

Opinion

Physical activity guidelines for Chinese children and adolescents: The next essential step

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1. Introduction

Because of the joint efforts of Active Healthy Kids Global Alliance, the results from the Global Matrix 2.0, involving 38 countries, provide a timely insight into physical activity (PA) in children and adolescents worldwide.¹ All the 38 countries, including China, published a report card on 9 PA indicators.^{1,2} Surprisingly, 92% of the countries had average grades of C or D across all indicators, of which the overall PA levels and sedentary behaviors generally had lower grades irrespective of the continent and the country's development.¹ It is no surprise that physical inactivity is also quite prevalent in Chinese children and adolescents, which is related to profound social and economic transitions.³ Moreover, it is noteworthy that although the importance of national and regional PA guidelines has been highlighted by World Health Organization (WHO),⁴ PA guidelines for Chinese children and adolescents have been lacking thus far.

2. Prevalence of physical inactivity in Chinese children and adolescents

In 2015, the national PA survey report by the General Administration of Sport of China revealed that only 33.2% of sampled Chinese children and adolescents aged 6–19 years participated in PA at least 7 times per week, while WHO recommends that children and adolescents aged 5–17 years should have at least 60 min of moderate-to-vigorous PA (MVPA) daily.^{4,5} Furthermore, in this nationwide PA survey report, no detailed information regarding overall PA levels and sedentary behaviors was collected. Based on the cross-sectional data on sedentary behaviors among children and adolescents aged 6–18 years in the China Health and Nutrition Surveys from 1997 to 2006, statistical analysis revealed that sedentary behaviors had significantly increased regardless of age, gender, and residence,

urban or rural.⁶ In Shanghai's 2016 Report Card on Physical Activity for Children and Youth, around 80% of the sampled children and adolescents aged 6–18 years did not meet the PA recommendations, which require at least 60 min of MVPA per day.⁷ Moreover, 75.2% of the children and adolescents in Shanghai had at least 2 h of sedentary behaviors on weekdays and 88.6% on weekends. The overall PA levels significantly decreased with age; conversely, sedentary behaviors increased with age. Generally, the rating of indicators of overall PA levels, sedentary behaviors, and organized sports participation was F, and the other 6 indicators received scores ranging from D– to B+. In the capital city of Beijing, a survey on PA and sedentary behaviors among young middle school students also found that a majority of the sampled 1715 students aged 13 years did not meet the WHO guideline of at least 1 h of MVPA daily.⁸ Further, 42.9% of the students had excessive screen-based sedentary activities (e.g., computer and TV).

Physical inactivity has been linked to increasing risks of obesity, a less healthy diet, and lower cardiorespiratory fitness in children and adolescents.⁸ It is no wonder that the 2014 Report on the Physical Fitness and Health Surveillance of Chinese School Students identified 3 main problems: (1) physical fitness among college students aged 19–22 years continued to decrease compared to 2010 results; (2) there was a high prevalence of poor eyesight in different age-groups for students from 7 to 22 years old, especially in younger students; and (3) there continued to be an increase in obesity in all students aged 7–22 years.⁹ All these problems could be associated with the prevalence of physical inactivity in Chinese children and adolescents, which further reflects the importance to increase PA in the young.

3. Current policies and strategies for PA promotion in Chinese children and adolescents

In 1995, a national fitness program was established by the central government of China to promote PA and improve fitness in the general population.¹⁰ Children and adolescents have been the focus population group in China's PA and fitness

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promotion. In 2014, this fitness program was listed as a national strategy. The latest National Fitness Program (2016–2020) aims to further popularize PA and improve physical fitness in Chinese children and adolescents by enhancing school-based physical education and implementing action plans (e.g., Sunshine Sports Project).¹¹ Since 2007, the Sunshine Sports Project initiated by the Ministry of Education, the General Administration of Sport of China, and the Central Committee of the Chinese Communist Youth League^{2,12} has been implemented to promote PA in youths. Its aim is to ensure at least 1 h of PA daily for all students. In the latest *Healthy China 2030* blueprint, PA promotion policies and action plans for children and adolescents have been emphasized.¹³ It ambitiously expects that children and adolescents will master at least 1 sport skill and enjoy at least 1 h of PA daily during school days. The objective is that by 2030, all school-based sports facilities and venues should meet the relevant national standards; students will be able to participate in MVPA at least 3 times per week; and at least 25% of children and adolescents are expected to reach the excellent level of the national standards for physical fitness and health.

Although it is encouraging that national policies and strategies are focused on children and adolescents in China, surprisingly, there is still a lack of national and regional PA guidelines for this population. Notably, the formulation of national and regional PA guidelines for health is considered a basic step to improve PA for children and adolescents and has been promoted by the WHO.⁴

4. Importance of PA guidelines for children and adolescents

National recommendations on PA have been considered as 1 of the 17 key elements essential for a successful implementation of a population-wide approach to promote PA across the human lifespan.³ As indicated by the WHO, the development and publication of evidence-based scientific national and regional PA guidelines (e.g., benefits, type, amount, frequency, intensity, duration, and total amount of PA necessary for health benefits) can (1) inform national PA policies and other public health interventions; (2) provide a starting point to establish goals and objectives for PA promotion at the national level; (3) nurture interdepartmental cooperation and contribute to building goals and objectives for PA promotion; (4) provide a foundation for PA promotion initiatives; (5) justify the allocation of resources to PA promotion interventions; (6) build a framework for joint action for all relevant stakeholders to reach the same goal; (7) provide an evidence-based document that enables all relevant stakeholders to transfer policy into action with the allocation of the appropriate resources; and (8) facilitate national surveillance and monitoring of the population's PA levels.⁴ Therefore, the WHO issued its official global PA guidelines for health that cover different population groups (i.e., growing children and adolescents, adults, and the elderly) in 2010.⁴ Needless to say, detailed national or regional guidelines and recommendations have been published in the many of the developed countries and regions, such as the US,¹⁴ the European Union,¹⁵ the UK,¹⁶ Australia,¹⁷ and Japan.¹⁸ Some of them

were even published before the WHO published its recommendations and provided helpful references in the preparation of the official documents by WHO, such as the *2008 Physical Activity Guideline for Americans*.¹⁴ Conversely, incomplete and non-existent national or regional PA guidelines for health are very common in low- and middle-income countries, including China.

In the global recommendations of the WHO, children and adolescents aged 5–17 years should have at least 1 h of MVPA per day, and an extra PA beyond 60 min is thought to provide additional health benefits.⁴ Aerobic activities should be the main PA modality, along with bone- and muscle-strengthening activities at least 3 times per week. It is noteworthy that these recommendations are the minimum target for daily PA that could yield health improvement and prevention of non-communicable diseases. As a result, it is suggested that nations make the necessary adjustments to the WHO recommendations for facilitating the achievements of PA promotion according to their own social, cultural, and economic backgrounds.^{4,15} In fact, almost all the aforementioned national and regional PA guidelines for children and adolescents have been developed in this way. In the U.S. guidelines, children and adolescents are defined as those aged 6–17 years, and comprehensive and illustrative information on the benefits, frequency, intensity, type, and time of PA is provided.¹⁴ Real-life examples are also presented for how to become and how to stay active in daily life and for meeting the guidelines. In the UK guidelines, children and adolescents are classified into 3 groups: infants under 5 years (yet not walking), children under 5 years (capable of walking), and children and young people aged 5–18 years.¹⁶ All groups have their own specific PA guidelines for health. In the Australian guidelines, PA recommendations are specifically formulated for children aged 0–5 years, children aged 5–12 years, and young people aged 13–17 years.¹⁷

Paradoxically, although PA promotion in Chinese youths has been addressed in several national programs and action plans, China has not yet published its national PA guidelines on health for children and adolescents. The only national PA guideline is for Chinese adults, and it was published in a trial version by Ministry of Health in 2011.¹⁹ In 2007, the only concise PA recommendations for overweight and obese children and adolescents were focused on diet and nutrition to address the problem of obesity in young Chinese school students rather than a standalone public health issue.²⁰ Moreover, in the latest *Healthy China 2030* blueprint that addresses the new emerging health challenges, Chinese children and adolescents are just expected to do MVPA at least 3 times per week by 2030, which is not in accordance with the recommendations of the WHO of at least 1 h of MVPA per day.^{4,13}

5. Implications and conclusion

Along with the dramatic social and economic transitions occurring in China, physical inactivity in children and adolescents has emerged as a serious public health issue that needs coordinated multidisciplinary and systematic approaches. Although PA promotion in children and adolescents has been highlighted in China's latest national fitness and health-

enhancing programs and strategies,^{11,13} evidence-based, scientific PA guidelines on health for youths are still missing. The lack of national PA guidelines on health for children and adolescents further reflects that the importance of PA is not appreciated, and the adverse health effects of physical inactivity are not fully recognized in China.

Children and adolescents are the future of society; thus, their health should be given particular attention. The lack of national PA guidelines on health for children and adolescents has become a barrier in China's fitness and health promotion. Therefore, the PA research community, relevant organizations, governments, and other stakeholders should work together to formulate specific PA guidelines for children and adolescents based on China's social, cultural, and economic dimensions.

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Authors' contributions

JX obtained research grants and drafted the manuscript; CG helped to draft the manuscript. Both authors have read and approved the final version of the manuscript, and agree with the order of presentation of the authors.

Competing interests

The authors declare that they have no competing interests.

References

1. Ainsworth BE. How physically active are our children? A global view. *J Sport Health Sci* 2016;**5**:400–1.
2. Liu Y. Promoting physical activity among Chinese youth: no time to wait. *J Sport Health Sci* 2017;**6**:248–9.
3. Kohl 3rd HW, Craig CL, Lambert EV, Inoue S, Alkandari JR, Leetongin G, et al. The pandemic of physical inactivity: global action for public health. *The Lancet* 2012;**380**:294–305.
4. World Health Organization. *Global recommendations on physical activity for health*. Geneva: WHO Press; 2010.
5. General Administration of Sport of China. *China's 2014 report on physical activities*. Available at: <http://www.sport.gov.cn/n16/n1077/n1422/7300210.html>; 2015 [accessed 25.04.2017]. [in Chinese].
6. Cui Z, Hardy LL, Dibley MJ, Bauman A. Temporal trends and recent correlates in sedentary behaviours in Chinese children. *Int J Behav Nutr Phys Act* 2011;**8**:93. doi:10.1186/1479-5868-8-93
7. Liu Y, Tang Y, Cao ZB, Chen PJ, Zhang JL, Zhu Z, et al. Results from Shanghai's (China) 2016 Report Card on Physical Activity for Children and Youth. *J Phys Act Health* 2016;**13**(Suppl. 2):S124–8.
8. Duan J, Hu H, Wang G, Arafat T. Study on current levels of physical activity and sedentary behavior among middle school students in Beijing, China. *PLoS One* 2015;**10**:e0133544. doi:10.1371/journal.pone.0133544
9. Chinese Students Physical Fitness and Health Research Group. *2014 report on the physical fitness and health surveillance of Chinese school students*. Beijing: Higher Education Press; 2016.
10. The State Council of the People's Republic of China. *An outline of the national fitness programme*. Available at: <http://www.sport.gov.cn/n16/n1092/n16849/312943.html>; 1995 [accessed 28.04.2017]. [in Chinese].
11. The State Council of the People's Republic of China. *National fitness program (2016–2020)*. Available at: http://www.gov.cn/zhengce/content/2016-06/23/content_5084564.htm; 2016 [accessed 26.04.2017]. [in Chinese].
12. Ministry of Education, General Administration of Sport of China, Central Committee of the Chinese Communist Youth League. *Sunshine Sports Project*. Available at: <http://www.moe.edu.cn/publicfiles/business/htmlfiles/moe/s3276/201001/80877.html>; 2006 [accessed 28.04.2017]. [in Chinese].
13. The State Council of the People's Republic of China. *The "Healthy China 2030" blueprint*. Available at: http://www.gov.cn/zhengce/2016-10/25/content_5124174.htm; 2016 [accessed 27.04.2017]. [in Chinese].
14. U.S. Department of Health and Human Services. *2008 Physical activity guidelines for Americans*. Available at: <https://health.gov/paguidelines/guidelines/>; 2008 [accessed 29.04.2017].
15. European Commission. *EU physical activity guidelines*. Available at: http://ec.europa.eu/assets/eac/sport/library/policy_documents/eu-physical-activity-guidelines-2008_en.pdf; 2008 [accessed 29.04.2017].
16. UK Department of Health. *UK physical activity guidelines*. Available at: <https://www.gov.uk/government/publications/uk-physical-activity-guidelines>; 2011 [accessed 29.04.2017].
17. Australian Department of Health. *Australia's physical activity and sedentary behaviour guidelines*. Available at: <http://www.health.gov.au/internet/main/publishing.nsf/Content/health-pubhlth-strateg-phys-act-guidelines>; 2014 [accessed 29.04.2017].
18. Ohta T, Tabata I, Mochizuki Y. Japanese national physical activity and health promotion guidelines. *J Aging Phys Act* 1999;**7**:231–46.
19. Ministry of Health of the People's Republic of China. *Physical activity guidelines for Chinese adults (on trial)*. Beijing: People's Medical Publishing House; 2011.
20. Ministry of Health of the People's Republic of China. *Overweight and obesity prevention and management guidelines for Chinese school children and adolescents*. Beijing: People's Medical Publishing House; 2007.