REVIEW ARTICLE

Recent trends in physical activity correlates among children and adolescents in China: A systematic review

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ABSTRACT

China, one of the most densely populated emerging nations, is confronted with an escalating problem of inadequate physical activity among its children and teenagers. This review systematically examines literature from the past five years to identify the latest trends in factors related to physical activity among Chinese kids and teenagers, aiming to provide information for formulating policies and intervention strategies tailored to China's national context. We searched six electronic databases (PubMed, Web of Science, Scopus, Cochrane Library, SPORTDiscus, and ERIC) for studies published between January 2019 and January 2024. A total of 30 articles met the inclusion criteria, with four employing longitudinal designs and three using objective tools to assess physical activity. Sample sizes ranged from 255 to 93,600 participants, with 23 studies involving more than 1,000 participants. The findings indicate that, compared to other countries, young people's physical activity in China is more strongly associated with parental support, physical exercise, family structure, and neighbourhood safety. Furthermore, research examining the correlation between school surroundings and physical activity is scarce. Future interventions should prioritize family-related factors and strengthen the collaboration between families and schools.

Keywords: Exercise, Factors, Correlation, Young people, Physical activity.

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INTRODUCTION

The numerous and well-documented health benefits of consistent physical activity for kids and teenagers are substantial. Participating in consistent physical activity during childhood and adolescence is crucial for sustaining a desirable body weight (Soares et al., 2023), promoting a healthy metabolism (Aadland et al., 2020), enhancing muscle function (Foster et al., 2020; Smith et al., 2014), and preventing chronic illnesses like diabetes and cardiovascular disease (Bila et al., 2023). Furthermore, research has demonstrated that engaging in moderate physical activity has a beneficial impact on the psychological well-being of young individuals (Biddle et al., 2019). Additionally, physical activity is being recognized as a possible approach to addressing and alleviating symptoms of depression (Jiang et al., 2023). These findings emphasize the multifaceted benefits of physical activity participation for young people, encompassing physical and psychological well-being.

Although the advantages of physical activity are well-known, new survey data reveals that the proportion of children and adolescents aged 6–17 in China who do not engage in physical activity has risen from 70.0% in 2004 to 81.5% in 2015, and this upward trend continues (Yang et al., 2020). Simultaneously, the time spent in sedentary mode has significantly increased from 23.9 ± 0.6 hours per week in 2004 to 25.7 ± 0.6 hours per week in 2015, with screen entertainment time showing a particularly notable increase of 2.9 hours per week. In general, the amount of physical activity among Chinese children and adolescents is plainly inadequate and demonstrates a continuous decline, while sedentary behaviour is consistently increasing.

The COVID-19 pandemic has significantly influenced people's lifestyles and habits. In China, this impact may have been intensified by an extended period of stricter public health measures imposed by the government to contain the virus's transmission. Hence, it is imperative to reassess the determinants linked to physical activity in Chinese children and adolescents. This endeavour would aid in pinpointing crucial components and provide valuable insights to steer the formulation of focused interventions in the times ahead. Furthermore, based on our current understanding, this research represents the initial investigation to thoroughly examine the parameters linked to physical activity in Chinese children and adolescents following the COVID-19 outbreak.

METHODS

The protocol was officially recorded and documented in the PROSPERO database in May 2024, with the assigned registration number CRD42024550080. This review adheres to the PRISMA guidelines (Moher et al., 2009).

Search strategy

We conducted the literature search using six electronic databases: PubMed, Web of Science, Scopus, Cochrane Library, SPORTDiscus, and ERIC. The search timeframe spanned from January 2019 to January 2024. The search strategy involved combinations of three keyword groups: (1) "*physical activ**" OR "*motor activ**" OR "*exercise**" OR "*physical fitness*" OR "*sport**" OR "*recreation**"; (2) "*adolescent**" OR "*teen**" OR "*youth**" OR "*young**" OR "*student**" OR "*child**" OR "*kid**"; (3) "*China*" OR "*Chinese*." We included the following MeSH terms in the PubMed search: "*physical activity*," "*exercise*," "*physical fitness*," "*sports*," "*adolescents*," "*students*," "*child*," and "*China*." We employed the '[All fields]' tag for all keywords in PubMed. We conducted topic-term searches in titles, abstracts, and keywords for all other databases.

Inclusion and exclusion criteria

Our review included studies that met the following criteria: (1) Research participants: healthy Chinese children and adolescents aged 3–18 years; (2) Exposures: factors that affect the involvement of children and adolescents in physical activity; (3) Outcomes: changes in physical activity behaviours; (4) Study designs: experimental studies; observational studies; as well as qualitative investigations; (5) Country: China; (6) Language: articles written in English.

The exclusion criteria included the following: (1) studies that did not address outcomes pertinent to physical activity; (2) the exclusion of participants with disabilities or health conditions that affect physical activity, such as heart disease; and (3) the study participants' residence outside of mainland China.

Data extraction

Methodological and outcome variables from each article were recorded using a standardized data extraction form. These variables encompassed author names, publication year, research focus, study design, sample size, age range, participant characteristics, physical activity measurement methods, physical activity levels, and critical findings.

Data synthesis

The extracted data indicate that the factors examined across various studies are diverse and inconsistent. Additionally, no studies employed identical measurement methods for the same factors, and the methods used to measure physical activity varied significantly. This inconsistency makes conducting a meta-analysis impossible. This review presents a cohesive summary of recurring themes and significant discoveries in the included research.

Quality assessment

The NIH Quality Assessment Tool for Observational Cohort and Cross-Sectional Studies was used to evaluate the quality of each selected study. The instrument assesses studies based on 14 specific criteria. Each criterion was assigned a score of 1 if the response was 'yes'. Otherwise, it was assigned a value of 0 if the response was 'no', 'not relevant', 'not recorded', or 'cannot identify'. A study-specific global score was determined by aggregating the values from all categories. Each study was subject to independent evaluation by two reviewers (ML & CY).

RESULTS

Study identification

Fig. 1 shows the flow diagram for the selection of studies. Through keyword and reference searches, we identified a total of 10,269 articles. After removing duplicates, 7,585 articles remained. Screening based on titles and abstracts yielded 53 articles. Subsequently, after full-text reading and exclusion of articles with age differences, special populations, and irrelevant content, a total of 30 articles were finally included (An et al., 2021; Bao et al., 2023; Fan et al., 2019; F. Gao et al., 2022; W. Gao et al., 2022; Guo et al., 2022, 2023; Hong et al., 2020; C. Huang et al., 2023; W. Huang et al., 2021; X. Huang et al., 2021; Ke et al., 2022; Lei et al., 2020; Liang et al., 2022; J. Liu et al., 2022; Y. Liu et al., 2023; Lu et al., 2020; Lv & Wang, 2023; Lyu et al., 2019; Qiu et al., 2021; Qurban et al., 2019; Ren et al., 2020; Shi et al., 2022; Su et al., 2023; H. Wang et al., 2024; X. Wang & Jiang, 2023; Y. Wang et al., 2022; Xia et al., 2020; Zeng et al., 2022; Z. Zhou et al., 2023).

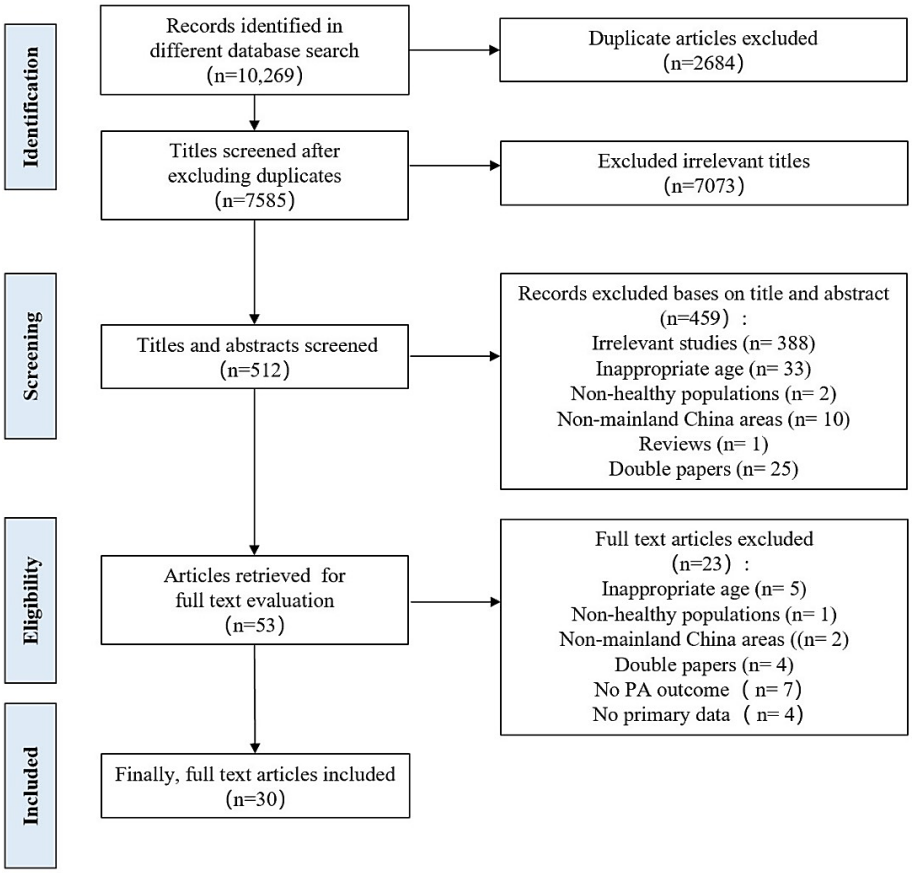

Figure 1. Flow diagram for selection of studies.

Basic characteristics of the included studies

Table 1 presents the fundamental characteristics of the 30 studies incorporated into this analysis. Four studies employed longitudinal designs. Three studies used objective tools to assess physical activity, while the remaining studies relied on self-reported measures. The sample sizes ranged from 255 to 93,600 individuals, with 23 studies (77%) having sample sizes greater than 1000. Thirteen studies exclusively recruited adolescents aged 11 to 19, four solely recruited preschool children aged 3 to 6, and thirteen enrolled children and adolescents aged 6 to 19.

Table 1 Main characteristics and main findings of the studies included in the review.

Author/ Year	Focus	Study design	Sample size	Sample characteristics	Measurement of PA	Main findings of study
An et al., 2021	Parental support	Cross-sectional	2670	Age: 7-15 years	Self-report questionnaire	Parental support behaviours are significantly associated with children's MVPA.
Bao et al., 2023	Urban parks	Cross-sectional	323	Age: 6-15 years	Self-report questionnaire	The landscape characteristics of urban parks are associated with children's physical activity, with semi open spaces, play facilities, and perceived safety showing a significant correlation.
Fan et al., 2019	Living arrangement	Cross-sectional	33213	Age:9-19years	Self-report questionnaire	Type of living arrangement was associated with the PA of youth in Shanghai, with no significant gender difference.

F. Gao et al., 2022	Region; urbanicity; family environment	Cross-sectional	41439	Age: 6–17 years	Self-report questionnaire	Children's outdoor time was significantly influenced by gender, age, urbanicity, region, annual total household expenditure, building environment, and meteorological conditions.
W. Gao et al., 2022	Region; parental support;	Cross-sectional	10967	Age: 3–6 years	Self-report questionnaire	Supportive family environment is positively associated with MVPA in Chinese preschool children.
Guo et al., 2023	Family structure	Cross-sectional	20000	Age: 12-18 years	Self-report questionnaire	Family structure has a significant impact on middle-school students' physical exercise.
Guo et al., 2022	Built environment	Longitudinal	517	Age: 14–17 years	Objective measure	Urban built environment significantly affected adolescents' weekend MVPA.
Hong et al., 2020	Parental support	Cross-sectional	61429	Age: 6–18 years	Self-report questionnaire	Various kinds of parental support have important effects on children and adolescents' MVPA, which varied by gender and grades.
C. Huang et al., 2023	Emotional/ behavioural problems	Cross-sectional	15071	Age: 13-17 years	Self-report questionnaire	Emotional and behavioural problems were negatively associated with PA, with sleep quality partially mediating the relationship between emotional and behavioural problems and PA.
W. Huang et al., 2021	Individual; School; Community	Longitudinal	1597	Age: 9–18 years	Self-report questionnaire	Both neighbourhood and school factors may affect students' MVPA, but school appears to play a more critical role in maintaining and promoting students' MVPA levels.
X. Huang et al., 2021	Built environment	Cross-sectional	749	Age: 7–12 years	Self-report questionnaire	Land-use mix around the school, the distance from home to school, and the distance to the nearest park are the top three important factors.
Ke et al., 2022	Socioeconomic status	Cross-sectional	2955	Age: 8–17 years	Self-report questionnaire	There are socioeconomic disparities in physical activity among Chinese children and adolescents.
Lei et al., 2020	Social networks	Cross-sectional	568	Age: 12–18 years	Self-report questionnaire	Adolescents' social networks positively influence their sports behaviour, with social efficacy acting as a mediator in this relationship.
Liang et al., 2022	Social Jetlag	Cross-sectional	3567	Mean age: 14.67 ± 1.72	Self-report questionnaire	Social jetlag negatively impacts adolescent participation in PA.
J. Liu et al., 2022	Social cognitive factors	Cross-sectional	3000	Age: 12–15 years	Self-report questionnaire	Social support had the greatest effect, self-regulation exerted a moderate effect, and self-efficacy and outcome expectations had a small effect on PA.
Y. Liu et al., 2023	Parental support; motivation	Longitudinal	2424	Age: 6-15 years	Self-report questionnaire	Intrinsic motivation and parental support can have a positive impact when physical activity levels change significantly.
Lu et al., 2020	Environment	Cross-sectional	980	Age: 3-6 years	Objective measure	Family structure and media exposure in the home maybe important factors in shaping preschoolers' PA patterns.
Lv & Wang, 2023	Built environment	Cross-sectional	2628	Age: 11-18 years	Self-report questionnaire	Built environment may be associated with leisure-time MVPA of Suzhou adolescents.

Qiu et al., 2021	Psychosocial Variables; Neighbourhood Environment	Cross-sectional	3833	Mean age: 14.7 ± 1.7	Self-report questionnaire	Psychosocial variables and availability of PA resources in the neighbourhood environment are positively related to out-of-school MVPA.
Qurban et al., 2019	Parental support	Cross-sectional	255	Age: 17 years	Self-report questionnaire	There were significant indirect effects of self-esteem and motivation on sports participation through parental support.
Ren et al., 2020	Social support; Exercise self-efficacy	Cross-sectional	2341	Age: 12-17 years	Self-report questionnaire	Exercise self-efficacy and social support are significant and positive predictors of PA in Chinese adolescents.
Shi et al., 2022	Family structure	Cross-sectional	4800	Age: 9–17 years	Self-report questionnaire	The PA levels of most children and adolescents were insufficient in western China and were affected by family structure and parental activity.
Su et al., 2023	Significant others	Cross-sectional	2484	Age: 11-18 years	Self-report questionnaire	The social influences of parents, physical education teachers, and peers were equally important to students' intention to take part in leisure-time PA.
H. Wang et al., 2024	School physical education	Cross-sectional	3708	Age: 6-17 years	Self-report questionnaire	School PE participation and duration increased out-of-school PA participation and duration, respectively.
X. Wang & Jiang, 2023	Gender; Parental support	Cross-sectional	1308	Age: 3–6 years	Self-report questionnaire	Parents' support on sports, and sports grounds near their homes were the main factors affecting the lack of MVPA time for urban migrant children.
Y. Wang et al., 2022	Community environment	Cross-sectional	471	Age: 3-6 years	Objective measure	Public activity facilities, the community transportation environment, and community personal safety are important factors.
Lyu et al., 2019	Family structure	Cross-sectional	93600	Age: 6-16 years	Self-report questionnaire	The more stable the family structure is, the better the family sports atmosphere will be.
Zeng et al., 2022	Family environment	Cross-sectional	3738	Age: 10-19 years	Self-report questionnaire	Parental support was not only positively directly but also indirectly associated with MVPA in Chinese boys through the home environment and the autonomous motivation of adolescents.
Z. Zhou et al., 2023	Peer effect	Longitudinal	7843	Seventh-grade junior high school students	Self-report questionnaire	The peer effect is causally related to adolescents' physical activity.
Xia et al., 2020	Socioeconomic status	Cross-sectional	9365	Main age: 13.56 years	Self-report questionnaire	Parental SES is directly linked to junior school students' sports participation and indirectly influences it through classmate support and parental involvement.

Note. PA: physical activity; MVPA: moderate to vigorous physical activity; SES: socioeconomic status.

Study quality assessment

The average score of the studies included in the analysis was 8 out of 14 points, ranging from 6 to 13. All studies explicitly articulated their research questions and objectives and clearly defined the study population, achieving participant recruitment rates of 50% or greater. All studies recruited participants from similar

groups, applying consistent criteria for inclusion and exclusion to all individuals. Five studies provided a power analysis for the sample size. Four studies measured exposure variables before outcome assessment. Six studies conducted long-term follow-ups to examine associations between exposure and outcomes. Twenty studies examined different levels of exposure related to outcomes. All studies employed effective and standardized exposure measurements. During the study period, only five studies carried out multiple exposure measurements. Five studies utilized efficacious and dependable outcome assessments. None of the studies had outcome assessors blinded to participants' exposure status. Additionally, two studies reported attrition rates exceeding 20%. All studies included statistical measurements and adjustments for critical potential confounding variables.

Main findings

Table 1 also summarizes the potential correlates of physical activity among children and adolescents in China. The variables included in the studies primarily relate to demographics, individual, family, neighbourhood environment, and school. The key variables are age, gender, urbanization, motivation, self-efficacy, peer support, parental support, family sports environment, family structure, socioeconomic status, community sports facilities, community aesthetics, neighbourhood safety, teacher support, and school physical education, totalling fifteen variables.

Regarding demographic characteristics, studies consistently show that boys have significantly higher physical activity participation rates than girls. Inactivity also increases as age increases, regardless of gender. The relationship between urbanization and physical activity varies across age groups. Studies for preschool children show that urban children have higher compliance rates with moderate to vigorous physical activity recommendations than rural children (W. Gao et al., 2022). However, for school-aged children, rural children tend to have higher physical activity levels (Fan et al., 2019; F. Gao et al., 2022).

In terms of personal factors, motivation and self-efficacy have shown significant correlations with physical activity (J. Liu et al., 2022; Y. Liu et al., 2023; Qiu et al., 2021; Qurban et al., 2019; Ren et al., 2020; Zeng et al., 2022). Additionally, factors such as social interactions (Lei et al., 2020), lifestyle habits (Liang et al., 2022) and psychological status(C. Huang et al., 2023) are also related to physical activity. Moreover, studies consistently indicate that peer support has a significantly positive impact on physical activity among children and adolescents. (W. Huang et al., 2021; Qiu et al., 2021; Su et al., 2023; Z. Zhou et al., 2023)

Regarding family factors, parental support significantly correlates with physical activity (An et al., 2021; W. Gao et al., 2022; Guo et al., 2023; Hong et al., 2020; W. Huang et al., 2021; Y. Liu et al., 2023; Lu et al., 2020; Qiu et al., 2021; Qurban et al., 2019; Shi et al., 2022; Su et al., 2023; X. Wang & Jiang, 2023; Xia et al., 2020; Zeng et al., 2022), with the frequency of parental exercise showing the strongest correlation (W. Gao et al., 2022; Guo et al., 2023; W. Huang et al., 2021; Y. Liu et al., 2023). The diversity of home sports facilities is positively correlated with physical activity (W. Gao et al., 2022; Zeng et al., 2022), whereas the presence of media devices, such as televisions or computers in bedrooms, is positively correlated with prolonged sedentary behaviour in preschool children (Lu et al., 2020). Additionally, socioeconomic status and family structure are associated with physical activity frequency, with children and adolescents from higher socioeconomic backgrounds and intact families generally participating more in physical activity (Guo et al., 2023; Ke et al., 2022; Shi et al., 2022; Xia et al., 2020).

For the neighbourhood environment, studies reveal a significant correlation between the built environment and physical activity among children and adolescents. Community aesthetics, sports facilities, and

neighbourhood safety are the environmental factors most closely associated with physical activity (Bao et al., 2023; Guo et al., 2022; X. Huang et al., 2021; Lu et al., 2020; Lv & Wang, 2023; X. Wang & Jiang, 2023).

Lastly, three studies examined the relationship between school characteristics and physical activity, suggesting that support from physical education teachers is positively associated with adolescents' extracurricular physical activity (Su et al., 2023). Moreover, children and adolescents who participate in school physical education are more likely to engage in extracurricular physical activity (W. Huang et al., 2021; H. Wang et al., 2024).

DISCUSSION

The review examined scientific evidence on the correlates of physical activity among children and adolescents in China over the past five years, encompassing a total of 30 studies. The findings suggest that age, gender, urbanization, motivation, self-efficacy, peer support, parental support, family sports environment, family structure, socioeconomic status, community sports facilities, community aesthetics, neighbourhood safety, teacher support, and school physical education are associated with physical activity.

The review found a link between gender and physical activity, consistent with other studies conducted in many countries, including China (Lu et al., 2017; Shao & Zhou, 2023). Furthermore, age seems to significantly influence the formation of physical activity patterns. The study revealed that irrespective of gender, physical inactivity levels tend to rise as individuals grow older. Studies conducted in other countries have found similar results, with an Israeli study observing a substantial inverse relationship between physical activity and age (Zach et al., 2012). Similarly, previous systematic reviews support this view (Craggs et al., 2011). In China, most adolescents attend middle or high school, facing immense academic pressure that may leave them with insufficient time and energy to engage in physical activities. Additionally, before reaching middle school, many Chinese children often participate in various sports interest classes. However, upon entering middle school, many parents may require their children to abandon these interest classes to focus on studying for the high school entrance examination. This could also be a contributing factor to the inverse correlation between age and physical activity.

The findings of this review indicate a direct association between motivation and physical activity, with intrinsic motivation showing the strongest link to physical activity. Studies from other nations have also confirmed this discovery. A European study serves as an example, demonstrating how autonomous motivation can mediate the influence of environmental factors, like perceived autonomy support from friends and parents, on physical activity. This, in turn, affects the beginning and ongoing nature of physical activity (Rutten et al., 2013). However, the key factors that stimulate intrinsic motivation are poorly understood (Pannekoek et al., 2013). Future research should focus on understanding which factors are associated with children and adolescents' motivation to participate in physical activity and which factors are most amenable to change. This will provide valuable insights for designing intervention measures to enhance motivation for participating in physical activities and ultimately promote physical activity engagement.

Adolescence is a period during which individuals gradually gain independence, and social support from peers and friends becomes increasingly important. This review identified a clear correlation between peer support and physical activity in adolescents. Both peer support and dedicated time for exercising with peers had a beneficial impact on teenagers' physical activity (W. Huang et al., 2021; Qiu et al., 2021; Su et al., 2023; Xia et al., 2020; Z. Zhou et al., 2023). Additionally, the research revealed that adolescents with more extensive and more interconnected social networks tend to participate in more excellent physical activity (Lei et al.,

2020). Their greater susceptibility to influence and support from friends or peers may increase their frequency of participation in physical activities. Prior studies have similarly found a positive correlation between friend support and physical activity in both early and late adolescence, although the magnitude of this impact was small (Laird et al., 2016; Mendonça et al., 2014). Research investigating the association between peer support and physical activity remains limited, with most studies conducted in developed countries (Mendonça et al., 2014). Future research in China should expand on peer influence, investigate the significance of peer social networks, and consider the role of peer influence in children.

Through our investigation of the correlation between family characteristics and physical activity, we have shown that parental support, parental physical activity frequency, and family structure demonstrate the most significant connections with physical activity. Our findings diverge from studies carried out in other nations. Other countries' previous reviews show a slight beneficial association between parental support and physical activity in teenagers (Laird et al., 2016; Mendonça et al., 2014). Moreover, evidence of the benefits of parents participating in physical activities with their children and serving as role models is limited (Yao & Rhodes, 2015). However, our research findings demonstrate a notable correlation between parental backing and physical activity habits in Chinese kids and teenagers (Guo et al., 2023; Hong et al., 2020). Furthermore, the frequency of physical activity among parents significantly influences Chinese teenagers' physical activity (Hong et al., 2020; W. Huang et al., 2021). Moreover, our review has revealed a substantial association between family composition and physical activity levels (Guo et al., 2023; Lyu et al., 2019). Children and adolescents from intact homes typically have greater physical activity levels than those from alternative family configurations. Those living with both parents are typically more physically active than those living with a single parent or grandparents. These findings suggest that, in the Chinese context, parental support and involvement are crucial in boosting physical activity for young people.

Our investigation revealed a consistent and favourable relationship between socioeconomic status and physical activity. This finding deviates to some extent from prior studies conducted in China (Lu et al., 2017). A subsequent study found that this association may vary depending on specific circumstances, with a negative correlation between socioeconomic status and sedentary behaviours in affluent nations and a direct relationship in less affluent nations (Kandola et al., 2020). One possible explanation is the continuous increase in China's urbanization rate over the past few decades (from less than 30% in 1990 to 66% in 2023) (National Bureau of Statistics of China, 2024). Consequently, there has been a notable surge in the population of children and adolescents residing in urban regions. Urban children and adolescents enjoy greater accessibility to a wide range of sports facilities and activity resources, which enhances their chances of engaging in physical activities. This enhanced accessibility amplifies the correlation between socioeconomic position and physical activity.

Furthermore, we discovered a correlation between the indoor surroundings of households and physical activity. Sporting facilities at home may encourage greater participation in physical activities (Lu et al., 2020), while electronic media devices may lead to spending more time on recreational screens, thus reducing physical activity time (Lu et al., 2020; Zeng et al., 2022). This result aligns with studies undertaken in other nations (Fairclough, 2021; Sirard et al., 2010). However, there is a dearth of research on the influence of one's home's physical environment on physical activity levels. Furthermore, most existing research on this subject has primarily focused on family social aspects, such as parental support and family structure.

In recent years, as urbanization has rapidly advanced and the urban population in China has dramatically increased, there has been a growing concern about the correlation between built surroundings and activity levels. Our review uncovered various built-environment characteristics that are associated with physical

activity. These factors include neighbourhood safety, community landscapes (such as green areas), and community sports facilities. These findings are broadly consistent with previous research. However, in China, neighbourhood safety is of particular concern to both parents and adolescents, and it has a stronger association compared to other factors (Bao et al., 2023; Lv & Wang, 2023). Currently, cross-sectional research offers insights into the relationship between urban settings and physical activity (Ding et al., 2020). Subsequent research should employ longitudinal designs and consider the impact of environmental interventions on physical activity within controlled experimental settings.

Traditionally, schools have been regarded as vital settings for fostering the well-being and growth of children and teenagers. Nevertheless, efforts to promote physical activity within schools have frequently failed to achieve desired outcomes (Borde et al., 2017; Dobbins et al., 2013; Love et al., 2019). Our research indicates that the presence of physical education teacher support and a wide range of school physical activities are correlated with more significant amounts of physical activity (W. Huang et al., 2021; Su et al., 2023; H. Wang et al., 2024). However, this finding is based on only three relevant cross-sectional studies, raising concerns about potential biases in the results. Furthermore, prior studies have shown that there is no correlation between the amount of assistance provided by teachers and the amount of physical activity among adolescents (Laird et al., 2016; Mendonça et al., 2014; Morton et al., 2016; Y. Zhou & Wang, 2019). At present, there is a lack of definitive findings identifying the specific school-related factors that impact physical activity levels. Current research primarily focuses on evaluating the efficacy of physical activity treatments implemented in schools, with few studies investigating school-related characteristics associated with physical activity. Future research should include broader school factors, including school policies, culture, and physical environments, to offer targeted guidance and enhance the implementation and effectiveness of school-based physical activity interventions.

This review has several limitations. Firstly, all the included studies were observational, meaning that without experimental designs, we cannot make causal inferences about the influence of various factors on physical activity; the observed relationships are merely correlational. Secondly, none of the studies provided quantitative estimates focusing on identical factors and physical activity measures, preventing a meta-analysis. Although the review focuses on the latest developments in factors affecting physical activity among Chinese children and adolescents, the search for relevant literature was limited to English-language publications from the last five years. This restriction may have resulted in incomplete information and inadequate evidence.

CONCLUSION

This review examines various factors linked to the physical activity behaviours of Chinese children and adolescents, including gender, age, urbanization, motivation, self-efficacy, peer support, parental support, parental engagement in physical activities, family structure, socioeconomic status, family exercise equipment, neighbourhood safety, community aesthetics, and the accessibility of community sports amenities. Notably, in the Chinese context, parental support, parental participation in physical activities, family structure, and neighbourhood safety have stronger associations with children and adolescents' physical activity behaviours. Moreover, the results suggest insufficient definitive data about the school-related factors linked to physical activity. In order to provide targeted guidance, future research should consider a broader range of school factors, including policies, culture, and the physical environment.

AUTHOR CONTRIBUTIONS

Meng Liu led the design and implementation of the study, conducted the literature search, screening, and data analysis, and drafted the manuscript. Abu Saad Hazizi supervised the research process, provided methodological guidance, participated in literature screening and analysis, and conducted a comprehensive review and revision of the manuscript. Kim Geok Soh contributed to methodological guidance and oversaw the research process. Chuang Yuan assisted with the literature search and screening and participated in portions of the data processing. Guangtao Ren also assisted with the literature search and screening and contributed to data processing.

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No potential conflict of interest was reported by the authors.

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