sg/our-services/Specialties/Paediatrics/Documents/NUH%20CDU%20Screen%20Time%20E-Brochure.pdf
2. https://www.healthychildren.org/English/family-life/Media/Pages/Healthy-Digital-Media-Use-Habits-for-Babies-Toddlers-Preschoolers.aspx
3. https://childmind.org/article/media-guidelines-for-kids-of-all-ages/
4. https://raisingchildren.net.au/preschoolers/play-learning/screen-time-healthy-screen-use/managing-screen-time-3-11-years

5. https://raisingchildren.net.au/toddlers/play-learning/screen-time-media/screen-time

Family media plan

1. https://www.healthychildren.org/English/media/Pages/default.aspx

Sleep

Parents, caregivers, and teachers can help young children to meet the sleep recommendations. Consider the following:

Infant	• Set a consistent, calming bedtime routine to establish infant's sleeping behaviours. A regular pre-bedtime plan can include bathing, infant massage, swaddling and dimming lights. • Learn to look out for body language indicating tiredness and need for sleep (e.g. rubbing eyes, arching back and infant not focusing). • Put infant to bed while drowsy but not completely asleep. Avoid nursing infant to sleep after the first few months, to allow infant to learn to fall asleep independently. • If infant is unsettled, provide rhythmic patting to calm infant, but not to the point of sleeping. • If infant remains restless, providing a pacifier may help. However, avoid carrying infant or rocking infant to sleep. • Provide infant opportunities to self soothe when he wakes up. Your infant might fuss or cry before finding a comfortable position and falling asleep. • Allow sufficient daytime naps, as infant may not sleep well at night if overtired.
Toddler	• Develop a bedtime routine that involves a wind-down period, which helps to relax and anticipate bedtime (e.g. reading a book, a relaxing shower, listening to music). • Avoid screen time (e.g. smart phones, tablets, computers) 30 minutes before sleep. • Avoid naps close to bedtime as it may prevent the toddler from falling asleep or staying asleep. • Set and maintain a consistent bedtime across weekdays and weekends. • Prioritise your toddler's sleep over other activities – practise good time management to ensure there is enough time for bedtime routine and that the toddler gets the recommended number of hours of sleep. • Provide a conducive sleep environment that is dark, quiet and of comfortable temperature. • Keep the bed only for sleep and rest. • Avoid stimulating and vigorous activities such as exercise and consumption of caffeinated food (e.g. soft drinks, chocolates) or beverages before bedtime. • May consider providing the toddler with an item that the toddler feels secure with (e.g. a favourite pillow, blanket or stuffed toy) .

Preschooler	• Develop a bedtime routine that involves a wind-down period. • Avoid screen time 30 minutes before sleep. • Set and maintain a consistent bedtime across weekdays and weekends. • Prioritise your preschooler's sleep over other activities – practise good time management to ensure there is enough time for bedtime routine and that the preschooler gets the recommended number of hours of sleep. • Provide a conducive sleep environment that is dark, quiet and of comfortable temperature. • Keep the bed only for sleep and rest. • Avoid stimulating and vigorous activities such as exercise and consumption of caffeinated food (e.g. soft drinks, chocolates) or beverages before bedtime. • Be a sleep role model for your preschooler, i.e. sleep sufficiently yourself, during sleep time phones should be on silent mode, switched off, or not be brought into the bedroom.

Resources
Helping infant sleep 1. https://www.healthhub.sg/live-healthy/1660/helping-baby-sleep 2. https://www.healthxchange.sg/news/bedtime-options-for-babies 3. https://polyclinic.singhealth.com.sg/Documents/GoodSleepHabitsBabies.pdf 4. https://www.healthhub.sg/live-healthy/1195/baby-time-to-unwind 5. https://www.healthhub.sg/live-healthy/1936/how-can-i-get-my-baby-to-sleep-well-and-safely **Tips on good sleep** 1. https://www.healthhub.sg/programmes/117/goodsleep

Eating Habit and Diet

Parents, caregivers, and teachers can help young children to meet the eating habit and diet recommendations. Consider the following:

Nutrition for Breastfeeding Mothers
It is important to have a nutritionally-balanced diet, and of adequate portions, as this may affect the quality and quantity of breastmilk. Nutritional requirements during breastfeeding can be found on: 1. Integrated Maternal and Child Wellness Hub (SingHealth Polyclinics) web link: • https://polyclinic.singhealth.com.sg/Documents/NutritionDuringBreastfeeding.pdf 2. SingHealth YouTube channel web link: • https://www.youtube.com/watch?v=NXEDiK0D0Is&list=PLwKZdOHmwfHG_SfEKdpApjarcQEvrXKbY&index=7

Nutrition for Young Children		
Nutrition-related information for parents	For information on breastfeeding, childhood nutrition and recipes according to various age groups. It includes other information on general care, growth and development, sleep and activity, as well as parenting tips. Web link: • https://www.healthhub.sg/programmes/183/parent-hub • https://www.youtube.com/watch?v=Zu-0WnjRzA8&list=PLwKZdOHmwfHG_SfEKdpApjarcQEvrXKbY&index=8 • https://activeparents.myactivesg.com/edu-series/ap/3g-diet-for-preschoolers • https://activeparents.myactivesg.com/edu-series/ap/5-ways-to-get-your-child-to-love-veggies	Search in browser: "Parent Hub HPB" "Singhealth Baby Feeding Tips" "Get Your Kids Going, Growing & Glowing – the 3G Diet for Pre-schoolers" "5 Ways To Get Your Child To Love Veggies"
Early Childhood Nutrition	For information on early nutrition according to the following age groups: - 0 to 4 months - 4 to 6 months - 6 to 12 months - 12 to 24 months Resource guides include recommended amount for each food group per day and recipes. Contact of helplines and support groups available.	QR code:

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Glossary

Cardiometabolic health	The interplay of blood pressure, blood lipids, glucose and insulin on health.
Cognitive development	The process of learning, memory, attention, concentration and language development.
Emotional regulation	An individual's ability to manage and respond to emotional experiences such as stress, anxiety, mood, temperament, hyperactivity/impulsivity.
Energetic play	Active play that is equivalent to moderate-to-vigorous physical activity, when children get out of breath and feel warm. This may take many forms and may involve other children, caregivers, objects or not.
Exercise	Physical activity that is planned, structured, generally repetitive and has purpose.
Light-intensity physical activity	LPA is equivalent to 1.5–4 METs in children, i.e., activities with energy cost 1.5 to 4.0 times the energy expenditure at rest for that child. For young children, this can include slow walking, bathing, or other incidental activities that do not result in the child getting hot or short of breath.
Metabolic equivalent of task	The metabolic equivalent of task, or simply metabolic equivalent, is a physiological measure expressing the energy cost (or calories) of physical activities. One MET is the energy equivalent expended by an individual while seated at rest.

Moderate to vigorous intensity physical activity	Moderate PA is equivalent to 4–7 METs in children, i.e., 4–7 times resting energy expenditure at rest for that child. Vigorous PA is equivalent to >7 METs. For young children, this can include brisk walking, cycling, running playing ball games, swimming, dancing etc. during which the child gets hot and breathless.
Physical activity	Movement of the body that uses energy over and above resting. For young children, this can include walking, crawling, running, jumping, balancing, climbing in, through and over objects, dancing, riding wheeled toys, cycling, jumping rope etc.
Sedentary behaviour	Any waking behaviour characterized by an energy expenditure ≤1.5 metabolic equivalents (METs), while in a sitting, reclining or lying posture. For children under 5 years of age includes time spent restrained in car seat, high-chair, stroller, pram or in a carrying device or on a caregiver's back. Includes time spent sitting quietly listening to a story.
Tummy time	Time an infant spends lying on their front (in prone position) while awake with unrestricted movement of limbs.

Source: Guidelines on Physical Activity, Sedentary Behaviour and Sleep for Children under 5 Years of Age. Geneva: World Health Organization; 2019.

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College of Paediatrics & Child Health, Singapore
Academy of Medicine, Singapore
81 Kim Keat Road
#11-00 NKF Centre
Singapore 328836