Review title

Barriers and facilitators to physical activity among ethnic Chinese children in school, home and community settings: a qualitative systematic review

Abstract

Objective: The objective of the review was to synthesize the barriers and facilitators from the available studies that dealt with physical activity among ethnic Chinese children and uncover any differences or similarities in these barriers and facilitators.

Introduction: Physical activity promotes overall health, fitness and well-being in children, yet this has been low among ethnic Chinese children who reside in both Chinese and non-Chinese territories. Research has been conducted to explore the barriers and facilitators to physical activity among ethnic Chinese children. However, no qualitative systematic review has been conducted to synthesize these barriers and facilitators.

Inclusion criteria: This review synthesized the barriers and facilitators to physical activity among ethnic Chinese children aged 6-17 years or among people who had responsibility for them, in school, home and community settings or country (Chinese or non-Chinese territories). The review included studies that focused on their views, experiences, attitudes, understandings, perceptions and perspectives. Studies were included if they focused on qualitative data including, but not limited to, designs such as phenomenology, ethnography, grounded theory and action research. In addition, we considered cross-sectional surveys to find any free-text relating to the review question.

Methods: MEDLINE, EMBASE, CINAHL, PsycINFO, BNI, AMED, Web of Science, Scopus, CNKI, Wanfang and VIP databases were searched to identify published studies. The search for unpublished studies included EthOS, OpenGrey, ProQuest Dissertations and Theses, CNKI and Wanfang. Databases were searched from their inception dates till 10th December 2018 and no language restrictions were applied. The Joanna Briggs Institute (JBI) guideline for qualitative

systematic review was followed to conduct the review. The JBI process of meta-aggregation was used to identify categories and synthesize findings.

Results: Out of 9460 records identified, 11 qualitative studies met the eligibility criteria and were included in the review. In terms of critical appraisal of studies, using the Joanna Briggs Institute (JBI) checklist for qualitative research (10 criteria), the scores ranged from a moderate score of six (n=2) to a high score of seven and above (n=9). Seven studies were from China, two from Australia, one each from the UK and US. The sample size in these studies ranged from 12 to 115 participants. A total of 56 findings were extracted and aggregated into 24 categories, based on the similarity of meaning. Fourteen categories described perceived barriers and 10 categories described perceived facilitators. Particularly, One category described both barriers and facilitators. From studies conducted in the Chinese territories, four synthesized findings (personal, socio-cultural, environmental, and policy- and program-related barriers and facilitators) were aggregated from 37 extracted findings and 16 aggregated categories. From studies conducted in the non-Chinese territories, only two synthesized findings (personal and socio-cultural barriers and facilitators) were derived from 19 extracted findings and eight aggregated categories.

Conclusions: In terms of barriers and facilitators to physical activity, four broad themes emerged from the participants' accounts, namely personal, socio-cultural, environmental, and policy- and program-related factors. Barriers and facilitators at the personal and socio-cultural level (e.g., parents and teachers) were most frequently cited, reflecting the importance of children's self-influence and the key role of adults play in shaping children's physical activity behaviors. Future interventions are needed to address the identified barriers and enhance the facilitators. For instance, the authors are developing a behavior change intervention to increase Chinese children's physical activity level based on these findings.

Keywords

Exercise, Sports, Child, China, Qualitative research

60 Insert "Summary of Findings" here

Introduction

Physical activity in childhood

Childhood is the most physically active period in a person's life and has been recognized as the most crucial period across the lifespan to promote the uptake of and adherence to physical activity.[1-3] Physical activity promotes children's overall health and it can contribute to their sense of self, social well-being and future health.[4] Moreover, it contributes to the quality of life in children with disabilities.[5,6] Physical activity in childhood directly may enhance the body composition and skeletal health. It also helps prevent several chronic diseases such as obesity, type 2 diabetes, hypertension and cardiovascular diseases.[7,8] In terms of psychological health, physical activity improves self-esteem, the establishment of social contacts and friendship.[6] It is also seen that, among children, regular physical activity may boost the learning abilities, including improvement in concentration power, memory, intellectual development and academic performance.[4,6,8] In terms of economic benefits, it contributes to lower healthcare utilization and costs associated with physical inactivity-related diseases.[7,9,10] For instance, in Australia around 43 million Australian dollars per year are spent on healthcare of overweight and obese children.[10] Moreover, childhood is also an important transition point where the physical activity level starts to decline.[11] The transition period from childhood to adolescence, which starts at around 13 years of age, marks the establishment of a new physical activity pattern in children.[12,13] Evidence suggests that children aged 9-11 years spend more time participating in moderate-to-vigorous physical activity in schools than children aged 6-8 years.[12] In other words, children start to take responsibility for their own participation in physical activity during this transition period. Hence, this transition period is critically important as health behaviors built-in this stage could underscore for both immediate and long-term health. For instance, children who engage in physical activity are likely to have higher self-efficacy and less depression.[14] In contrast, children who do not engage in physical activity at this stage are likely to have higher cardiovascular risks and possibility of being overweight or obese in adulthood.[11] According to the WHO's physical activity guideline, children and adolescents (aged 5-17 years old) should engage in at least 60 minutes of moderate-to-vigorous physical activity per day and reduce their sedentary time.[15] However, globally, the physical activity level remains low among children. Particularly, children's physical activity level in China is significantly lower compared

to the high-income countries in Europe and North America.[16-19] For instance, physical active rates among children were 25% in Ireland and Finland, 66.7% in Australia, 59% in Mexico and 25% in the US.[17] In China, however, only 9% of children were physically active.[17] Additionally, around 25% of physically active children in China did not achieve the required intensity (moderate-to-vigorous physical activity).[17]

Furthermore, available evidence has suggested that poor physical activity engagement may affect Chinese children's mental health wellbeing.[20] It is reported that 15.4% of children have mental disorders and over 25% of children have experienced some mental or psychological disorders (such as poor dependability, mentality and confidence) as a result of low physical activity participation. Poor physical activity may also cause overweight and obesity in children and adolescents. In China, specifically, the prevalence of overweight and obesity combined was up to 19.2% in 2010 among children and adolescents.[21,22] This was even higher than that of US children and adolescents (16.9%) in 2009-2010.[23] Moreover, around 76% (> 3million) of obese and overweight Chinese children were reported to have at least one metabolic syndrome.[24] As a result, there is a need to investigate the issue of low physical activity among Chinese children and physical activity-related health problems.

Physical activity among ethnic Chinese children

Children's academic achievements are overemphasized in China and schools are usually evaluated based on their academic performances. As a result, schools prefer to allocate their resources (including time) more on academic curriculum compared to physical activity.[25] In turn, only 24.7% of Chinese children are reported to have participated in extracurricular physical activity compared to around 60% of the average level in high-income countries.[17] In schools, health (physical) education and structured exercise programs are available and being delivered to the children orally and/or in written format. Structured exercise sessions are run to achieve the recommended intensity and duration of physical activity. However, the development process of these programs remains questionable and most of these programs are not based on behavior change theories.[26-28]

Although there exists the culture of being active for children in many high-income countries (such as the UK, US and Australia), ethnic Chinese children are less physically active compared

to children of other ethnic origins in many high-income countries.[29,30] A study reported that around 45% of Chinese American children were not actively playing outdoor games and sports.[30] In these countries, ethnic Asian sub-groups are often aggregated as a homogenous group and the same generic physical activity promotion intervention is provided to all.[29,31] The intervention that works in children of other ethnicities may not have the same positive impact on ethnic Chinese children. This is also supported by previous studies that the two main barriers to physical activity among ethnic Chinese children are insufficient time for physical activity and a competing emphasis on educational attainment.[32,33] As such, a "shrinkage" of available physical activity time for children has been reported at the school level.[34] Moreover, it has been reported that a consistent decrease in the physical fitness of ethnic Chinese children.[35] Additionally, the stereotypical views of ethnic Chinese (such as not good at ball games including football, basketball, etc.) make ethnic Chinese children self-exclude themselves from immersing in the physical activity culture of the immigration countries.[36]

There are socio-cultural issues which hinder physical activity among ethnic Chinese children. Generally, parents of ethnic Chinese children are more concerned about their child's safety and academic achievements, which in turn promotes sedentary behavior and impedes physical activity.[37] After school hours and on weekends, these children spend more time on academic studies than on physical activity.[25] In addition, ethnic Chinese girls are less likely to engage in physical activity than boys.[16] In many conservative Chinese societies, there is a huge socio-cultural pressure on girls to avoid physical activity. The image of Chinese women does not fit well with being physically active.[29] Thus, there is a need for a socio-culturally appropriate intervention for ethnic Chinese children, addressing their specific barriers to physical activity.

The rationale for the systematic review

Several studies have been conducted to explore the barriers and facilitators to physical activity among ethnic Chinese children.[29,30,37-44] Although a few systematic reviews written in Chinese are available on this topic, they are extremely brief and limited in searching scope (i.e., only Chinese databases) and their quality is questionable. In these reviews, there are no details regarding the development of the search strategy and the procedures of screening, data extraction, synthesis and quality appraisal.[45-48] Moreover, evidence shows that parents,

guardians and teachers play an important role in shaping children's health behaviors such as physical activity.[46,49] Much work has been conducted to explore what factors those having responsibility for children (e.g., parents, guardians and teachers), and the children themselves, perceive to be important for physical activity behavior, but no qualitative systematic synthesis of this growing body of evidence has been conducted until now. Exploring and integrating previous qualitative evidence will enhance our understanding of the barriers and facilitators to physical activity among ethnic Chinese children. Moreover, it may also lead to the identification of potential avenues for intervention that those who are instrumental to children's physical activity behaviors believe to be important but that have yet to be explored by researchers and policymakers as important components of interventions.

The ethnicity, cultural norms and residence can have an impact on children's views, experiences, attitudes, understandings, perceptions and perspectives regarding barriers and facilitators to physical activity.[50] In addition, the physical activity program- and policy-related differences between Chinese territories and non-Chinese territories can have influences on a child's physical activity behavior. For instance, in Chinese territories there are some unique influential factors including 1) state-run sports system, 2) "one-child" policy and 3) tight control at the school level due to the fear of sports injuries and accidents[45,47] In non-Chinese territories, ethnic Chinese children's physical activity behaviors may be influenced by the sports trend in the local communities.[29,30] Thus to uncover the particular views, experiences, attitudes, understandings, perceptions and perspectives of ethnic Chinese children, this systematic review only included data that can be analyzed separately for ethnically Chinese children. In this systematic review, the repetition of bouts of physical activity over time is the focus, which includes exercise, sport and physical education.[51]

Review objective

The aim of this systematic review was to synthesize the barriers and facilitators from the available studies that dealt with physical activity among ethnic Chinese children and uncover any differences or similarities in these barriers and facilitators.

Inclusion and exclusion criteria

Types of participants

This review included studies that were conducted among ethnic Chinese children (between 6 and 17 years of age) residing in either Chinese or non-Chinese territories, or among people who have responsibility for them (such as their ethnic Chinese/non-Chinese parents, guardians, teachers). Studies were excluded if the ethnic Chinese children were not within the range of 6–17 years, or if children of other ethnicities were included. Studies conducted among the people who have responsibility for the children were excluded if their children were not within the range of 6–17 years. If a study included both ethnic Chinese children and children of other ethnicities, only the barriers and facilitators to physical activity among ethnic Chinese children were extracted. Studies were excluded if it was not possible to extract these findings (i.e., not possible to distinguish between ethnic Chinese children and children of other ethnicities).

Phenomena of interest

This review included studies that focused on the views, experiences, attitudes, understandings, perceptions and perspectives regarding the barriers and facilitators to physical activity.

Context

All study settings were included, such as home, community and school, either in Chinese or non-Chinese territories.

Types of studies

The review included studies that focused on qualitative data, including, but not limited to, designs such as phenomenology, ethnography, grounded theory and action research. We also planned to include cross-sectional surveys where free-texts relating to the review question were collected using open-ended questions. This is because free-text data are suggested to be of intrinsic value and its analysis enables the researcher to explore important contextual value of participants' response.[52,53] The free-text data could provide additional information that are examined beyond the surface-level analysis.[52,53] The importance of free-text data in experience surveys has been acknowledged for their qualitative utility and for improving the health services.[54,55]

Methods

The systematic review followed the Joanna Briggs Institute (JBI) methodology for systematic reviews of qualitative evidence.[56] It was conducted in accordance with a JBI protocol.[57] This systematic review was registered with PROSPERO (CRD42018097124). The process adhered to the preferred reporting items for systematic reviews and meta-analyses (PRISMA).[58]

Search strategy

An initial limited search was carried out on MEDLINE and China National Knowledge Infrastructure (CNKI) databases using the initial keywords, and these keywords were physical activity, barriers, facilitators, Chinese and children. The titles and abstracts of the studies were screened for keywords, and the index terms used to describe the article were also identified. As some databases have their specific thesauruses that list all the subject terms in their specific hierarchical categorizations, the initial search terms were indexed differently (e.g., physical fitness, child) or not indexed (e.g., barriers and facilitators) in the databases. As such, the final search strategy used both initial search terms and specific index terms (e.g., MeSH term in MEDLINE) where appropriate. The search results were inspected to ensure that the relevant articles were identified. Phenomenology, grounded theory, ethnography or qualitative descriptive studies are qualitative research designs and thus explored using "qualitative research" in the search strategy (the full search strategies are detailed in Appendix I, which were firstly developed to be used in MEDLINE and then adapted for other databases in consultation with an information specialist/librarian). We searched a wide range of sources, to find both published and unpublished studies. The following databases were searched till 10th December 2018: MEDLINE (from 1946), EMBASE (from 1947), CINAHL (from 1937), PsycINFO (from 1806), BNI (from 1993), AMED (from 1985), Web of Science (from 1900), Scopus (from 1788), CNKI (from 1979), Wanfang (from 1995), VIP (from 1989), EthOS (from 1925), OpenGrey (from 1997) and ProQuest Dissertations and Theses (from 1980). The reference list of all the identified reviews and studies selected for inclusion in the review were screened for additional studies. No language restrictions were applied, and translations from Chinese into English were sought where necessary. Whenever a translation was needed, two

reviewers independently involved in the translation and then commented on it. The consensus was reached through discussion between reviewers.

Study selection

Screening

Following the search, all identified citations were collated and uploaded into EndNote X8.2, a reference management software.[59] Subsequently, the duplicate citations were removed. Titles and abstracts were screened for eligibility using the inclusion criteria by two independent reviewers. Studies identified as potentially eligible or those without an abstract had their full-text retrieved and their details were imported into the JBI premier software for systematic review of the literature, the system for the unified management, assessment and review of information (JBI SUMARI).[60] Full-text of the studies were assessed against the inclusion criteria by two independent reviewers. Full-text studies that did not meet the inclusion criteria were excluded, and the reasons for exclusion were reported. Any disagreements that arose between the reviewers were resolved through discussion or by involving a third reviewer.

Assessment of methodological quality

All studies, selected for inclusion, were critically assessed, by two independent reviewers using the standardized critical appraisal tool for qualitative research incorporated within JBI SUMARI.[56] This tool uses a series of criteria that can be scored as being met (yes), not met (no) or unclear or where appropriate, not applicable (n/a) to that particular study. Two independent reviewers went through each criterion and commented on it. Any disagreements that arose between the reviewers were resolved through discussion or by involving a third reviewer. The critical appraisal results are presented in a table and reported (Table 1). All studies, regardless of the results of their methodological quality, underwent data extraction and synthesis. A cutoff score was not used to include or exclude studies in this systematic review, as many studies are likely to be of poor quality.[56] Apart from high-quality studies, poor-quality studies can also generate potentially valuable insights.[61] Together, they can lead to a richer understanding of the research phenomenon.

Data extraction

Data were extracted from papers included in the review by two independent reviewers using the standardized data extraction tool incorporated within JBI SUMARI.[60] Any disagreements that arose between the reviewers were resolved through discussion or by involving a third reviewer. In the first phase of data extraction, study characteristics were extracted - study period, design, location (territory (Chinese/non-Chinese) and country), phenomena of interest, context (such as home, community and school), participant characteristics (such as age and gender), inclusion and exclusion criteria, sample size, recruitment method, data collection procedure and tool, data analysis technique and authors' conclusion. In the second phase of data extraction, specific study findings were extracted - barriers and facilitators to physical activity among ethnic Chinese children. As suggested by previous qualitative studies and cross-sectional surveys, a structure was agreed by the reviewers to extract findings.[38-45] This consisted of four aspects: i) personal (relating to physical, emotional or mood-associated factors of children), ii) socio-cultural (relating to people with whom the child would come in contact with such as parents/guardians and teachers), iii) environmental (relating to structural elements such as facilities and transport) and iv) policy- and program-related (relating to programs, organizations and staff). In addition, illustrations from the text that support these findings were extracted (one illustration per finding). The findings and illustrations were the actual verbatim words of the study participants and the authors. The credibility of each finding was assessed using the following criteria[56]:

- Unequivocal: the finding is accompanied by an illustration that is beyond a reasonable doubt and is not open to challenge.
- Credible: the finding is accompanied by an illustration that is lacking a clear association with it and is open to challenge.
- Not supported: when neither unequivocal nor credible can be applied and when the most notable findings are not supported by the data.

Data synthesis

Study findings from all qualitative studies were pooled using JBI SUMARI with the meta-aggregation approach.[62] This involved the aggregation or synthesis of findings to generate a

set of statements that represent that aggregation, through assembling the findings and categorizing these findings on the basis of similarity in meaning.[56] These categories were then subjected to a synthesis in order to produce a single comprehensive set of synthesized findings.[56] It was originally planned that any free-text from cross-sectional surveys would be pooled together with qualitative data from qualitative studies. However, this process was not required due to the nature of the data extracted.

In order to uncover any associated differences or similarities in the views, experiences, attitudes, understandings, perceptions and perspectives regarding barriers and facilitators to physical activity, the data from the Chinese and non-Chinese territories were synthesized separately. In addition, the data from the children and parents/guardians/teachers were synthesized separately based on the pre-defined structure (i.e., personal and socio-cultural). Specifically, the findings relating to children and parents/guardians and teachers were assembled and synthesized under personal and socio-cultural aspects, respectively. In addition, specific themes relating to children, parents/guardians and teachers were separated on the basis of similarity in meaning of included findings and the interpretation illustrated in the included studies. The identification of themes relating to barriers or facilitators was based on the similarity in meaning of the included findings. The identification of barriers or facilitators was cross-checked by the two independent reviewers and consensus was reached in case of differences.

Assessing certainty in the findings

The final synthesized findings were graded according to the ConQual approach for establishing confidence in the output of research synthesis and presented in a summary of findings table.[63] The table included the major elements of the review and details how the ConQual score was developed. The table included the title, population, phenomena of interest and context for the specific review. Each synthesized finding from the review was then presented along with the type of research informing it, a score for dependability, credibility and the overall ConQual score.

Results

Study inclusion

The comprehensive literature search returned 12533 records (Figure 1) through database searching and 13 through additional resources, resulting in 12546 potentially relevant records. Following the removal of duplicates (n=3086), using the inclusion criteria, the titles and abstracts of the remaining records were assessed (n=9460). A further 9281 of these records were excluded with reasons (see Figure 1), thus leaving 179 records in the full-text screening. All 179 papers were retrieved for a full review, following which, 168 were excluded based on the inclusion and exclusion criteria (see Appendix II). No disagreements arose during the screening. The remaining 11 papers were critically appraised and included in the review (see Figure 1).[29,32,36,38,64-70]

Insert "Figure 1" here

Methodological quality

The critical appraisal results of 11 included studies are presented in Table 1.[29,32,36,38,64-70] The results for each study ranged from a moderate score of six out of 10 (n=2) to a high score of seven and above out of 10 (n=9). Nine of the 10 quality appraisal questions achieved a high proportion of "yes" rating, however, question 7 (the "influence of the researcher on the research, and vice versa is addressed") had a significantly lower proportion of "yes" ratings (Q7), which illustrated a consistent poor reporting against the criteria. As such, the issue of poor reporting of methodologies was identified in the majority of the included studies (except two studies conducted in Australia). It also highlighted a consistently poor attainment of expectations in reporting the impact of the researchers on the studies. Despite this, the score of all 11 studies ranged between six and ten on the JBI critical appraisal checklist for qualitative research and therefore none were excluded for reasons of quality.

Insert "Table 1" here

Characteristics of included studies

The characteristics of the included studies are presented in Appendix III. All included studies

used qualitative methods to investigate the perspectives of the participants. Of all 11 studies, seven were from China,[38,64-69] two from Australia,[36,70] one from the UK[32] and one from the US.[29] Only one study was written in Chinese and the translation of findings was conducted.[67] Among seven studies from China, four were from Hong Kong[38,64,68,69] and three were from Mainland China.[65-67] Out of 11 studies, seven were conducted in schools,[36,38,64-68] two in communities[29,69] and two in both schools and communities.[32,70] Only one study was an unpublished thesis.[67] All studies were published between 2007 and 2017, with most (8 of 11) being conducted since 2014.[29,32,36,38,65,67,68,70] There were more studies exploring the experience of barriers and facilitators to physical activity from the perspective of children than that of parents and teachers. Specifically, two studies were conducted with both children and parents,[64,65] one with both children and teachers,[67] two with parents only[32,69] and six included children only.[29,36,38,66,68,70] Two papers originated from the same study.[36,70] Interestingly, time constraints and having other priorities than physical activity were identified among both children and parents' accounts, which may reflect the insufficient physical activity opportunities for children in China due to the academic pressure and the low awareness of physical activity participation among children and parents.[64-66,68,69]

The study participants ranged from 12 to 115 and one study (conducted among teachers) did not mention the number of participants.[67] Exploring the methodological aspects of the 11 studies, two made specific commitments to a critical and interpretive ethnographic methodology[36,70] while methodology was unspecified in the other nine.[29,32,38,64-69] The data collection methods used were primarily semi-structured interviews, carried out in person[29,64,67,68] or by telephone.[29,64,69] Focus group discussion was used in two studies,[32,65] and two studies only mentioned using interviews,[36,70] of which one also used filed observation.[36] Specifically in two studies, alternative qualitative methods were used including self-completion education[66] and nominal group technique.[38] Regarding the trustworthiness of these qualitative approaches had on research findings, it is considered that interviews are better for investigating experience compared to quantitative methods.[71] It is extremely helpful for in-depth exploration instead of broad surveys of surface patterns. Moreover, a previous study reported that interviews could produce sufficient and trustworthy contributions when exploring children's perceptions compared to the focus group discussion.[72] In terms of field observation, it is an

effective qualitative approach to study the meaning of behavior, language and the interactions of the group. However, this approach may not be appropriate to be used to identify the experiences of barriers and facilitators to physical activity. This is because that observation mainly entails looking at the individuals' behavior rather than their attitudes and opinions.[73] In addition, it is less appropriate to identify infrequent events, which might be of significance for their physical activity (e.g., start or stop doing physical activity).

The data analysis techniques were thematic analysis,[29,36] inductive analysis,[32] framework analysis[65] and content analysis.[66,68,70] Two studies did not state the specific analysis but only stated using coding analysis[64,69] whilst no data analysis methods were specified in one study.[67] This review was to explore the experience of barriers and facilitators to physical activity among ethnic Chinese children and all these analytical approaches were considered to be suitable for answering the question. However, thematic analysis and inductive analysis were seen to be better in comprehensively capturing all the themes of findings. This was because that these approaches did not cautiously measure the frequency of different themes as a proxy for significance (i.e., content analysis) or identify categories using the pre-existing concepts/ frameworks (i.e., framework analysis).[74,75] As such, it may be able to comprehensively evaluate each finding and not neglect potential experiences of barriers and facilitators that unidentified from the previous studies.

Review findings

As mentioned in our protocol, a standard structure with four themes was used to categorize all the extracted findings using the meta-aggregative approach.[57] Findings related to our participants of interest (i.e., children, parents/guardians and teachers) were aggregated under personal (relating to physical, emotional or mood-associated factors of children) and socio-cultural themes (relating to people with whom the child would come in contact with such as parents/guardians and teachers). Altogether, the findings from these three groups were aggregated into two specific synthesized findings, synthesizing the barriers and facilitators to ethnic Chinese children's physical activity. In addition, findings related to structural elements (such as facilities and transport) and policy and program (such as organizations and staff) were

respectively aggregated into environmental and policy- and program-related themes, synthesizing the barriers and facilitators to ethnic Chinese children's physical activity.

All 11 studies included in this review explored the barriers and facilitators to physical activity among ethnic Chinese children. A total of 56 findings were extracted, of which 41 were assessed as unequivocal and 15 as credible (see Appendix IV). Among all the extracted findings, a total of 37 findings were extracted from the studies conducted in the Chinese territories, of which 24 were graded as unequivocal and 13 as credible. Specifically, the 37 findings were grouped into 15 categories and further aggregated into four synthesized findings. The first synthesized findings had 15 findings and six categories, of which 12 findings were unequivocal and three were credible. The second synthesized findings had 10 findings and four categories, of which eight findings were unequivocal and two were credible. The third synthesized findings had eight findings and three categories, of which seven findings were credible and one was unequivocal. The fourth synthesized findings had four findings and two categories, of which three findings were unequivocal and one was credible.

Confidence of synthesized findings

The confidence of all synthesized findings was graded based on ConQual approach and evidence suggests that it enables researchers to establish the confidence of qualitative review (see Summary of Findings). Additionally, it is a practical tool to assist in decision making. This ranking system allowed the findings of individual studies to be downgraded based on its dependability and credibility. Downgrading for dependability occurred when the five criteria for dependability were not met across the included studies.[63] Where four to five of the responses to these questions were yes for an individual finding, then the finding remained at its current level. If two to three of these responses were yes, it moved down one level (i.e. from high to moderate). If zero to one of these responses were yes, it moved down two levels (from high to low, or moderate to very low). The synthesized finding then would be downgraded based on the aggregate level of dependability from across the included findings. In terms of credibility, it would be downgraded if the synthesized findings not only contain unequivocal findings. Specifically, the synthesized findings would be downgraded one, two, three and four levels if it contained a mix of unequivocal/equivocal findings, only equivocal findings, a mix of

plausible/unsupported findings and no supported findings, respectively.[63]

For all synthesized findings, the majority of studies received four "yes" responses on the ConQual identified criteria for dependability; therefore, the level of confidence remained unchanged. The findings included a mix of unequivocal and credible ratings, necessitating downgrading by an additional level, resulting in a ConQual score of moderate. This represented a rating of moderate confidence in these qualitative synthesized findings and was supported by the evidence of sufficient quality.

Among studies conducted in the non-Chinese territories, 19 extracted findings (17 unequivocal and two credible) were grouped into eight categories that were aggregated into two synthesized findings. The first synthesized findings had seven findings and three categories. Of these, six findings were assessed as unequivocal and one as credible. The second synthesized findings had 12 findings and five categories, of which 11 findings were unequivocal and one was credible. The confidence of all synthesized findings was graded based on ConQual approach (see Summary of Findings). For all synthesized findings, the majority of studies received four "yes" responses on the ConQual identified criteria for dependability; therefore, the level of confidence remained unchanged. The findings included a mix of unequivocal and credible ratings, thus necessitating downgrading by an additional level, resulting in a ConQual score of moderate. This represented a rating of moderate confidence in these qualitative synthesized findings and was supported by the evidence of sufficient quality.

Results from Chinese territories

Of the studies conducted in the Chinese territories, the barriers and facilitators to a child's physical activity were identified and synthesized into four broad findings, including personal, socio-cultural, environmental and policy- and program-related aspects. Specifically, both barriers and facilitators were identified in personal and socio-cultural factors while there were only barriers identified in the environmental (except the category "facilities" was reported as both the barrier and facilitator) and policy- and program-related factors.

Synthesized finding 1: Personal barriers and facilitators

The personal barriers and facilitators include both physical, emotional and motivational factors of children that may determine their physical activity choices and participation. A child's perceived interest, enjoyment of doing physical activity and physical active pursuit may increase their physical activity level. In contrast, individual perceived lower value or utility of physical activity and time constraint may negatively influence their participation in physical activity. This synthesized finding was derived out of 15 findings which merged into six categories (see Figure 2)

Insert "Figure 2" here

Personal facilitators:

Category 1.1: Fun

Children were generally had experience in physical activity and thus their previous positive feelings (e.g., fun, enjoyment and happiness) were cited to be important for facilitating physical activity participation.[64,68]

"Doing physical activity is fun and when I see other people playing, I want to be one of them . . . My parents also encouraged me. They would spend time jogging with me and I still remember we had so much fun."[64(p.390)]

"I feel satisfied when I can shoot a basketball into the ring . . . and usually I am able to hit the shuttlecock with a swift sound and therefore I feel really happy and have fun playing with it . . . When I play badminton, I think the sound of hitting a badminton cock is really interesting, I feel very happy when I could hit the cock with that kind of special sound."[68(p.390)]

Category 1.2: Practice to gain skills and competence

Children stated that they were more likely to do physical activity when they had a strong interest to practice a specific physical activity skill or to become more competitive or improved in a particular activity.[64,68]

"I play table tennis more now and therefore have less time for other activities. I'd rather focus my time on improving in it than spending time doing various sports which seem to be wasting my time."[64(p.339)]

"I can boast in front of my teammates in basketball, which I think is important for me to do better in it."[68(p.390)]

Category 1.3: Child's aspiration and understanding of the benefits of physical activity

Physical activity participation among children who reside in China was also noted to be associated with their aspiration to physical activity. Moreover, the participation was dependent on whether an individual was aware of the benefits of physical activity to the betterment of physical health, clinical benefits and career.[68]

"Physical activity is important because it is good for my health, I get less pain and disease after doing physical activities."[68(p.390)]

"Sport may be useful for my future job because I will find sport-related careers, like being an athlete. I want to be as good as those Olympic athletes, I think they are gorgeous"[68(p.391)]

Personal barriers:

Category 1.4: Have other priorities or commitments

A particular barrier to physical activity mentioned by children was that they regarded physical activity was less important or they had other priorities or commitments.[68]

"Sometimes I think it [physical activity] is not really that useful at all as most schools do not think it is relevant to study."[68(p.392)]

"I would like to excel in my academic studies. I think studies may affect my future but not sport. I always place academic studies first."[68(p.391)]

Category 1.5: Low intrinsic values to physical activity

Low intrinsic values to physical activity among children were cited as a barrier inhibiting physical activity participation. Children stated that the negative feelings or experiences brought by physical activity delimited their motivation to physical activity, including the perceived feeling of frustration, loneliness and tiredness while doing or after physical activity.[68]

"I do not feel any differences or improvements and I think it is boring. I am always like that, not a bit better."[68(p.392)]

"I always do sport alone by myself and this is why sport is not interesting to me. I do not like it because there is no one to compete or compare with me. There is no one to encourage me and I do not feel happy when doing sport."[68(p.392)]

"I need to put in too much effort in sport. I do not like the feeling of tiredness after doing sport."[68(p.391)]

Category 1.6: Time constraints

The lack of time was one of the most cited and particular barriers to a child's physical activity and it was identified mainly because of the long school day and heavy study burden (e.g., assignments) for ethnic Chinese children who reside in China.[65,66]

"I do not have time for leisure time exercise at all from Monday to Friday. I came home late from school in the evening, and when I finish my homework, it's time to sleep. I just don't have time to exercise at all."[65(p.894)]

"The most frequently mentioned disadvantage, "will take too much time," was mentioned by 40.6% of the students."[66(p.43)]

"The most frequently mentioned barrier, "having too many assignments", was mentioned by about half (48.4%) of the students. Additionally, "time" was the second most frequently

mentioned circumstance; 14.2% of the students mentioned having more time as a facilitator and 18.8% mentioned not having enough time as a barrier."[66(p.43)]

Similarly, parents also cited that the low physical activity participation of their children was as a result of the insufficient time being provided with them, which may indicate the "academic-focused" school environment.[65]

"The environment now is so different from the environment of my childhood. My kid is sitting there all day studying and no time for exercise. It seems that he does not like exercise at all, and when he has spare time, he watches TV."[65(p.894)]

Synthesized finding 2: Socio-cultural barriers and facilitators

The socio-cultural barriers and facilitators include interactions brought by people who have a connection with children (e.g., parents, peers). A child's physical activity participation may be facilitated when there is a dynamic involvement of parents and teachers. Children may be more likely to take part in physical activity when there are available opportunities or conducts provided by supportive teachers and parents. In contrast, parental perceived lower value or utility of physical activity and time constraint may negatively influence their children's participation in physical activity. This synthesized finding was derived out of 10 findings which merged into four categories (see Figure 3).

Insert "Figure 3" here

Socio-cultural facilitators:

Category 2.1: Parental support

Parents were commonly identified as the important person of approval and disapproval for children's physical activity engagement.[66] Particularly, fathers were cited as responsible for creating physical activity opportunities for their children.[64]

"Clearly, most of the salient referents for this behavior were family members, including parents, others, fathers, and grandparents."[66(p.43)]

"Interestingly, within the group we interviewed, only fathers provided actual facilitation of their children's physical activity. One of them acted as an assistant coach regularly in his boy's rugby team, while a few attended their children's sports competitions, such as badminton and swimming during their leisure time, and two parents assisted with transporting children to playgrounds."[64(p.338)]

In addition, parental knowledge, as well as their understanding of the importance of physical activity the betterment of physical health and academic were cited as facilitators to physical activity participation in their children.[64]

"Students in Hong Kong, as far as I know, are not doing much sports and exercise. I'm sure exercise can help my son to be fit and maintain a good shape and weight."[64(p.341)]

"PE (physical education) is important because it makes my son healthier . . . good health may help him study better."[64(p.342)]

Category 2.2: Teachers' actions, behaviors or concerns

While at school, a child's physical activity mostly took place at physical education class and thus the physical education teachers were cited to be able to facilitate and encourage children to be active. Physical education teachers believed that the establishment of proper teaching goals and a harmonious teacher-student relationship positively influenced children's physical activity.[67]

"We should combine the collective goal with an individual goal. Each student's physical quality and individual ability are different. We should fully consider the individual difference of each student when setting the teaching goal. When setting the collective teaching goal, we should make the goal has a certain range of fluctuation, because the requirement is universal for each student. We should ensure that for students whose sports learning ability are not strong enough can improve their sports achievements through hard work and their interest in sports learning

can be increased due to the establishment of motivation in sports learning. In the other way, this goal should also apply to those who have higher sports learning abilities."[67(p.24)]

"The PE (physical education) teachers should respect and care about students rather than criticize students at will. Teachers should equip a positive attitude and be the role model so that the students will feel the equality between themselves and teachers. In addition, they may be attracted to the class. With the establishment of a harmonious relationship between students and teachers, students will thus take the teachers as examples and change their behavior."[67(p.25)]

Socio-cultural barriers:

Category 2.3: Physical activity is not part of the family's priorities - as a barrier

Although parents did acknowledge the beneficial effects of physical activity, it was identified that a child's educational attainment and academic development were considered to be the universal priorities among Chinese parents.[64,69]

"I know doing more physical activity is good for my child, but I'd rather have her study first and only allow her to play for a while if she could finish her school work. You know, too much play will negatively affect her academic performance."[64(p.338)]

"My son is now in the soccer team and he practices for many days a week …he comes back home at 7 pm and I think soccer is distracting him from studying well… I'm so afraid that he'll get hurt and I'm thinking not let him play anymore. I usually let him do whatever he wants in sports but if the exam is near, I'd advise him to play less basketball, I think it's better for him to spend more time studying than on playing."[69(p.42)]

"There was a time a basketball club invited me to join them, and I know this was a chance for me to play in a professional level. However, my mother opposed my decision, and I did not dare to argue with her."[64(p.340)]

Category 2.4: Time constraints

The lack of time and energy due to their work was cited as a barrier by the parents of ethnic Chinese children who reside in Chinese territories that delimited their accompany with children to participate in physical activity.[69]

"Both of us need to work six days a week, well… we're not rich and we must work for the money for the family. Sometimes we would go out with the kids on Sundays and we usually go shopping or dining out."[69(p.41)]

Synthesized finding 3: Environmental barriers and facilitators

A child's physical activity may be hindered by the environmental characteristics including environment structural characteristics (e.g., heavy transport), demographic characteristics (e.g., high population density) and physical activity resources (e.g., insufficient facilities). This synthesized finding was derived out of eight findings which merged into four categories (see Figure 4).

Insert "Figure 4" here

Environmental facilitator:

Category 3.1: Accessibility and proximity of facilities

The perceived physical activity-friendly environment was mentioned to be able to facilitate physical activity participation. Specifically, it was identified that a child's engagement of physical activity was positively associated with the accessible facilities ("recreation grounds, parks") and the proximity of facilities ("convenient transportation, subway station").[38(p.50)]

Environmental barriers:

Category 3.2: Care concerns

A common consideration mentioned by both parents and children was safety concerns.[38,69] Parents stated that they worried that a child could get hurt doing certain types of activities while children stated the consciousness of the neighborhood safety.

"Some dangerous activities, like skating, it's not too safe for my girl to play. Children usually can't decide what is dangerous for them. They just play for fun but neglect the importance of safety. For example, I won't let him go climbing hills or rock…it's too dangerous. I've seen quite a lot of accidents happened in people climbing, it's definitely not suitable for children, especially girls), it's just not right for her to play such rough sport and Hong Kong don't have much safe climbing places for younger ones and there is a lack of qualified teachers."[69(p.42)]

A child's physical activity was also related to an individual's local environmental safety, specifically, the expressions of a fear of surrounding safety ("afraid of being taken or hurt at night" (crime)[38(p.4)] and the awareness of danger ("few cars on roads (traffic)")[38(p.5)] were cited by the children as barriers that delimited their activity.

Category 3.3: Insufficient facilities

In contrast to the accessibility of facilities to the facilitator, insufficient resources and facilities at school was identified as a hindrance to children's physical activity participation.[64]

"Other negative feelings, expressed by both boys and girls, included too many students in a class (40-45 students sharing one basketball court)."[64(p.343)]

Category 3.4: The unique condition in the Chinese mainland

Particularly, two unique environmental barriers were mentioned by children who reside in China, which were pollution-related barriers and population density. The air quality ("fresh air") and extent of noise (too much noise") acted as barriers to children's activity engagement.[38(p.5)] In addition, the large population density ("too many people in recreation grounds") was cited responsible for hindering a child's engagement in the activity.[38(p.5)]

Synthesized finding 4: Policy- and program-related barriers

The national policies and related programs are the outer structure influencing a child's physical activity opportunity. A lack of appropriate physical activity programs or attractive program

contents may inhibit children's participation in physical activity. This synthesized finding was derived out of four findings which merged into two categories (see Figure 5).

Insert "Figure 5" here

Category 4.1: Lack of opportunities to participate

Physical education class was mentioned as the physical activity opportunity provided with Chinese children. However, children cited that they hardly had the opportunity to participate in their activity of interest in the class. One possible reason was that physical education was only set up to help children pass the high school entrance examination (i.e., commonly known as "Zhongkao" in Chinese).[65] Particularly, an incidence of physical education taking over by other academic curriculum was identified as a barrier delimiting the physical activity opportunities that provided with children at school.[64]

"We have a morning recess. Usually we start with group rhythmic gymnastics and then jump roping. We have PE (physical education) class, and each class content is arranged by teachers for us to run or do items for Zhongkao. We are not given free play time during PE class. I like playing badminton, but my PE teacher said I can only play badminton after I am capable of receiving full credits for all Zhongkao-tested items."[65(p.894)]

"… having academic subject lessons at the expense of PE (physical education) lessons, especially when it comes to the senior secondary level."[64(p.343)]

Category 4.2: Lack of appropriate programs/activities

A lack of appropriate programs or a deficiency within the available programs were mentioned as a barrier by children. At school, children were identified with low interests to physical education lessons due to the overly skilled-oriented nature and the inappropriate time provision of the physical education lessons.[32,68]

"It's not very nice because we always learn traditional sports, such as track and field, soccer, basketball, volleyball, and gymnastics. It is no fun at all. Teachers are actually repeating the same content we have already learnt in senior primary schools. I dislike running long distances; it is so boring."[64(p.343)]

"Well, it seems that during PE (physical education) lessons, most of the time, about 15 to 20 minutes was allocated to doing stretching and warm up, and the time for us to really learn a sport is not enough."[68(p.392)]

Results from non-Chinese territories

Unlike the synthesized findings from studies conducted in the Chinese territories, only personal and socio-cultural barriers and facilitators to physical activity were extracted and synthesized from the studies conducted in the non-Chinese territories. In addition, both barriers and facilitators were identified in the personal and socio-cultural themes.

Synthesized finding 1: Personal barriers and facilitators

The personal barriers and facilitators include both physical and psychological factors of children that may determine their physical activity choices and participation. A child perceived physical activity interests and positive attitude may facilitate their participation while the negative interpersonal influences may hinder their participation. This synthesized finding was derived out of seven findings which merged into three categories (see Figure 6).

Insert "Figure 6" here

Facilitators to physical activity

Personal facilitators:

Category 1.1: Individual physical activity preference

At an individual level, a child's own physical activity preferences were perceived to be influential on their physical activity participation.[29] Particularly, team sports were reported to be most

popular among ethnic Chinese children and they stated that physical activity mostly took place at school and after-school setting (e.g., home, neighborhood).[29]

"Of the team sports, the most commonly mentioned were basketball and soccer. Other examples were baseball, dodgeball, football, volleyball, badminton, kickball, tennis, hockey, ping pong, and ga–ga (a variation of dodgeball), which were mostly played during physical education (PE), at summer camp, or on an extracurricular team."[29(p.361)]

"I sometimes play chase with my brother around the house, practicing hockey in the yard, or we do work outside in the garden."[29(p.362)]

Category 1.2: Child's desire to be active

A child own needs and willingness to participate in physical activity were also noted to be important. [60] The participation of physical activity was dependent on whether the individual had the desire to participate in physical activity.

"I like being a perfect but I wouldn't want to be house captain, because if you want to be a house captain, you have to be really active, you always have to cheer up and do this and do that, and I'm not that kind of sporty person, so I signed up for the perfect (role) instead."[36(p.448)]

"I don't really study, because I hate studying, it's boring, I like to have fun . . . I'm having fun and feeling good. I like sports but I'm not good at it because I'm not as fast as everyone else, and I can't swim that well either. I'd like to join an AFL club but I haven't found a club yet that I like. Australian Football League (AFL) is fun."[36(p.451)]

Barriers to physical activity

Personal barriers:

Category 1.3: Interpersonal negative perspectives on self-identity

A particular barrier mentioned by the ethnic Chinese children who reside in the non-Chinese territories was that they experienced the inequality, exclusion and racism at school.[36] For

instance, girls were in general acquiesced to exclude themselves from physical activity. Moreover, it existed the phenomena that the captain of physical education was often nominated among boys. Additionally, ethnic Chinese children who reside in the non-Chinese territories were 'oppressively silenced' because of their ethnicity or race.

"Yeah, well I guess in PE (physical education), the captain chooses the boys first, like you know, they are the stronger players, and he kind of chooses the girls last . . . Some of the girls are strong as well, but coz the boys always want those who's able to kick and able to goal. Well, in HPE (health and physical education) class, not many girls participate in it, coz like we're girls, we don't want to do it, and the teachers is like, you can walk around the field and do nothing."[36(p.449)]

"I just think they [European] think they are better, my other friends, they used to be in the A team, but then they are too inside, they don't express much things in schools, they don't talk to other people, they're just not used to it, that's why they don't pass the ball to them."[36(p.450)]

"Like back in primary school, you don't notice that much, since your English is not good enough, you won't know what they're saying, but when your English gets better, sometimes, you hear stuff, sometimes in playing sport, they'll say you're Asian and you can't play sport, they like to start things like that."[36(p.450)]

Synthesized finding 2: Socio-cultural barriers and facilitators

The socio-cultural barriers and facilitators include interactions brought by people who have a connection with children (e.g., parents, peers). A child's physical activity participation may be facilitated when there is dynamic involvement of parents and peers as well as their support. In contrast, unsupportive parenting and cultural beliefs may hinder children's activity participation. This synthesized finding was derived out of 12 findings which merged into five categories (see Figure 7).

Insert "Figure 7" here

Socio-cultural facilitators:

Category 2.1: Parental or family support

Parental and familial support were identified for facilitating children's physical activity participation.[29] The availability of opportunities for physical activity in children was associated with parental understanding and knowledge of the physical activity.[32]

"My mom and dad... because they're the ones that tell me: okay, you can go to the park or you can go outside and play, so they'd be the ones that control what I do after school."[29(p.362)]

"We just hope our children can fully develop their skills, I will let him try everything."[32(p.1009)]

Category 2.2: Involvement of peers

The wider social networks of a child were cited to present both positive and negative impacts on their physical activity participation. Specifically, the conducts of peers were important in determining an individual's motivation for physical activity.[36]

"I have been known in my class to be one of the best long-jumpers . . . I'm really proud of my quick thinking, coz of debating, you do a lot of debating on the spot . . . people say I'm a good public speaker in debating and sometimes in HPE (health and physical education), so I'm really proud of that one."[36(p.447)]

"Well, when I was skinny, I just look(ed) so fragile that I'll be pushed over by wind, and now when I'm not that skinny, people just assume that I don't do much exercise anyways . . . they just don't pick me first."[36(p.449)]

Socio-cultural barriers:

Category 2.3: Chinese cultural beliefs

Under the Chinese ethnic ethos, it promotes the comprehensive development of an individual.[32] Of which, Children were encouraged to lead a physically active lifestyle and become positive active role models within the family.

"Because our nation requires us to pursue all kinds of development including moral, intellectual and physical aspects."[32(p.1010)]

However, this cultural ethos was also identified as the cultural barrier to physical activity participation for children. In general, a child's educational attainment or the academic success were given more emphasis by parents and children as it was considered to be a promising path that could lead to success.[32,70] As a result, this belief in turn delimited participation in physical activity for ethnic Chinese children.

"You will understand how to balance and you will make your children have sport, for activities, and have time for study too."[32(p.1010)]

"Academics is important because if I don't do well at school, I would let down my Mum and Dad, coz I mean what would it feel like if you were the parent of your child, others will say, oh my god, that person is so dumb, that child is so stupid, you know what I mean? I don't wanna feel that way or have my parents looked down upon by others like that."[70(p.1053)]

In addition, it highlighted a traditional familiar power relation in the Chinese family. A child was culturally legitimized to value filial piety including uptake of their parental discourse without questioning, which, in turn, made ethnic Chinese children obligated to achieve good academic performance as expected by their parents.[70]

"Pretty stilted, I mean they don't know what to do with me, my problems, like the Asian thing. Basically, to be Asian daughter, it's like I need to get A+ and everything, though they say they don't mind me getting a B in English…Chinese kids wouldn't ask to go out, they'd be too busy studying. I'm meant to like learning, I'm supposed to take what they say without questions, you

know, and to look after my sister, just basically be a model daughter…I'm different from this model, I think I'm reasonably ok, because I don't go out and party and drink and stuff like that, a lot of other people do. I'm ok. I mean I'm not ashamed of myself."[70(p.1059)]

Category 2.4: Parental concerns

Parental perceived negative impacts brought by physical activity were commonly cited as the barriers to a child's participation in physical activity. In general, three parental concerns were identified, including academic concerns, aesthetic concerns and safety concerns.[70]

"My parents don't really like me doing fencing…My parents are like whenever I ask to join a new sport, they're like What's the point of that? Are you going to get world champion? Are you going to get number one like gold medal in sailing? If not, I don't think you should do it, coz it's not going to get you any money and it's not going to get you an OP1."[70(p.1056)]

"…all I got was getting tanner and tanner and tanner in my sport and my Dad starts complaining, like oh my gosh, you look like you're getting darker, no no no! They prefer me to be Whiter… they don't really want me to get tanner coz they think it's like the marine people. They just don't want me to be dark, not like a chocolate."[70(p.1055)]

"Sometimes when I go outside, I ride my bike but my parents don't want me to ride outside, coz there's more cars in the place where I lived before, the place I lived before was like a circuit."[70(p.1056)]

Category 2.5: Negative societal attitudes

A child's physical activity was also hindered by the negative societal attitudes toward the figure.[58] Generally, overweight and obesity were perceived by parents to be a barrier to physical activity and it, in turn, helped form the parental assumption of an inactive lifestyle of children who were overweight or obese.

"For example if a child is already fat, that means he will have less interest in sport."[32(p.1009)]

Discussion

This systematic review combined qualitative evidence relating to barriers and facilitators to physical activity in ethnic Chinese children and uncovered the similarities and differences in these barriers and facilitators. It was beneficial to researchers working in the fields of physical activity as it could provide novel information about the barriers and facilitators to ethnic Chinese children's physical activity behaviors. The included 11 studies resulted in 41 unequivocal and 15 credible findings that were grouped into 24 categories. Finally, four synthesized findings emerged from the data: 1) personal, 2) socio-cultural, 3) environmental (only in the Chinese territories), and 4) policy- and program-related barriers and facilitators (only in the Chinese territories).

The synthesized findings described barriers and facilitators to ethnic Chinese children's physical activity in school, home and community settings. For many identified barriers and facilitators, the constructs were similar and were particularly dependent on the presence or absence of that factor. Overall, the identified personal and socio-cultural facilitators were consistent in both Chinese and non-Chinese settings. However, there were some differences regarding the barriers in the four synthesized findings. Hence, it is important to reflect on what happened on average and critically assess the barriers distinctive to ethnic Chinese children in the Chinese and non-Chinese territories. This systematic review identified personal barriers and facilitators which were similar to those identified by previous Chinese quantitative systematic reviews on this topic.[46,47,76] Specifically, children's participation in physical activity was associated with a child's physical activity preferences, motivation, self-perceived physical activity value and experience of participating previously, regardless of residence (in the Chinese or non-Chinese territories).[29,36,64,68] It was highlighted that children who experienced enjoyment and happiness while doing physical activity were more likely to participate in physical activity.[36,64,68] In contrast, children who had negative feelings (e.g., tiredness) in physical activity would inhibit their future participation in physical activity.[68] In addition, children's motivations to physical activity increased when they perceived that benefits could be gained by engaging in physical activity.[68]

In this systematic review, parents were consistently identified as integral "gatekeepers" in providing ethnic Chinese children's with physical activity opportunities, in line with previous Chinese quantitative systematic reviews on this topic.[29,32,45,70,76] Regardless of whether children resided in the Chinese or non-Chinese territories, their parents were culturally aware of the responsibility to provide opportunities for their child to be active, such as going out at weekends.[29,32,64,66] However, parents were generally seen to be over-emphasizing on children's educational attainment.[64,69,70] Specifically, their perception that physical activity was a factor negatively influencing their child's academic performance was presented as a barrier inhibiting children from participation in the physical activity.[64,69,70] On the other hand, parental support and willingness to provide greater opportunities for their child to participate in physical activity resulted in higher physical activity levels in their children.[29,32,64] This suggests a widespread over-emphasis on academic achievements among ethnic Chinese parents in Chinese and non-Chinese territories.

Beyond the parental influences, the role of peers and teachers in shaping a child's physical activity behavior was reported to be an important facilitator. In Chinese and non-Chinese territories, children were likely to participate in physical activity if they had peers to play with. Additionally, their interests in physical activity increased when they had experiences of better performance than their peers in certain physical activities.[64] As only one included Chinese study that involved teachers was included, it was not possible to distinguish the similarities or differences relating to teachers between the two settings. In Chinese territories, specifically, it was identified that good teaching of physical education lessons (e.g., "set appropriate goals", "establish an equal and harmonious relationship between teachers and children") led to an increase in children's physical activity levels.[67] This may be potentially related to the social support from engaging in physical activity which is perceived by children.[77] Children spent the majority of their time at school and social interaction was identified as their reason for participation in sports. Children were therefore more likely to engage in physical activity when the teachers and peers were encouraging and supportive.

Specific to children in Chinese territories, a lack of time was identified as a personal barrier to being active.[65,66] Children commonly expressed their interests in engaging in physical activity, yet they had very little leisure time as they spent the majority of time staying at school or working

on assignments.[65,66] This was also consistent with other Chinese quantitative systematic reviews, suggesting that children who reside in China commonly experienced a great burden of academic study which limited the amount of time they have available for physical activity.[68,76] A previous study shows that the school hours for primary school children in China are nine hours on average.[78] Children normally arrive in schools around 7.30 am to 7.55 am and leave school around 4.30 pm to 5.30 pm, which is significantly intensive when compared with the school periods in the United States (US) and the United Kingdom (UK) (e.g., approximately from 8.30 am to 3.30 pm).[78-82] Experiences of exclusion, overt racism and/or gender inequality were specific socio-cultural barriers that emerged among children in non-Chinese territories.[36] In general, ethnic Chinese children had the feeling of being purposively excluded and discriminated against by peers while doing certain types of sports (e.g., touch football) due to their ethnicity. The stereotypical perceptions of Chinese (Asians) as being quiet and not good at sports negatively influenced ethnic Chinese children's participation in physical activities. In addition, the general idea that girls are less competitive and strong compared with boys was identified as a barrier to girls being physically inactive and led to them self-excluding from participation in physical activity.[36] This gender inequality was also reflected in the scenario that boys were most commonly nominated as the captain of physical education. Given the difficult experience of being a migrant, it is important for ethnic Chinese children who reside in the non-Chinese territories to be aware of the impact of these stereotypes on individuals and not to perpetuate them through their own internalized physical activity behaviors. Moreover, an interesting socio-cultural barrier was identified among the female Chinese children who reside in the non-Chinese territories. It was claimed that their physical activity was hindered by the normalization of the "white" body by their parents as a "whiter" skin color was considered to be associated with higher social classes according to traditional Chinese culture.[70] Unlike the culture observed in high-income countries, dark-skinned people are comparably looked down upon in Asia (including China) and being tanned indirectly represents a low socio-economic status as it implies working outside under the scorching sun.[83] Fair skin implies wealth, power and nobility and in general Chinese culture equates fairer skin with feminine beauty.[83] Although this preference remains in Chinese culture, it was only identified as a barrier to physical activity in ethnic Chinese children who reside in the non-Chinese territories. This may suggest that

conflicts of self-values between the first migrant generation and their descendants. Hence, it is important for parents of ethnic Chinese children who reside in the non-Chinese territories to be aware of the cultural differences relating to preferences for skin color and not to restrict children's participation in physical activity as a result of the ancient belief.

Interestingly, in addition to personal and socio-cultural barriers and facilitators, the synthesized findings of environmental and policy- and program-related barriers and facilitators were only identified in children who reside in Chinese territories. This may suggest that children's physical activity levels may have more complex and multifaceted barriers and facilitators in Chinese settings compared to the non-Chinese settings. Environmental barriers and facilitators in relation to safety and convenience of physical activity environments were identified in this review, and were consistent with previous Chinese quantitative systematic reviews on this topic.[46,47,76] In general, children's physical activity participation may be hindered by the poor neighborhood safety (e.g., crime) and traffic, but can be facilitated by an exercise-friendly environment (e.g., available equipment and resources for physical activity).[38,64,69]

In this review, air quality and population density were additionally identified as barriers relating to environmental sanitation, among ethnic Chinese children who reside in China.[31] Specifically, children's motivation for physical activity was negatively influenced by poor air quality and high population density. Evidence suggests that children have different physical activity patterns compared with adults, such as playing outdoor, playing close to the ground and engaging in more contact activities. As a result, these two identified sanitary barriers in China may inhibit children's participation in physical activity, particularly for ethnic Chinese children who reside in the Chinese territories.[84] Being aware of the unique Chinese environmental barriers to children's physical activity and involving public health policymakers in the physical activity promotion may help to increase the physical activity levels in ethnic Chinese children who reside in China.[85]

In terms of policy- and program-related barriers, ethnic Chinese children who reside in China were repeatedly hindered from doing physical activity as a result of the insufficient opportunities being provided for them to do their preferred physical activity in physical education lessons.[29,64,65,68] In China, children are mandated to take a sports test before entering high school. As a result, physical education lessons were generally used as a training (exam-

oriented) purpose by schools and therefore children lacked opportunities for doing their preferred physical activity at school.[65] In addition, the overly skill-oriented nature (e.g., ball games, track and field) and time provision (e.g., most of the class time allocated to do warm-up or stretching) of physical education lessons negatively influenced a child's motivation to engage in physical activity.[64,68] Similarly, several previous Chinese quantitative systematic reviews reported that in China physical education lessons were considered to be lack of attractive characteristics to children (i.e., intriguing curriculum content/ structure) and they are simply delivered by organizing children to do free self-practice.[47,76] Given that a child's physical activity may be determined by their preference and they will thus allocate more time to specific activities as they grow up, age-specific physical activity guidance could, therefore, be developed. For instance, it may be more appropriate to offer young children general and interesting physical activity while providing more skill-oriented sports for older children. Additionally, strategies to improve the contents and structure of physical education lesson, and a focus on physical activity policy adherence in schools are warranted. The use of surveillance systems to monitor the implementation performance of physical education in school could be considered in order to support school policy adoption.[86]

Strengths and limitations

To the best of our knowledge, this is the first qualitative systematic review to synthesize the barriers and facilitators to physical activity in ethnic Chinese children aged 6-17 years. We applied rigorous JBI review methods, an extensive search strategy and did not exclude papers based on language and types of publication (i.e., published or not). It is acknowledged that the synthesized findings cannot be generalized as this is a qualitative systematic review. However, the included studies were carried out across four countries (China, Australia, US and UK) and included children from different age groups, ranging from nine to 16 years, and various participant groups including children, teachers and parents. These qualitative studies provided useful insights in the contexts of home, school and community in which barriers and facilitators are experienced by children and perceived by parents and teachers, as well as rich narrative illustrations from all the participants, which provide a better understanding of the specific needs from the perspective of children, parents and teachers. In addition, this review categorized the

extracted findings using a similar structure to that of previous studies, which could help uncover the similarities and differences of perceived barriers and facilitators to physical activity when compared with other systematic reviews on this topic conducted among participants of different age groups, settings or countries.

A limitation is that publication bias cannot be ruled out as a non-peer reviewed thesis was included in this review, which may lower the methodological quality and the credibility of synthesized findings Moreover, the confidence of the recommendations may be compromised due to the poor quality of the included thesis based on the JBI critical appraisal tool. However, none of the theses or dissertations were left out internationally in the process of screening (see study inclusion). In addition, the majority of studies are not written in Chinese, which may lead to the conclusions being biased by a general view on China held by Western society. As one study was in Chinese and therefore a translation of extracted findings was conducted by reviewers, however, the credibility of synthesized findings may be reduced due to the language bias and the accuracy of the translation. In a similar way to previous Chinese systematic reviews, this review did not stratify the barriers and facilitators specific to children of different age and gender as a result of the included studies in this systematic review that have both children, teachers and parents and the majority of included studies did not report the barriers and facilitators according to children's gender. Considering that the perceived barriers and facilitators to physical activity may differ between younger and older children as well as boys and girls, future research may consider reporting the barriers and facilitators to children of different ages and genders independently. The review data offered limited insights into barriers and facilitators to physical activity specifically to ethnic Chinese children who reside in the non-Chinese territories since the synthesized findings were drawn from just four research studies that met the inclusion criteria. Of the seven studies conducted among children who reside in the Chinese territories, only six were published peer-reviewed studies and these studies were generally conducted in large Chinese cities, such as Beijing and Hongkong. Considering the limited number of included studies and the social differences between different jurisdictions in China, therefore, claims to have gained a universal understanding of barriers and facilitators for children residing in China cannot be made.

Conclusion

The reasons for physical inactivity in ethnic children are complex and multifactorial. A range of personal, social, environmental, and policy- and program-related barriers and facilitators have been identified which influence the participation in physical activity among ethnic Chinese children. Particularly, barriers and facilitators at the personal and socio-cultural level (e.g., parents and teachers) were most frequently cited, reflecting the importance of children's self-influence and the key role of adults play in shaping children's physical activity behaviors. There are fewer qualitative studies on this topic that have been conducted with Chinese children who reside in the non-Chinese territories than in the Chinese territories. It is important that future research examines this topic in ethnic Chinese Children living in the non-Chinese territories, given there is a large population of ethnic Chinese children living outside China and the differences noted regarding the barriers to physical activity between ethnic Chinese children who reside in the Chinese or non-Chinese territories. The focus on identified barriers and facilitators to physical activity in ethnic Chinese children will assist parents, health professionals, teachers and policymakers in developing successful physical activity programs to encourage and increase participation in physical activity within this population.

Recommendations for practice

Using the JBI guidance for recommendation development implications for practice have been identified and recommendations made.[87] Grade A recommendations are strong, and Grade B recommendations are weaker. On the strength of the ConQual Summary of Findings, it is recommended that future physical activity promotion practice needs to consider the children, parents and teachers' particular concerns as well as the unique Chinese social, cultural, environmental and policy- and program-related influences. Specific recommendations are listed in Table 2.

Insert "Table 2" here

Recommendations for research

This review identifies the issue of poor reporting of methodologies in the majority of the included

studies (except two studies conducted in Australia). It also highlights the overall poor reporting of the potential impact of the researcher on the study findings. In addition, the systematic review convincingly calls for more high-quality qualitative research into understanding the perceived barriers and facilitators to physical activity in ethnic Chinese children who reside in either Chinese or non-Chinese territories, particularly from the perspectives of teachers, parents and policymakers. To better increase physical activity level in ethnic Chinese children and help them establish healthy physical activity behaviors, future physical activity interventions might address these identified barriers and enhance the facilitators when developing interventions.

Conflict of interest

The authors declare no conflict of interest.

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References

1. Telama R. Tracking of physical activity from childhood to adulthood: a review. Obes Facts. 2009;2(3):187-95.
2. Direito A, Jiang Y, Whittaker R, Maddison R. Apps for improving fitness and increasing physical activity among young people: the AIMFIT pragmatic randomized controlled trial. J Med Internet Res. 2015;17(8):e210.
3. Gordon-Larsen P, Nelson MC, Popkin BM. Longitudinal physical activity and sedentary behaviour trends: adolescence to adulthood. Am J Prev Med. 2004;27(4):277-83.
4. Strong WB, Malina RM, Blimkie CJ, Daniels SR, Dishman RK, Gutin B, et al. Evidence based physical activity for school-age youth. J Pediatr. 2005;146(6):732-7.
5. Anderson DM, Bedini LA, Moreland L. Getting all girls into the game: physically active recreation for girls with disabilities. J Park Recreat Admi. 2005;23(4):78-104.
6. te Velde SJ, Lankhorst K, Zwinkels M, Verschuren O, Takken T, de Groot J, et al. Associations of sport participation with self-perception, exercise self-efficacy and quality of life among children and adolescents with a physical disability or chronic disease—a cross-sectional study. Sports Med Open. 2018;4(1):38-48.
7. Lee IM, Shiroma EJ, Lobelo F, Puska P, Blair SN, Katzmarzyk PT. Effect of physical inactivity on major non-communicable diseases worldwide: an analysis of burden of disease and life expectancy. Lancet. 2012;380(9838):219-29.
8. Wu XY, Han LH, Zhang JH, Luo S, Hu JW, Sun K. The influence of physical activity, sedentary behaviour on health-related quality of life among the general population of children and adolescents: A systematic review. PLoS One. 2017;12(11):e0187668.
9. Idler N, Teuner CM, Hunger M, Holle R, Ortlieb S, Schulz H, et al. The association between physical activity and healthcare costs in children–results from the GINIplus and LISAplus cohort studies. BMC public health. 2015;15(1):437-49.
10. Black N, Hughes R, Jones AM. The health care costs of childhood obesity in Australia: An instrumental variables approach. Economics & Human Biology. 2018;31(4):1-13.
11. Hardman AE, Stensel DJ. Physical activity and health the evidence explained. 2 ed. Stensel DJ, editor: London : Routledge; 2009; p. 207.
12. Veitch J, Bagley S, Ball K, Salmon J. Where do children usually play? A qualitative study of

parents' perceptions of influences on children's active free-play. Health Place. 2006;12(4):383-93.

13. Kneeshaw-Price S, Saelens B, Sallis J, Glanz K, Frank L, Kerr J, et al. Children's objective physical activity by location: why the neighborhood matters. Pediatr Exerc Sci. 2013;25(3):468-86.

14. Janssen I, LeBlanc AG. Systematic review of the health benefits of physical activity and fitness in school-aged children and youth. Int J Behav Nutr Phys Act. 2010;7(1):40-55.

15. WHO. Global recommendations on physical activity for health. Geneva, Switzerland: World Health Organization; 2010; p. 19.

16. Zhang ZL, Tang Y, Chen PJ, Liu Y, Cao ZB, YY H. Quan qiu shi yu xia wo guo cheng shi er tong qing shao nian sheng ti huo dong yan jiu - yi shanghai shi wei li 全球视域下我国城市儿童青少年身体活动研究 - 以上海市为例 [The report card of Chinese city children and youth physical activity based on AHKGA - take Shanghai as example]. Ti yu ke xue 体育科学 [China Sport Science] 2017;37(1):14-27.

17. Li PH, Wang M, Wang-Fu BH, 李培红, 王梅, 王富百慧. Zhong guo er tong qing shao nian shen ti huo dong shui ping yu quan qiu AHKG bao gao xiang guan zhi biao de bi jiao 中国儿童青少年身体活动水平与全球 AHKC 报告相关指标的比较 [Comparison of physical activity levels between Chinese children and youth and global AHKC reports]. Zhong guo jian kang jiao yu 中国健康教育 [Chinese Journal of Health Education]. 2017;33(2):99-102+19.

18. Song Y, Zhang R, Yang TB, Zhang B, Dong B, Ma J, et al. 2010 nian quan guo Zhong xiao xue sheng ti yu duan lian xing wei xian zhuang ji yuan yin fen xi 2010 年全国中小学生体育锻炼行为现状及原因分析 [Current situation and cause analysis of physical activity in Chinese primary and middle school students in 2010]. Bei jing da xue xue bao yi xue ban 北京大学学报（医学版）[Beijing Da Xue Xue Bao Yi Xue Ban]. 2012;44(3):347-54.

19. He LL, Lin L, 何玲玲, 林琳. Zhong guo cheng shi xue lin er tong huo dong bian hua qu shi 中国城市学龄儿童体力活动变化趋势 [The tendency of the physical activity level among school-aged urban children in China]. Zhong guo xue xiao wei sheng 中国学校卫生 [Chinese Journal of School Health]. 2016;37(4):636-40.

20. Lan ZL, Y L, 兰自力, 骆映. Xue xiao ti yu dui zhong xiao xue sheng xin li jian kang jiao yu ying xiang zuo yong tan tao 学校体育对中小学生心理健康教育影响作用探讨 [A research

on the effect of the physical education at school to students' mentality health education] Ti yu yu ke xue 体育与科学 [Journal of Sports and Science]. 2003;24(1):72-4.

21. Sun H, Ma Y, Han D, Pan C-W, Xu Y. Prevalence and trends in obesity among China's children and adolescents, 1985–2010. PLoS One. 2014;9(8):e105469.

22. Guo LZ, Liu R, Chen MX, Sun PF, CX W, 郭连增, et al. Zhong guo er tong qin shao nian fei pang yan jiu de san ge shi nian 中国儿童青少年肥胖研究的三个十年 [Three decades of research on childhood and adolescent obesity] Zhong guo quan ke yi xue 中国全科医学 [Chinese General Practice]. 2014;17(30):3531-5.

23. Ogden CL, Carroll MD, Kit BK, Flegal KM. Prevalence of obesity and trends in body mass index among US children and adolescents, 1999-2010. Jama. 2012;307(5):483-90.

24. Li Y, Yang X, Zhai F, Kok FJ, Zhao W, Piao J, et al. Prevalence of the metabolic syndrome in Chinese adolescents. Br J Nutr. 2008;99(3):565-70.

25. Ma JS, Wu JN, 马健生, 吴佳妮. Wei shen me xue sheng jian fu zheng ce nan yi jian cheng xiao? - lun xue ye fu dan de shi jian fen pei yu ji zhi 为什么学生减负政策难以见成效? - 论学业负担的时间分配本质与机制 [Why is the academic burden reduction policy hard to achieve? On the nature and mechanism of time allocation of academic burden]. Bei jing shi fan da xue xue bao she hui ke xue ban 北京师范大学学报 (社会科学版) [Journal of Beijing Normal University (Social Sciences)]. 2014;59(2):5-14.

26. Li M, Li S, Baur LA, Huxley RR. A systematic review of school‐based intervention studies for the prevention or reduction of excess weight among Chinese children and adolescents. Obe Rev. 2008;9(6):548-59.

27. Gao Y, Griffiths S, Chan EY. Community-based interventions to reduce overweight and obesity in China: a systematic review of the Chinese and English literature. J Public Health (Oxf). 2008;30(4):436-48.

28. Lin F, Wei DM, Lin ST, Maddison R, Mhurchu CN, Jiang YN, et al. Systematic review and meta-analysis of school-based obesity interventions in mainland China. PLoS One. 2017;12(9):e0184704.

29. Diep CS, Leung R, Thompson D, Gor BJ, Baranowski T. Physical activity behaviors and Influences among Chinese–American children aged 9–13 Years: a qualitative study. J Immigr Minor Health. 2017;19(2):358-66.

30. Chomitz VR, Brown A, Lee V, Must A, Chui KKH. Healthy living behaviors among Chinese–American preschool-aged children: results of a parent survey. J Immigr Minor Health. 2018;20(4):926-35.

31. Kao D, Gulati AC, Lee RE. Physical activity among Asian American adults in Houston, Texas: data from the health of Houston survey 2010. J Immigr Minor Health. 2016;18(6):1470-81.

32. Trigwell J, Murphy RC, Cable NT, Stratton G, Watson PM. Parental views of children's physical activity: a qualitative study with parents from multi-ethnic backgrounds living in England. BMC Public Health. 2015;15(1):1005-15.

33. Yang X. Rural–urban migration and mental and sexual health: a case study in Southwestern China. Health Psychol Behav Med. 2014;2(1):1-15.

34. Jiang LZ, Li CZ, 姜莉珍, 李臣之. Yang guang ti yu yun dong 1 xiao shi suo shui gui yin ji dui ce 阳光体育运动 1 小时"缩水"归因及对策[Attribution and countermeasures of "1-hour" shrinkage of sunshine sports]. Jiao yu yu guan li 教育与管理 [Journal of Teaching and Management]. 2017;33(30):21-4.

35. Lu SW, ZR L, 陆素文, 李志荣. Sheng tai yin su dui wo guo cheng shi qin shao nian shen ti huo dong xing wei ying xiang fen xi - yi jiang su wei li 生态因素对我国城市青少年身体活动行为影响分析 - 以江苏省为例 [Impact of ecological factors on physical activity behavior of urban youth in China: a case study of Jiangsu province]. Yun dong 运动 [Sport]. 2016;7(145):6-7+129.

36. Pang B, Macdonald D. Understanding young Chinese Australian's (dis) engagement in health and physical education and school sport. Phys Educ Sport Pedagogy. 2016;21(4):441-58.

37. Suen Y-n, Cerin E, Wu S-l. Parental practices encouraging and discouraging physical activity in Hong Kong Chinese preschoolers. J Phys Act Health. 2015;12(3):361-9.

38. He G, Cerin E, Huang WY, Wong SH. Understanding neighborhood environment related to Hong Kong children's physical activity: a qualitative study using nominal group technique. PLoS one. 2014;9(9):e106578.

39. Li B, Lin R, Liu W, Chen J, Liu W, Cheng K, et al. Differences in perceived causes of childhood obesity between migrant and local communities in China: a qualitative study. PLoS One. 2016;12(5):e0177505.

40. Li X, Zhou X, Hesketh T. Experiences and perspectives of children attending a weight loss camp in China: a qualitative study. Child Care Health Dev. 2016;42(5):644-51.

41. Zhang R, Li HF, 章茹, 李海峰. Jiang su sheng zhong xiao xue sheng can yu ti yu duan lian xing wei ying xiang yin su 江苏省中小学生参与体育锻炼行为影响因素分析 [Associated factors of physical exercise participation among primary and middle school students in Jinagsu]. Zhong guo xue xiao wei sheng 中国学校卫生 [Chinese Journal of School Health]. 2017;38(12):1793-5.

42. Chen LH, Zou YL, Song Y, Liu ZY, 陈林会, 邹玉玲, et al. Jiang su sheng zhong xiao xue sheng ti li huo dong ji ying xiang yin su yan jiu 江苏省中小学生体力活动及影响因素研究 [Physical activities of primary and middle school students and its influential factors in Jiangsu province]. Ti yu cheng ren jiao yu xue kan 体育成人教育学刊 [Journal of Sports Adult Education]. 2011;27(4):92-4.

43. Guan Y, 关颖. Wo guo da cheng shi shao nian er tong ti yu huo dong zhuang kuang ji ying xiang yin su tan xi 我国大城市少年儿童体育活动状况及影响因素探析 [The physical activity of teenagers and influence factors in big cities in China]. Tian jin ti yu xue yuan xue bao 天津体育学院学报 [Journal of Tianjin University of Sport]. 2005;20(3):28-31.

44. Cheng KY, Cheng PG, Mak KT, Wong SH, Wong YK, Yeung EW. Relationships of perceived benefits and barriers to physical activity, physical activity participation and physical fitness in Hong Kong female adolescents. J Sports Med Phys Fitness. 2003;43(4):523-9.

45. He Q, 何庆. Zhong xiao xue ti yu duan lian xi guan xing cheng de wai jie ying xiang yin su 中小学体育锻炼习惯形成的外界影响因素分析 [Analysis of influential factors to the formation of exercise habits among primary and middle school students]. Dang dai ti yu 当代体育[Contemporary Sports Technology]. 2015;5(11):252-3.

46. Liu F, Xie CL, 刘峰, 谢春丽. Zhong xue sheng ke wai ti yu can yu yan ji zong shu 中学生课外体育参与研究综述 [The review of the extracurricular exercise participation among middle school students]. Dang dai yan jiu 当代研究 [Modern Communication]. 2011;25(5):117-8.

47. Qian JL, Ma D, 钱建龙, 马丁. Zhong xue sheng ti yu huo dong yan jiu wen xian de zong shu 中学生体育活动研究文献的综述 [The review of the exercise and sports among middle school students]. Ti yu shi jie 体育世界 [Sports World (Scholarly)]. 2014;43(8):60-2.

48. Yuan AG, Lei Y, 袁爱国, 雷雨. Ying xiang xiao xue sheng ti zhi jian kang de yin su yu dui ce tao lun 影响小学生体质健康的因素与对策探讨 [Discussion on the influencing factors and countermeasure of physical health in elementary school students]. Shao yang xue yuan xue bao zi ran ke xue ban 邵阳学院学报(自然科学版) [Journal of Shaoyang University (Natural Science Edition)]. 2017;14(6):77-83.

49. Lu CC, Stolk RP, Sauer PJ, Sijtsma A, Wiersma R, Huang GW, et al. Factors of physical activity among Chinese children and adolescents: a systematic review. Int J Behav Nutr Phys Act. 2017;14(1):36-45.

50. Masoumi HE. Associations of built environment and children's physical activity: a narrative review. Rev Environ Health. 2017;32(4):315-31.

51. McAuley E, Blissmer B. Self-efficacy determinants and consequences of physical activity. Exerc Sport Sci Rev. 2000;28(2):85-8.

52. Riiskjær E, Ammentorp J, Kofoed P-E. The value of open-ended questions in surveys on patient experience: number of comments and perceived usefulness from a hospital perspective. Int J Qual Health Care. 2012;24(5):509-16.

53. O'Cathain A, Thomas KJ. "Any other comments?" Open questions on questionnaires–a bane or a bonus to research? BMC medical research methodology. 2004;4(1):25-31.

54. Cunningham M, Wells M. Qualitative analysis of 6961 free-text comments from the first National Cancer Patient Experience Survey in Scotland. BMJ Open. 2017;7(6):e015726.

55. Rich JL, Chojenta C, Loxton D. Quality, rigour and usefulness of free-text comments collected by a large population based longitudinal study-ALSWH. PLoS One. 2013;8(7):e68832.

56. Lockwood C, Porritt K, Munn Z, Rittenmeyer L, Salmond S, Bjerrum M. Chapter 2: systematic reviews of qualitative evidence. In: Aromataris E, Munn Z, editors. Joanna Briggs Institute Reviewer's Manual [Internet]. Adelaide (AU): The Joanna Briggs Institute, 2017. [cited 24 April 2018]. Available from: https://reviewersmanual.joannabriggs.org/.

57. Wang HQ, Blake H, Chattopadhyay K. Barriers and facilitators to physical activity among ethnic Chinese children: a systematic review protocol. JBI Database System Rev Implement Rep. 2019;17(0):1-8.

58. Liberati A, Altman DG, Tetzlaff J, Mulrow C, Gøtzsche PC, Ioannidis JP, et al. The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate health

1328 care interventions: explanation and elaboration. PLoS Med. 2009;6(7):e1000100.
1329 59. Endnote X8.2. Clarivate Analytics, PA, USA [Internet]. Endnote. 2017 [cited 24 Apr 2018].
1330 Available from: http://endnote.com.
1331 60. Joanna Briggs Institute. The System for the Unified Management, Assessment and
1332 Review of Information (SUMARI). 2017 [cited 24 Apr 2018]. Available from:
1333 https://www.jbisumari.org/.
1334 61. Dixon-Woods M, Booth A, Sutton AJ. Synthesizing qualitative research: a review of
1335 published reports. Qualitative Research. 2007;7(3):375-422.
1336 62. Lockwood C, Munn Z, Porritt K. Qualitative research synthesis: methodological guidance
1337 for systematic reviewers utilizing meta-aggregation. Int J Evid Based Healthc. 2015;13(3):179-
1338 87.
1339 63. Munn Z, Porritt K, Lockwood C, Aromataris E, Pearson A. Establishing confidence in the
1340 output of qualitative research synthesis: the ConQual approach. BMC Med Res Methodol.
1341 2014;14(1):108-14.
1342 64. Ha AS, Macdonald D, Pang BO. Physical activity in the lives of Hong Kong Chinese children.
1343 Sport Educ Soc. 2010;15(3):331-46.
1344 65. Wang Y, Yan AF, Shi X, Wang H, Wang Z, Gittelsohn J, et al. Child and parental perspectives
1345 on diet and physical activity decisions: implications for childhood obesity prevention in China.
1346 Asia Pac J Clin Nutr. 2017;26(5):888-98.
1347 66. Zhang J, Middlestadt SE, Ji C-Y. Psychosocial factors underlying physical activity. Int J Behav
1348 Nutr Phys Act. 2007;4(1):38-47.
1349 67. Zhang MM, Fan LH. Shan xi sheng chu zhong xue sheng ti yu xue xi dong ji ying xiang yin
1350 su ji pei yang ce lue yan jiu 山西省初中学生体育学习动机影响因素及培养策略研究
1351 [Study on the factors of motivation and influencing sports learning [Master's thesis]] [Master].
1352 Shanxi: Lin fen shan xi shi fan da xue 临汾: 山西师范大学 [Linfen: Shanxi Normal University];
1353 2015. [cited 18 Feb 2019]. Available from:
1354 http://kns.cnki.net/KCMS/detail/detail.aspx?dbcode=CMFD&dbname=CMFD201502&filename
1355 =1015606755.nh&uid=WEEvREdxOWJmbC9oM1NjYkZCbDdrdW1OMEorK2xkTGxBTllkYnR
1356 td0VrYlo=$R1yZ0H6jyaa0en3RxVUd8df-oHi7XMMDo7mtKT6mSmEvTuk11l2gFA!!&v=MDU0
1357 NjM2RzdXNEdOYkpxcEViUElSOGVYMUx1eFlTN0RoMVQzcVRyV00xRnJDVVJMT2ZZK1p1

RkNqa1VMN0tWRjI=

68. Pang B. Promoting physical activity in Hong Kong Chinese young people: factors influencing their subjective task values and expectancy beliefs in physical activity. Eur Phy Educ Rev. 2014;20(3):385-97.

69. Pang BOH, HA ASC. Parental concerns in facilitating children's physical activity participation in Hong Kong. Journal of Physical Education & Recreation (Hong Kong). 2008;14(1):39-46.

70. Pang B, Macdonald D, Hay P. 'Do I have a choice?'The influences of family values and investments on Chinese migrant young people's lifestyles and physical activity participation in Australia. Sport Educ Soc. 2015;20(8):1048-64.

71. Mason J. Qualitative researching. London: Sage; 2002; p.28.

72. Woolley K, Edwards K, Glazebrook C. Focus group or individual interviews for exploring children's health behaviour: the example of physical activity. Adv Pediatr Res. 2018;5(2):11-20.

73. Creswell JW, Poth CN. Qualitative inquiry and research design: Choosing among five approaches: Sage publications; 2017; p.132.

74. Vaismoradi M, Turunen H, Bondas T. Content analysis and thematic analysis: Implications for conducting a qualitative descriptive study. Nurs Health Sci. 2013;15(3):398-405.

75. Gale NK, Heath G, Cameron E, Rashid S, Redwood S. Using the framework method for the analysis of qualitative data in multi-disciplinary health research. BMC medical research methodology. 2013;13(1):117-24.

76. He LL, Wang XL, L L, 何玲玲, 王肖柳, 林琳. Zhong guo cheng shi xue lin er tong ti li huo dong ying xiang yin su: ji yu she hui sheng tai xue mo xing de zong shu 中国城市学龄儿童体力活动影响因素: 基于社会生态学模型的综述 [Factors associated with physical activity of school age children in Chinese cities: a systemic review based on a social ecological model]. Guo ji cheng shi gui hua 国际城市规划 [Urban Planning International]. 2016;31(4):10-5.

77. Taylor IM, Spray CM, Pearson N. The influence of the physical education environment on children's well-being and physical activity across the transition from primary to secondary school. J Sport Exerc Psychol. 2014;36(6):574-83.

78. Just Landed. The American school system. Madrid: Just Landed; [date unknown]. [updated unknown; cited 5 Mar 2019]. Available from:https://www.justlanded.com/english/United-

States/USA-Guide/Education/The-American-school-system.

79. Guo H, Yang Z, 郭华, 杨钊. Bei jing shi xiao xue sheng shi jian an pai yu sheng cun zhuang tai yan jiu 北京市小学生时间安排与生存状态研究 [Study on time arrangement and daily status of primary school students in Beijing]. Diao cha yu shi yan 调查与实验 [Educational Science Research]. 2008;29(11):31-2.

80. Rebort L. The school day and year (England). London: House of Commons; 2016. p. 16.

81. Yang X. 杨雪. Xiao xue di nian ji xue sheng de shi jian fen pei 小学低年级学生的时间分配 [The time distribution of junior students in primary school [Master's thesis]]. Nei meng gu nei meng gu shi fan da xue 内蒙古: 内蒙古师范大学 [Inner Mongolia: Inner Mongolia Normal 1253 University]. 2014. [cited 18 Feb 2019]. Available from:http://kns.cnki.net/KCMS/detail/detail.aspx?dbcode=CMFD&dbname=CMFD201501&filename=1014348601.nh&uid=WEEvREdxOWJmbC9oM1NjYkZCbDdrdW1OMEorK2xkTGxBTllkYnRtd0VrYlo=$R1yZ0H6jyaa0en3RxVUd8df-oHi7XMMDo7mtKT6mSmEvTuk11l2gFA!!&v=1MTcyNjFyQ1VSTE9mWStadUZDbmhVcnJNVkYyNkdyQzhGdGZNcnBFYlBJUjhlWDFMdXhZ UzdEaDFUM3FUcldNMUY=

82. Xue S, Zheng Q. 薛莎, 郑旗. 城市学校作息制度对小学生课外体育活动的影响 – 以山西省城市小学为例 Cheng shi xue xiao zuo xi dui xiao xue sheng ke wai ti yu huo dong de ying xiang – yi shan xi sheng cheng shi xiao xue wei li [The influence of city schools work and rest system on the elementary student extracurricular sports activities - taking Shanxi urban elementary school as an example [Master's thesis]]. Lin fen shan xi shi fan da xue 临汾: 山西师范大学 [Linfen: Shanxi Normal University]. 2012. [cited 18 Feb 2019]. Available from: http://kns.cnki.net/KCMS/detail/detail.aspx?dbcode=CMFD&dbname=CMFD2012&filename=1012341022.nh&uid=WEEvREdxOWJmbC9oM1NjYkZCbDdrdW1OMEorK2xkTGxBTllkYnRtd0VrYlo=$R1yZ0H6jyaa0en3RxVUd8dfoHi7XMMDo7mtKT6mSmEvTuk11l2gFA!!&v=MjEwODlEaDFUM3FUcldNMUZyQ1VSTE9mWStadUZDbmhVNy9CVkYyNkhMQzhIOUhPclpFYlBJ1269 UjhlWDFMdXhZUzc=

83. Roger P. Yes, Asia is obsessed with white skin Makati City: INQUIRER.net; 2016 [updated 1st October; cited 5 Mar 2019] Available from: https://business.inquirer.net/215898/yes-asia-is-obsessed-with-white-skin?utm_expid=.XqNw Tug2W6nwDVUSgFJXed.1.

84. Ridgers ND, Carter LM, Stratton G, McKenzie TL. Examining children's physical activity and

play behaviors during school playtime over time. Health Education Research. 2011;26(4):586-95.

85. Si Q, Cardinal BJ. The health impact of air pollution and outdoor physical activity on children and adolescents in Mainland China. J Pediatr. 2017;180(1):251-5.

86. Nathan N, Elton B, Babic M, McCarthy N, Sutherland R, Presseau J, et al. Barriers and facilitators to the implementation of physical activity policies in schools: a systematic review. Prev Med. 2018;107(2):45-53.

87. The Joanna Briggs Institute. New JBI grades of recommendation. 2014 [cited 18 Feb 2019]. [Available from: http://joannabriggs. org/assets/docs/approach/JBI-grades-of-recommendation_2014.pdf.

Appendix I

MEDLINE (1946-December 10th, 2018)

Search strategy

1. exp Physical Fitness/
2. exp Physical Education and Training/
3. exp Exercise/
4. exp Sports/
5. exp Sedentary Lifestyle/
6. (physical adj (fitness OR education OR training OR activit* OR inactivit*)).mp.
7. (exercise* OR sport* OR sedentariness).mp.
8. (sedentary adj (lifestyle OR behavio$r)).mp.
9. 1 OR 2 OR 3 OR 4 OR 5 OR 6 OR 7 OR 8
10. (barrier* OR imped* OR challenge* OR hinder* OR hindrance* OR obstacle* OR obstruct* OR deter* OR facilitat*).mp.
11. exp Qualitative Research/
12. exp Interview/
13. exp Focus Groups/
14. exp Cross-Sectional Studies/
15. exp Surveys and Questionnaires/
16. (qualitative OR interview* OR focus group* OR cross-sectional OR cross sectional OR survey*).mp.
17. 11 OR 12 OR 13 OR 14 OR 15 OR 16
18. 10 OR 17
19. exp Child/
20. exp Adolescent/
21. exp Students/
22. exp Minors/
23. (child* OR adolescen* OR student* OR minor* OR kid* OR teen* OR youth* OR young OR juvenile*).mp.
24. 19 OR 20 OR 21 OR 22 OR 23

25. exp Asian Continental Ancestry Group/
26. exp China/
27. (Chinese OR China).mp
28. 25 OR 26 OR 27
29. 9 AND 18 AND 24 AND 28

Embase (1947-December 10th, 2018)

Search strategy

1. exp fitness/
2. exp physical education/
3. exp training/
4. exp exercise/
5. exp sport/
6. exp sedentary lifestyle/
7. exp physical activity/
8. exp physical inactivity/
9. (physical adj (fitness OR education OR training OR activit* OR inactivit*)).mp.
10. (exercise* OR sport* OR sedentariness).mp.
11. (sedentary adj (lifestyle OR behavio?r)).mp.
12. 1 OR 2 OR 3 OR 4 OR 5 OR 6 OR 7 OR 8 OR 9 OR 10 OR 11
13. (barrier* OR imped* OR challenge* OR hinder* OR hindrance* OR obstacle* OR obstruct* OR deter* OR facilitat*).mp.
14. exp qualitative research/
15. exp interview/
16. exp cross-sectional study/
17. (qualitative OR interview* OR focus group* OR cross-sectional stud* OR cross sectional OR survey*).mp.
18. 14 OR 15 OR 16 OR 17
19. 13 OR 18
20. exp child/
21. exp adolescent/
22. exp student/
23. exp minor (person)/
24. exp juvenile/
25. (child* OR adolescen* OR student* OR minor* OR kid* OR teen* OR youth* OR young OR juvenile*).mp.

1496 26. 20 OR 21 OR 22 OR 23 OR 24 OR 25

1497 27. exp Asian continental ancestry group/

1498 28. exp China/

1499 29. exp Chinese/

1500 30. (Chinese OR China).mp

1501 31. 27 OR 28 OR 29 OR 30

1502 32. 12 AND 19 AND 26 AND 31

PsycINFO (1806-December 10th, 2018)

Search strategy

1. exp Physical Fitness/
2. exp Physical Education/
3. exp TRAINING/
4. exp EXERCISE/
5. exp SPORTS/
6. exp Sedentary Behavior/
7. exp Physical Activity/
8. (physical adj (fitness OR education OR training OR activit* OR inactivit*)).mp.
9. (exercise* OR sport* OR sedentariness).mp.
10. (sedentary adj (lifestyle OR behavio?r)).mp.
11. 1 OR 2 OR 3 OR 4 OR 5 OR 6 OR 7 OR 8 OR 9 OR 10
12. (barrier* OR imped* OR challenge* OR hinder* OR hindrance* OR obstacle* OR obstruct* OR deter* OR facilitat*).mp.
13. exp Qualitative Research/
14. exp INTERVIEWS/
15. exp SURVEYS/
16. (qualitative OR interview* OR focus group* OR cross-sectional OR cross sectional OR survey*).mp.
17. 13 OR 14 OR 15 OR 16
18. 12 OR 17
19. exp STUDENTS/
20. (child* OR adolescen* OR student* OR minor* OR kid* OR teen* OR youth* OR young OR juvenile*).mp.
21. 19 OR 20
22. (Chinese OR China OR Asian Continental Ancestry Group).mp
23. 11 AND 18 AND 21 AND 22

CINAHL (1937-December 10th, 2018)

Search strategy

S1. (MH "Physical Fitness+")

S2. (MH "Physical Education and Training"+)

S3. (MH "Exercise+")

S4. (MH "Sports+")

S5. (MH "Life Style, Sedentary")

S6. (MH "Physical Activity")

S7. TX (physical fitness OR physical education OR physical training OR physical activit* OR physical inactivit* OR exercise* OR sport* OR sedentariness OR sedentary lifestyle OR sedentary behavio*)

S8. S1 OR S2 OR S3 OR S4 OR S5 OR S6 OR S7

S9. TX (barrier* OR imped* OR challenge* OR hinder* OR hindrance* OR obstacle*OR obstruct* OR deter* OR facilitat*)

S10. (MH "Qualitative Studies+")

S11. (MH "Interviews+")

S12. (MH "Focus Groups")

S13. (MH "Cross Sectional Studies")

S14. (MH "Surveys+")

S15. TX (qualitative OR interview* OR focus group* OR cross-sectional OR cross sectional OR survey*)

S16. S10 OR S11 OR S12 OR S13 OR S14 OR S15

S17. S9 OR 16

S18. (MH "Child+")

S19. (MH "Adolescence+")

S20. (MH "Students+")

S21. (MH "Minors (Legal)")

S22. TX (child* OR adolescen* OR student* OR minor* OR kid* OR teen* OR youth* OR young OR juvenile*)

S23. S18 OR S19 OR S20 OR S21OR S22

S24. (MH "China+")

S25. (MH "Chinese+")

S26. TX (Chinese OR China)

S27. S24 OR S25 OR S26

S28. S8 AND S17 AND S23 AND S27

AMED (1985-December 10th, 2018),

Search strategy

1. exp Physical fitness/
2. exp Physical education/
3. exp Exercise/
4. exp Sports/
5. exp Sedentary Lifestyle/
6. (physical adj (fitness OR education OR training OR activit* OR inactivit*)).mp.
7. (exercise* OR sport* OR sedentariness).mp.
8. (sedentary adj (lifestyle OR behavio?r)).mp.
9. 1 OR 2 OR 3 OR 4 OR 5 OR 6 OR 7 OR 8
10. (barrier* OR imped* OR challenge* OR hinder* OR hindrance* OR obstacle* OR obstruct* OR deter* OR facilitat*).mp.
11. exp Interviews/
12. (qualitative OR interview* OR focus group* OR cross-sectional OR cross sectional OR survey*).mp.
13. 11 OR 12
14. 10 OR 13
15. exp Child/
16. exp Adolescent/
17. exp Students/
18. (child* OR adolescen* OR student* OR minor* OR kid* OR teen* OR youth* OR young OR juvenile*).mp.
19. 15 OR 16 OR 17 OR 18
20. exp China/
21. (Chinese OR China).mp
22. 20 OR 21
23. 9 AND 14 AND 19 AND 22

Scopus (1788-December 10th, 2018)

Search strategy

TITLE-ABS-KEY (physical fitness OR physical education OR physical training OR physical activit* OR physical inactivit* OR exercise* OR sport* OR sedentariness OR sedentary lifestyle OR sedentary behavio*) And (TITLE-ABS-KEY (barrier* OR imped* OR challenge* OR hinder* OR hindrance* OR obstacle* OR obstruct* OR deter* OR facilitat*) OR TITLE-ABS-KEY (qualitative OR interview* OR focus group* OR cross-sectional OR cross sectional OR survey*)) AND TITLE-ABS-KEY (child* OR adolescen* OR student* OR minor* OR kid* OR teen* OR youth* OR young OR juvenile*) AND TITLE-ABS-KEY (China OR Chinese)

Web of Science (1900-December 10th, 2018)

Search strategy

#1. TS=(physical fitness OR physical education OR physical training OR physical activit* OR physical inactivit* OR exercise* OR sport* OR sedentariness OR sedentary lifestyle OR sedentary behavio*)

#2. TS=(barrier* OR imped* OR challenge* OR hinder* OR hindrance* OR obstacle* OR obstruct* OR deter* OR facilitat*)

#3. TS=(qualitative OR interview* OR focus group* OR cross-sectional OR cross sectional OR survey*)

#4. #2 OR #3

#5. TS=(child* OR adolescen* OR student* OR minor* OR kid* OR teen* OR youth* OR young OR juvenile*)

#6. TS=(China OR Chinese)

#7. #1 AND #4 AND #5 AND #6

BNI (1993-December 10th, 2018)

Search strategy

1. exp Physical fitness/
2. exp Physical education/
3. exp Training/
4. exp Exercise/
5. exp Sports/
6. (physical adj (fitness OR education OR training OR activit* OR inactivit*)).mp.
7. (exercise* OR sport* OR sedentariness).mp.
8. (sedentary adj (lifestyle OR behavio?r)).mp.
9. 1 OR 2 OR 3 OR 4 OR 5 OR 6 OR 7 OR 8
10. (barrier* OR imped* OR challenge* OR hinder* OR hindrance* OR obstacle* OR obstruct* OR deter* OR facilitat*).mp.
11. exp Qualitative research/
12. exp Interviews/
13. exp Focus groups/
14. exp Polls & surveys/
15. (qualitative OR interview* OR focus group* OR cross-sectional OR cross sectional OR survey*).mp.
16. 11 OR 12 OR 13 OR 14 OR 15
17. 10 OR 16
18. exp Children & youth/
19. exp Teenagers/
20. exp Students/
21. exp Minors/
22. (child* OR adolescen* OR student* OR minor* OR kid* OR teen* OR youth* OR young OR juvenile*).mp.
23. 18 OR19 OR 20 OR 21 OR 22
24. (Chinese OR China).mp
25. 9 AND 17 AND 23 AND 24

CNKI (1979- December 10th, 2018)

Search strategy

SU ='身体健康' + '体育课' + '身体锻炼' + '训练' + '运动' + '体育' + '静坐行为' + '久坐' + '静坐活方式' + '身体活动' + '体力活动' AND SU =('影响' + '障碍' + '阻碍' + '妨碍'+'阻止' + '挑战' + '决定因素' + '促进' + '推动' + '推进')+('质性' + '采访' + '访谈' + '座谈' + '焦点组' + '横断面' + '调查') AND SU = '儿童' + '小孩' + '少年' + '青少年' + '学生' + '未成年' + '年轻人' AND SU = '中国'+ '我国'

Wanfang (1995- December 10th, 2018)

Search strategy

题名或关键词: ("身体健康" + "体育课" + "身体锻炼" + "训练" + "运动" + "体育" + "静坐行为" + "久坐"+ "静坐活方式" + "身体活动" + "体力活动") AND 题名或关键词:(("影响" + "障碍" + "阻碍" + "妨碍" +"阻止" + "挑战" + "决定因素" + "促进" + "推动" + "推进")+("质性" + "采访" + "访谈" + "座谈" + "焦点组" + "横断面" + "调查")) AND 题名或关键词:("儿童" + "小孩" + "少年" + "青少年" + "学生" + "未成年" + "年轻人") AND 题名或关键词:("中国" + "我国")

VIP (1989- December 10th, 2018)

Search strategy

M=("身体健康" + "体育课" + "身体锻炼" + "训练" + "运动" + "体育" + "静坐行为" + "久坐"+ "静坐活方式" + "身体活动" + "体力活动") AND M=(("影响" + "障碍" + "阻碍" + "妨碍" +"阻止" + "挑战" + "决定因素" + "促进" + "推动" + "推进")+("质性" + "采访" + "访谈" + "座谈" + "焦点组" + "横断面" + "调查")) AND M=("儿童" + "小孩" + "少年" + "青少年" + "学生" + "未成年" + "年轻人") AND M=（"中国" + "我国"）

Grey literature

ProQuest dissertation and thesis

Search strategy

ab,ti(physical fitness OR physical education OR physical training OR physical activit* OR physical inactivit* OR exercise* OR sport* OR sedentariness OR sedentary lifestyle OR sedentary behavio*) AND ab,ti((barrier* OR imped* OR challenge* OR hinder* OR hindrance* OR obstacle* OR obstruct* OR deter* OR facilitat*) OR (qualitative OR interview* OR focus group* OR cross-sectional OR cross sectional OR survey*)) AND ab,ti(child* OR adolescen* OR student* OR minor* OR kid* OR teen* OR youth* OR young OR juvenile*) AND ab,ti(China OR Chinese)

Open grey

Search strategy

(physical fitness OR physical education OR physical training OR physical activit* OR physical inactivit* OR exercise* OR sport* OR sedentariness OR sedentary lifestyle OR sedentary behavio*) AND((barrier* OR imped* OR challenge* OR hinder* OR hindrance* OR obstacle* OR obstruct* OR deter* OR facilitat*) OR (qualitative OR interview* OR focus group* OR cross-sectional OR cross sectional OR survey*)) AND (child* OR adolescen* OR student* OR minor* OR kid* OR teen* OR youth* OR young OR juvenile*) AND (China OR Chinese)

EthOS

Search strategy

physical activity OR physical fitness OR exercise OR sports OR sedentary AND Chinese

CNKI

Search strategy

TI ='身体健康' + '体育课' + '身体锻炼' + '训练' + '运动' + '体育' + '静坐行为' + '久坐' + '静坐活方式' + '身体活动' + '体力活动' AND TI =('影响' + '障碍' + '阻碍' + '妨碍'+'阻止' + '挑战' + '决定因素' + '促进' + '推动' + '推进')+('质性' + '采访' + '访谈' + '座谈' + '焦点组' + '横断面' + '调查') AND TI = '儿童' + '小孩' + '少年' + '青少年' + '学生' + '未成年' + '年轻人'

Wanfang

Search strategy

题名或关键词: ("身体健康" + "体育课" + "身体锻炼" + "训练" + "运动" + "体育" + "静坐行为" + "久坐"+ "静坐活方式" + "身体活动" + "体力活动") AND 题名或关键词:(("影响" + "障碍" + "阻碍" + "妨碍" +"阻止" + "挑战" + "决定因素" + "促进" + "推动" + "推进")+("质性" + "采访" + "访谈" + "座谈" + "焦点组" + "横断面" + "调查")) AND 题名或关键词:("儿童" + "小孩" + "少年" + "青少年" + "学生" + "未成年" + "年轻人") AND 题名或关键词:("中国" + "我国")

Appendix II: Excluded studies and reasons for their exclusion

Abdullah ASM, Wong CM, Yam HK, Fielding R, Asm A, Cm W, et al. Factors related to non-participation in physical activity among the students in Hong Kong. Int J Sports Med. 2005;26(7):611–5.

Reason for exclusion: Cross-sectional survey without free-text

Aldinger C, Zhang XW, Liu LQ, Pan XD, Yu SH, Jones J, et al. Changes in attitudes, knowledge and behavior associated with implementing a comprehensive school health program in a province of China. Health Educ Res. 2008;23(6):1049–67.

Reason for exclusion: Inappropriate phenomena of interest

Chan EWC, Au EYM, Chan BHT, Kwan MKM, Yiu PYP, Yeung EW. Relations among physical activity, physical fitness, and self-perceived fitness in Hong Kong adolescents. Percept Mot Skills. 2003;96(3):787–97.

Reason for exclusion: Cross-sectional survey without free-text

Chen H, Sun H, Dai J, Griffin M. Relationships among middle school students' expectancy beliefs, task values, and health-related fitness performance. J TEACH PHYS EDUC. 2017;36(1):40–9.

Reason for exclusion: Cross-sectional survey without free-text

Chen J, Unnithan V, Kennedy C. Exploring Chinese children's physical and sedentary activity. Asian J Nurs. 2006;9(1):17–25.

Reason for exclusion: Cross-sectional survey without free-text

Chen JL, Unnithan V, Kennedy C, Yeh CH. Correlates of physical fitness and activity in Taiwanese children. Int Nurs Rev. 2008;55(1):81–8.

Reason for exclusion: Cross-sectional survey without free-text

Cheng KY, Cheng PG, Mak KT, Wong SH, Wong YK, Yeung EW. Relationships of perceived benefits and barriers to physical activity, physical activity participation and physical fitness in Hong Kong female adolescents. J Sports Med Phys Fitness. 2003;43(4):523–9.

Reason for exclusion: Cross-sectional survey without free-text

Cheung PYP, Chow Bik C. Parental mediatory role in children's physical activity participation. Health Education. 2010;110(5):351–66.

Reason for exclusion: Cross-sectional survey without free-text

Dong F, Howard AG, Herring AH, Thompson AL, Adair LS, Popkin BM, et al. Parent-child associations for changes in diet, screen time, and physical activity across two decades in modernizing China: China Health and Nutrition Survey 1991-2009. Int J Behav Nutr Phys Act. 2016;13(1):118–128.

Reason for exclusion: Cross-sectional survey without free-text

Du S, Popkin BM. Barriers to physical activity among Chinese children and adolescents, 2000-2009. Obesity. 2011;19(1):S124–5.

Reason for exclusion: Full text unavailable

Eves FF, Masters RSW, McManus A, Leung M, Wong P, White MJ, et al. Contextual barriers to lifestyle physical activity interventions in Hong Kong. Med Sci Sports Exerc. 2008;40(5):965–71.

Reason for exclusion: Inappropriate phenomena of interest

Xu F, Li J, Liang Y, Wang Z, Hong X, Ware RS, et al. Associations of residential density with adolescents' physical activity in a rapidly urbanizing area of mainland China. J Urban Health. 2009;87(1):1–10.

Reason for exclusion: Cross-sectional survey without free-text

Gordon-Larsen P, McMurray RG, Popkin BM. Adolescent physical activity and inactivity vary by ethnicity: the national longitudinal study of adolescent health. J Pediatr. 1999;135(3):301–6.

Reason for exclusion: Cross-sectional survey without free-text

Green J, Waters E, Haikerwal A, O'Neill C, Raman S, Booth ML, et al. Social, cultural and environmental influences on child activity and eating in Australian migrant communities. Child Care Health Dev. 2003;29(6):441–8.

Reason for exclusion: Could not distinguish data about ethnic Chinese children

Chen H, Sun H, Dai J. Peer support and adolescents' physical activity: the mediating roles of self-efficacy and enjoyment. J Pediatr Psychol. 2017;42(5):569–77.

Reason for exclusion: Cross-sectional survey without free-text

Huang XH, Zhang J, Chen ZJ, Qu XP, Gu F, Ma HY, et al. A transtheoretical model-based analysis of sedentary behaviors in Chinese high school students. Int J Clin Exp Med. 2016;9(2):3820–30.

Reason for exclusion: Cross-sectional survey without free-text

Huang YJ. Socio-environmental correlates of physical activity and sedentary behaviors in primary school children in Hong Kong [PhD thesis]. Hong Kong: The Chinese University of Hong Kong. 2008.

Reason for exclusion: Cross-sectional survey without free-text

Duan J, Hu H, Wang G, Arao T. Study on current levels of physical activity and sedentary behavior among middle school students in Beijing, China. PLoS One. 2015;10(7):e0133544–e0133544.

Reason for exclusion: Cross-sectional survey without free-text

Ho KW, Louie LH, Wong WH, Chow CB. Association between overweight and obesity and school asset for physical activity. Obes Facts. 2014;7(Suppl 1):122–3.

Reason for exclusion: Cross-sectional survey without free-text

Leung KM, Chung PK, Kim S. Parental support of children's physical activity in Hong Kong. Eur Phy Educ Rev. 2017;23(2):141–56.

Reason for exclusion: Cross-sectional survey without free-text

Li K, Wen M. Racial and ethnic disparities in leisure-time physical activity in California: patterns and mechanisms. Race Soc Probl. 2013;5(3):147–56.

Reason for exclusion: Cross-sectional survey without free-text

Lin L. Leisure-time physical activity, objective urban neighborhood built environment, and

overweight and obesity of Chinese school-age children. J Transp Health. 2018;10(1):322–33.

Reason for exclusion: Cross-sectional survey without free-text

Liu Y, Zhang Y, Chen S, Zhang J, Guo Z, Chen P, et al. Associations between parental support for physical activity and moderate-to-vigorous physical activity among Chinese school children: a cross-sectional study. J Sport Health Sci. 2017;6(4):410–5.

Reason for exclusion: Cross-sectional survey without free-text

Lonsdale C, Sabiston CM, Raedeke TD, Ha AS, Sum RK. Self-determined motivation and students' physical activity during structured physical education lessons and free choice periods. Prev Med. 2009;48(1):69–73.

Reason for exclusion: Cross-sectional survey without free-text

Rhodes RE, Macdonald HM, McKay HA. Predicting physical activity intention and behaviour among children in a longitudinal sample. Soc Sci Med.2006;62(12):3146–56.

Reason for exclusion: Cross-sectional survey without free-text

Sham MKS. How parental attitudes on play affect children in Hong Kong [PhD thesis]. San Francisco Bay: Alliant international University. 2009.

Reason for exclusion: Full text unavailable

Li S, Zhao P. The determinants of commuting mode choice among school children in Beijing. J Transp Geogr. 2015;46(1):112–21.

Reason for exclusion: Cross-sectional survey without free-text

Shi X, Tubb L, Chen S, Fulda KG, Franks S, Reeves R, et al. Associations of health disparities and physical activity with children's health and academic problems. J Exerc Sci Fit. 2014;12(1):7–14.

Reason for exclusion: Cross-sectional survey without free-text

Sun L. Correlates of physical activity and physical activity change among Hong Kong Chinese adolescent girls: a mixed method study [PhD thesis]. Hong Kong: The Chinese University of Hong Kong. 2015.

Reason for exclusion: Cross-sectional survey without free-text

Todorovich J, Smith K. Chinese teachers' beliefs about inclusive physical education. J Phys Health Educ Recreat Dance. 2013;84(2):13–13.

Reason for exclusion: Cross-sectional survey without free-text

Tudor-Locke C, Ainsworth BE, Adair LS, Du S, Lee N, Popkin BM. Cross-sectional comparison of physical activity and inactivity patterns in Chinese and Filipino youth. Child Care Health Dev. 2007;33(1):59–66.

Reason for exclusion: Cross-sectional survey without free-text

Tudor-Locke C, Ainsworth BE, Adair LS, Du S, Popkin BM. Physical activity and inactivity in Chinese school-aged youth: the China Health and Nutrition Survey. Int J Obes. 2003;27(9):1093–9.

Reason for exclusion: Cross-sectional survey without free-text

Unger JB, Reynolds K, Shakib S, Spruijt-Metz D, Sun P, Johnson CA. Acculturation, physical activity, and fast-food consumption among Asian-American and Hispanic adolescents. J Community Health. 2004;29(6):467–81.

Reason for exclusion: Cross-sectional survey without free-text

Liu W, He MZ, Wang Y, Zhou Y, Wu M, Tang Z, et al. Differences in health-related behaviors between middle school, high school, and college students in Jiangsu province, China. Asia Pac J Clin Nutr. 2017;26(4):731–7.

Reason for exclusion: Cross-sectional survey without free-text

Huang WY, Wong SH, Salmon J. Correlates of physical activity and screen-based behaviors in Chinese children. J Sci Med Sport. 2013;16(6):509–14.

Reason for exclusion: Cross-sectional survey without free-text

Wang CKJ, Liu WC, Sun Y, Lim BSC, Chatzisarantis NL. Chinese students' motivation in physical activity: Goal profile analysis using Nicholl's achievement goal theory. Int J Sport Exerc Psychol. 2010;8(3):284–301.

Reason for exclusion: Cross-sectional survey without free-text

Wang L, Qi J. Association between family structure and physical activity of Chinese adolescents. Biomed Res Int. 2016;2016:4278682.

Reason for exclusion: Cross-sectional survey without free-text

Wang L, Tang Y, Luo J, L W, Y T, Wang L, et al. School and community physical activity characteristics and moderate-to-vigorous physical activity among Chinese school-aged children: a multilevel path model analysis. J Sport Health Sci. 2017;6(4):416–22.

Reason for exclusion: Cross-sectional survey without free-text

Wang X, Liu QM, Ren YJ, Lv J, Li LM. Family influences on physical activity and sedentary behaviours in Chinese junior high school students: a cross-sectional study. BMC Public Health. 2015;15(1):287–287.

Reason for exclusion: Cross-sectional survey without free-text

Wei X, Zang Y, Jia X, He X, Zou S, Wang H, et al. Age, period and cohort effects and the predictors of physical activity and sedentary behaviour among Chinese children, from 2004 to 2011. BMC Public Health. 2017;17(1):353–353.

Reason for exclusion: Cross-sectional survey without free-text

Wong BYM, Cerin E, Ho SY, Mak KK, Lo WS, Lam T-H. Adolescents' physical activity: competition between perceived neighborhood sport facilities and home media resources. Int J Pediatr Obes. 2010;5(2):169–76.

Reason for exclusion: Cross-sectional survey without free-text

Wong BY, Ho SY, Lo WS, Cerin E, Mak KK, Lam TH, et al. Longitudinal relations of perceived availability of neighborhood sport facilities with physical activity in adolescents: an analysis of potential moderators. J Phys Act Health. 2014;11(3):581–7.

Reason for exclusion: Cross-sectional survey without free-text

Guo X, Dai J, Xu P, Jamieson LM, He K. Sport facility proximity and physical activity: results from the Study of Community Sports in China. Eur J Sport Sci. 2015;15(7):663–9.

Reason for exclusion: Cross-sectional survey without free-text

Xiang P. Achievement goals and self-perceptions of ability in physical education: a cross-cultural perspective [PhD thesis]. Louisiana: Louisiana State University. 1996.

Reason for exclusion: Cross-sectional survey without free-text

Xu F, Wang XR, Xiang DD, Wang ZY, Ye Q, Robert SW. Awareness of knowledge and practice regarding physical activity: a population-based prospective, observational study among students in Nanjing, China. PLos One. 2017;12(6):e0179518.

Reason for exclusion: Cross-sectional survey without free-text

Yan JH, McCullagh P. Cultural influence on Youth's motivation of participation in physical activity. J Sport Behav. 2004;27(4):378–90.

Reason for exclusion: Cross-sectional survey without free-text

Yeung DC, Yuan X, Hui SS, Feresu SA. Determinants of moderate to vigorous physical activity and obesity in children: a structural equation modeling analysis. World J Pediatr. 2016;12(2):170–6.

Reason for exclusion: Cross-sectional survey without free-text

Zhang Y, Piao W, Ji Y. Social determinants of health behaviors in primary school children: a cross-sectional study of both migrant and resident children in Beijing, China. Journal of Huazhong University of Science and Technology (Medical Sciences). 2016;36(2):289–94.

Reason for exclusion: Cross-sectional survey without free-text

Yu SY, Hao ZS, Li XT, Meng PJ. 于少勇，郝宗帅，李小涛，蒙鹏军. Wo guo nong cun qing shao nian ti zhi zhuang kuang ji qi ying xiang yin su 我国农村青少年体质状况及其影响因素研究述评 [Review on rural adolescents' physique of China and the influencing factors]. Jia zhi gong cheng 价值工程 [Value Engineering]. 2013;32(27):9–11.

Reason for exclusion: Cross-sectional survey without free-text

He LL, Lin L, Fu YL. 何玲玲，林琳，伏玉玲. Shang hai shi xue lin er tong jiao tong xin ti li huo

dong ji ying xiang yin su 上海市学龄儿童交通性体力活动及影响因素分析 [Correlates of transport related physical activity of school-age children in Shanghai [Master's thesis]]. Shang hai hua dong shi fan da xue 上海：华东师范大学 [Shanghai: East China Normal University]. 2017.

Reason for exclusion: Cross-sectional survey without free-text

Liu, CQ. 刘家庆. Chang chun shi qu chu zhong ke wai ti yu huo dong kai zhan xian zhuang ji fa zhan dui ce yan jiu 长春市区初中课外体育活动开展现状及发展对策研究 [Changchun city junior middle school extracurricular sports activities situation and development countermeasures [Master's thesis]]. Chang chun dong bei shi fan da xue 长春：东北师范大学［Changchun: Northeast Normal University]. 2011.

Reason for exclusion: Cross-sectional survey without free-text

Liu XL, Chen HP. 刘晓丽, 陈洪平. Wo guo qing shao nian jia tin ti yu qian fa da de ying xiang yin su 我国青少年家庭体育欠发达的影响因素分析 [Analysis of influence factors developed in adolescent family sports in China]. An hui ti yu ke ji 安徽体育科技 [Journal of Anhui Sports Science]. 2014;35(6):13–5.

Reason for exclusion: Cross-sectional survey without free-text

Zhuo W, Jin Y. 卓威, 金玉. Jiang su sheng xin yi shi gao Zhong xue sheng ti yu tai du de xian zhuang diao cha ji dui ce yan jiu 江苏省新沂市高中学生体育态度的现状调查及对策研究 [Investigation on the present situation of sports attitude of senior high school students in Xinyi city of Jiangsu province [Master's thesis]]. Yang zhou yang zhou da xue 扬州：扬州大学 [Yangzhou: Yangzhou University]. 2012.

Reason for exclusion: Cross-sectional survey without free-text

Dan D. 单丹. Wo guo qing shao nian ti yu duan lian xing wei xi guan yao cheng de ying xiang yin su 我国青少年体育锻炼行为习惯养成的影响因素及对策 [Influencing factors and

countermeasures of adolescents' physical activity habits in China]. Ke cheng jiao yu yan jiu 课程教育研究 [Course education research]. 2018;(19):197.

Reason for exclusion: Cross-sectional survey without free-text

Bu SC, Zhao Y. 卜昭灿, 赵勇. Ji ning di qu nong cun chu zhong sheng ti yu duan lian xing wei xian zhuang de diao cha yu pei yang dui ce yan jiu 济宁地区农村初中学生体育锻炼行为现状的调查与培养对策研究 [The research on status quo and training strategy of Jining rural junior middle school students' physical exercise behaviors [Master's thesis]]. Jin an shan dong ti yu xue yuan 济南：山东体育学院 [Jinan: Shandong Sport University]. 2012.

Reason for exclusion: Cross-sectional survey without free-text

Lu HM. 卢慧敏. Qing shao nian ti yu huo dong xian zhuang diao cha 青少年体育活动现状调查. [Investigation on the current situation of teenagers' sports activities]. Zhong xue sheng 中学生. 2007;78(10):4–9.

Reason for exclusion: Cross-sectional survey without free-text

Lu QS. 吕青山. Ji lin shi nong cun chu zhong xue xiao ti yu xian zhuang diao cha yu dui ce fen xi 吉林市农村初中学校体育现状调查与对策分析 [City junior high school physical education in rural areas investigation and analysis [Master's thesis]]. Chang chun dong bie shi fan da xue 长春: 东北师范大学 [Changchun: Northeast Normal University]. 2009.

Reason for exclusion: Cross-sectional survey without free-text

Wu LM. 吴玲敏. Ying xiang wo guo qing shao nian ti shi neng shui pin de she hui yin su tan tao 影响我国青少年体适能水平的社会学因素探讨 [Sociological factors to the physical fitness of adolescents in China]. Ti yu yan jiu yu jiao yu 体育研究与教育 [Sports Research and Education]. 2015;30(3):50–5.

Reason for exclusion: Cross-sectional survey without free-text

Zhou LJ, Larry DH. 周丽君, 莱利·汉斯利. Zhong mei qing shao nian can jia ti yu huo dong ying xiang yin su de bi jiao yan jiu 中美青少年参加体育活动影响因素的比较研究 [A comparative study on factors impacting on adolescents' physical activity participation with different genders and grades in some selected areas in China and USA]. Bei jing ti yu da xue xue bao 北京体育大学学报 [Journal of Beijing Sport University]. 2008;31(9):1247–9.

Reason for exclusion: Cross-sectional survey without free-text

Zhou LJ. 周丽君. Guan yu ying xiang zhong mei qing shao nian can jia ti yu huo dong yin su de bi jiao yan jiu 关于影响中美青少年参加体育活动因素的比较研究 [Comparative study on factors affecting on physical activities of adolescents in China and USA]. Zhe jiang ti yu ke xue 浙江体育科学 [Zhejiang Sports Science]. 2000;22(3):14–7.

Reason for exclusion: Cross-sectional survey without free-text

Zhou LJ, Yu KH, Larry DH. 周丽君, 于可红, 莱利·汉斯利. Ying xiang zhong mei liang guo qing shao nian can jia ti yu huo dong yin su de bi jiao yan jiu 影响中、美两国青少年参加体育活动因素的比较研究 [Comparative study on the factors impacting on children Student's physical activity participation in China and USA]. Zhong guo ti yu ke ji 中国体育科技 [China Sport Science and Technology]. 2007;43(4):27–31.

Reason for exclusion: Cross-sectional survey without free-text

Zhou CY, Zhang ZY. 周传玉, 张志勇. Pin yin xian chu zhong da yuan jiao xue shi jian zhongcu jin xue sheng ti yu xue xi de yan jiu 平阴县初中单元教学实践中促进学生体育学习的研究 [Research on promoting students' physical education learning in junior middle school's teaching practice in Pingyin county [Master's thesis]]. Ji nan shan dong shi fan da xue 济南：山东师范大学 [Jinan: Shandong Normal University]. 2013.

Reason for exclusion: Cross-sectional survey without free-text

Zhou BQ. 周本权. Xiao xue ti yu ke cheng kai fa li yong de ying xiang yin su yan jiu 小学体育课程资源开发利用的影响因素研究 [Research on the influencing factors of the exploration and utilization of PE curriculum resources in primary schools]. Xue sheng zhi you xiao xue ban 学生之友(小学版). 2012;32(19):59.

Reason for exclusion: Cross-sectional survey without free-text

Zhou RN, Fu H. 周热娜, 傅华. Shang hai shi qing shao nian he zhong qing nian shen ti huo dong de ying xiang yin su yan jiu 上海市青少年和中青年身体活动的影响因素研究 [Influencing factors of physical activity among adolescent and middle-age adults in Shanghai [Master's thesis]]. Shang hai fu dan da xue 上海:复旦大学［Shanghai: Fudan University]. 2013.

Reason for exclusion: Cross-sectional survey without free-text

Zhou HW, Fu GQ. 周红伟, 傅钢强. Wo guo qing shao nian hu wai jiao yu kai zhuan xian zhuang diao cha ji fen xi 我国青少年户外教育开展现状调查及分析 [Investigation and analysis on the current situation of outdoor education for teenagers in China]. Qing shao nian ti yu 青少年体育. 2013;2(4):24–6.

Reason for exclusion: Cross-sectional survey without free-text

Zhou, R, Zhou DS. 周融, 周登嵩. Bei jing shi cheng qu zhong xiao xue sheng jia tin huan jing dui xue xiao xiao wai ti yu huo dong can yu ying xiang de yan jiu 北京市城区中小学生家庭环境对学生校外体育活动参与影响的研究 [Study on the effect of the family environment on the participation in physical activity for students in primary and secondary schools in the urban area in Beijing [Master's thesis]]. Bei jing shou du ti yu xue yuan 北京：首都体育学院 ［Beijing: Capital University of Physical Education and Sports]. 2012.

Reason for exclusion: Cross-sectional survey without free-text

Zhou Y, Li DG. 周阳, 李登光. Xi an shi zhong zhi xue sheng can jia ke wai ti yu duan lian tai

du xing wei xian zhuang diao cha yan jiu 西安市中职学生参加课外体育锻炼态度、行为现状调查研究 [Investigation and research on attitudes and behaviors of secondary vocational school students participating in extracurricular physical exercise in Xi'an [Master's thesis]]. Xi an xi an shi fan da xue 西安：西安师范大学 [Xi'an: Shanxi Normal University]. 2009.

Reason for exclusion: Cross-sectional survey without free-text

Yao DL. 姚大林. Wo guo xue sheng ti zhi jian kang zhuang kuang xia jiang de she hui xue yan jiu 我国学生体质健康状况下降的社会学研究 [The sociology research on the state of decline of physical fitness of students]. Ha er bin ti yu xue yuan xue bao 哈尔滨体育学院学报 [Journal of Harbin Institute of Physical Education]. 2009;27(1):68–71.

Reason for exclusion: Not a primary study

Sun YF, Bao HS. 孙元芳, 宝红升. Zhong de qing shao nian xiu xian ti yu wen hua dui bi yan jiu 中德青少年休闲体育文化对比研究 [A contrastive study of Chinese and German youth leisure sports culture]. Ti yu wen hua dao kan 体育文化导刊 [Sports Culture Guide]. 2017;35(6):157–61.

Reason for exclusion: Cross-sectional survey without free-text

Song XL, Xiao LP. 宋秀丽, 肖林鹏. Wo guo xue sheng ti zhi jian kang jiao yu xian zhaung fen xi 我国学生体质健康教育现状分析 [Analysis on the current situation of physical health education for students in China]. Ti yu wen hua dao kan 体育文化导刊 [Sports Culture Guide]. 2012;30(5):103–6.

Reason for exclusion: Cross-sectional survey without free-text

Song C, Yu XP, Ding CC, Liu AL, Zhen, BJ. 宋超, 于欣平, 丁彩翠, 李荔, 刘爱玲, 甄宝杰. Shan dong sheng san cheng shi 3-4 nian ji xiao xue sheng xian xia duan lian ji jin tai huo dong fen xi 山东省三城市3～4年级小学生闲暇锻炼及静态活动分析 [Status of exercise and

sedentary activities in the leisure time among third and fourth grade pupils in three cities of Shandong province]. Wei sheng yan jiu 卫生研究 [Journal of hygiene research]. 2015;44(3):398–406.

Reason for exclusion: Cross-sectional survey without free-text

Song Y, Zhang X, Yang TB, Zhang B, Dong B, Ma J. 宋逸, 张芯, 杨土保, 张冰, 董彬, 马军. 2010 nian quan guo zhong xiao xue sheng ti yu duan lian xing wei xian zhuang ji yuan yin fen xi 2010年全国中小学生体育锻炼行为现状及原因分析 [Current situation and cause analysis of physical activity in Chinese primary and middle school students in 2010] . Bei jing da xue xue bao yi xue ban 北京大学学报（医学版）[Beijing Da Xue Xue Bao Yi Xue Ban]. 2012;44(3):347–54.

Reason for exclusion: Cross-sectional survey without free-text

Shang KB. 尚克标. Ying xiang wo guo qing shao nian ti yu duan lian can yu yi shi de yin su yu dui ce tan xi 影响我国青少年体育锻炼参与意识的因素与对策探析 [Restricting awareness of youth participation in physical exercise factors and countermeasures in China]. Shan dong ti yu ke ji 山东体育科技 [Shandong Sports Science & Technology]. 2010;32(4):90–2.

Reason for exclusion: Cross-sectional survey without free-text

Cui ZL. 崔志林. Wo guo qing shao nian ti zhi jian kang ying xiang yin su fen xi ji dui ce tan tao 我国青少年体质健康影响因素分析及对策探讨 [Analysis on influencing factors of adolescents' physical health in China and discussion on countermeasures]. Zhong guo gao xin qu 中国高新区 [Science & Technology Industry Parks]. 2018;18(4):71.

Reason for exclusion: Not a primary study

Chang F. 常凤. Wo guo xue sheng ti zhi jian kang xin ying xiang yin su ji jian kang cu jin ce lue yan jiu 我国学生体质健康新影响因素及健康促进策略研究 [New Impact Factors and Health

promotion strategies of students' physical health in China]. Hu bei ti yu ke ji 湖北体育科技 [Hubei Sports Science]. 2017;36(7):616- 618+654.

Reason for exclusion: Not a primary study

Pang JH. 庞金华. Ying xiang wo guo zhong xiao xue sheng ti zhi jian kang de yin su ji dui ce yan jiu 影响我国中小学生体质健康的因素及对策研究 [Study on the factors affecting the physical health of primary and secondary school students in China and the countermeasures]. Xin ke cheng gai ge yu shi jian 新课程改革与实践. 2009;4(10):1.

Reason for exclusion: Cross-sectional survey without free-text

Liao ZF. 廖钟锋. Wo guo qing shao nian ti zhi yu jian kang xian zhuang tou xi ji dui ce yan jiu 我国青少年学生体质与健康现状透析及对策研究 [Analysis and countermeasure on the current situation of physical fitness and health of adolescents in China]. Guang xi jiao yu xue yuan xue bao 广西教育学院学报 [Journal of Guangxi College of Education]. 2014;29(3):162–5.

Reason for exclusion: Cross-sectional survey without free-text

Zhang Y. 张亚. Wo guo ming ban zhong xue xue sheng can jia ke wai ti yu huo dong xian zhuang de yan jiu. 我国民办中学学生参加课外体育活动现状的研究 [Research on the current situation of participation in physical activities after class of managed by the people middle school student of our country]. Shang qiu shi fan xue yuan xue bao 商丘师范学院学报 [Journal of Shangqiu Teachers College]. 2010;26(9):130----133+136.

Reason for exclusion: Cross-sectional survey without free-text

Zhang ZL, Tang, Y, Hu YY. 张加林, 唐炎, 胡月英. Wo guo er tong qing shao nian ti yu huan jin te zheng yu cun zai wen ti yan jiu 我国儿童青少年体育环境特征与存在问题研究 [Analysis on characters of children & youth’s sport environment as well as existing problems in China]. Ti yu ke xue 体育科学 [China Sport Science]. 2017;37(3):21----34+97.

Reason for exclusion: Not a primary study

Zhang ZL, Tang Y, Chen PJ, Liu Y, Cao ZB, Hu YY, et al. 张加林, 唐炎, 陈佩杰, 刘阳, 曹振波, 胡月英, et al. Quan qiu shi yu xia wo guo cheng shi er tong qing shao nian sheng ti huo dong yan jiu – yi shang hai shi wei li 全球视域下我国城市儿童青少年身体活动研究 - 以上海市为例 [The report card of Chinese city children and youth physical activity based on AHKGA – take Shanghai as example]. Ti yu ke xue 体育科学 [China Sport Science]. 2017;37(1):14–27.

Reason for exclusion: Cross-sectional survey without free-text

Zhang DC, Li M. 张大超, 李敏. Ying xiang wo guo zhong xiao xue sheng ti zhi jian kang fa zhan de zhu yao yin su yu dui ce yan jiu 影响我国中小学生体质健康发展的主要因素与对策研究 [On main influencing factors and countermeasures of development of primary and middle school students' physical health in China]. Bei jing ti yu da xue xue bao 北京体育大学学报 [Journal of Beijing Sport University]. 2009;32(11):76----80+83.

Reason for exclusion: Cross-sectional survey without free-text

Zhang Y, Wang HT. 张悦, 王海涛. Jia tin gan yu dui xiao xue sheng ti li huo dong de ying xiang yan jiu – yi qian an shi mu chang kou wu nian ji xue sheng wei li 家庭干预对小学生体力活动的影响研究 – 以迁安市木厂口小学五年级学生为例 [Effects of family intervention on physical activity of primary school students – a case study of the grade five students in Muchangkou primary school of Qian'an [Master's thesis]]. Shi jia zhuang hei bei shi fan da xue 石家庄：河北师范大学 [Shijiazhuang: Hebei Normal University]. 2017.

Reason for exclusion: Cross-sectional survey without free-text

Zhang CS. 张成胜. Wo guo qing shao nian ti zhi jian kang ying xiang yin su yu ying dui ce lue yan jiu 我国青少年体质健康影响因素与应对策略研究 [Study on influencing factors and coping

strategies of adolescents' physical health in China]. Ti yu shi you 体育师友. 2016;39(6):53–5.

Reason for exclusion: Not a primary study

Zhang N, Wang HZ. 张楠, 王华倬. Bei jing cheng qu xiao xue xue sheng jia tin ti yu xian zhuang ji ying xiang yin su 北京市城区小学学生家庭体育现状及影响因素分析 [Analysis on present situation and influencing factors of family sports of primary school students in Beijing urban area [Master's thesis]]. Bei jing bei jing ti yu da xue 北京: 北京体育大学 [Beijing: Beijing Sport University]. 2005.

Reason for exclusion: Cross-sectional survey without free-text

Zhang HH, Liao FX. 张海红, 廖福祥. Qian xi ying xiang wo guo nong cun xiao xue ti yu jiao yu jiao xue gai ge de yuan yin ji dui ce 浅论影响我国农村小学体育教学改革的原因及对策 [On the reasons and countermeasures of influencing the reform of physical education in rural primary schools in China]. Zhong guo jiao yu xue kan 中国教育学刊 [Journal of the Chinese Society of Education]. 1989;10(6):52-54.

Reason for exclusion: Not a primary study

Zhang T. 张涛. Zhong guo qing hsao nian ke wai ti yu duan lian xian Zhuang ji ying xiang yinsu fen xi 中国青少年课外体育锻炼现状及影响因素分析 [Current situation and influencing factors of Chinese youth extracurricular physical exercise]. Shang商[Business]. 2016;0(11):102.

Reason for exclusion: Not a primary study

Zhang CC. 张灿灿. Qing dao shi nan qu bu fen xue xiao zhong xue sheng jia tin ti yu huo dong xian zhuang de diao cha yu yan jiu 青岛市南区部分学校中学生家庭体育活动现状的调查与研究 [The investigation and research in Qingdao city middle school students of the family sports activities in some schools [Master's thesis]]. Shang hai hua dong shi fan da xue 上海: 华东师范大学 [Shanghai: East China Normal University]. 2011.

Reason for exclusion: Cross-sectional survey without free-text

Zhang X, Song Y, Yang TB, Zhang B, Dong B, Ma J. 张芯, 宋逸, 杨土保, 张冰, 董彬, 马军. 2010 nian zhong guo zhong xiao xue sheng mei tian ti yu duan lian 1 xiao shi xian zhuang ji ying xiang yin su 2010年中国中小学生每天体育锻炼1小时现状及影响因素 [Analysis of current situation of physical activity and influencing factors in Chinese primary and middle school students in 2010]. Zhong hua yu fang yi xue za zhi 中华预防医学杂志 [Zhonghua Yu Fang Yi Xue Za Zhi]. 2012;46(9):781–8.

Reason for exclusion: Cross-sectional survey without free-text

Zhang F, Xu YY. 张飞, 徐元玉. Cong qing shao nian ti zhi jian kang xian zhuang shi jiao dui zhong xue sheng ti yu jiao xue de diao cha yan jiu 从青少年体质健康现状视角对中学体育教学的调查研究 [Investigation and research on middle school physical education from the perspective of adolescents' physical health [Master's thesis]]. Yang zhou yang zhou da xue 扬州:扬州大学 [Yangzhou: Yangzhou University]. 2011.

Reason for exclusion: Cross-sectional survey without free-text

Zhang F, Wu YH. 张飞, 武云化. Xi an shi cheng xiang 6-7 sui er tong ge xing dui ti yu xue xi xin qu tai du ying xiang yan jiu 西安市城乡6-7岁儿童个性对体育学习兴趣、态度影响研究 [A study on the influence of personality on sports learning interest and attitude of children aged 6-7 in urban and rural areas of Xi'an [Master's thesis]]. Kun ming yun nan shi fan da xue 昆明:云南师范大学 [Kunming: Yunnan Normal University]. 2013.

Reason for exclusion: Cross-sectional survey without free-text

Xu ZS, Wei GH. 徐卓妤, 魏冠华. Zhong xue sheng xue xi xin qu diao cha fen xi – yi hua dongshi da erf u zhong wei li 中学生体育学习兴趣调查分析 - 以华东师大二附中附属初中为例 [Investigation and analysis on students' learning interest in physical education - take affiliated junior middle school of second affiliated middle school of East China Normal University as an

2152 example]. Ti yu ke ji wen xian tong bao 体育科技文献通报 [Bulletin of Sport Science &
2153 Technology]. 2017;25(4):83–5.

2154 **Reason for exclusion: Cross-sectional survey without free-text**

2155 Xu YQ. 徐扬清. Guan yu wo guo zhong xue sheng sheng ti duan lian xian zhuang diao cha fen
2156 xi 关于我国中学生身体锻炼现状调查与分析 [Investigation and analysis of physical exercise
2157 status of middle school students in China]. Kuai le yue du 快乐阅读. 2015;0(2):29.

2158 **Reason for exclusion: Cross-sectional survey without free-text**

2159 Ge S, Chi J. 戈莎, 池建. Sheng tai yin su dui wo guo cheng shi qing shao nian shen ti huo
2160 dong xing wei ying xiang yan jiu 生态因素对我国城市青少年身体活动行为影响的研究 [Effect
2161 of ecological factors on physical activity of urban adolescents in China [PhD thesis]]. Bei jing ti
2162 yu da xue 北京：北京体育大学［Beijing: Beijing Sport University]. 2012.

2163 **Reason for exclusion: Cross-sectional survey without free-text**

2164 Cen SH. 曾淑惠. Pu tian shi cheng qu qing shao nian er tong ke wai ti yu huo dong xian zhuang
2165 diao cha fen xi 莆田市城区少年儿童课外体育活动现状调查分析 [Investigation and analysis of
2166 the present situation of children's extracurricular sports activities in Putian city]. Qin shao nian
2167 ti yu 青少年体育. 2017;0(2):116-8.

2168 **Reason for exclusion: Cross-sectional survey without free-text**

2169 Cen YL, Gong ZW. 曾银莲, 龚正伟. Ban zhu ren ti yu can yu dui xue sheng ti yu xing wei ying
2170 xiang yan jiu 班主任体育参与对学生体育行为影响研究 [Research into the influence of
2171 headteachers' sports involvement upon student' physical behavior [Master's thesis]]. Chang
2172 sha hu nan shi fan da xue 长沙：湖南师范大学 [Changsha: Hunan Normal University]. 2008.

2173 **Reason for exclusion: Cross-sectional survey without free-text**

2174 Zhu XY, Pan S. 朱欣阳, 潘晟. Su zhou chu zhong ban zhu ren lao shi de ti yu yi shi dui xue

2175 sheng ti yu xing wei ying xiang de yan jiu 苏州市初中班主任老师的体育意识对学生体育行为影
2176 响的研究 [A study about influence of junior middle school teachers'-in-charge PE awareness
2177 on their students' PE behavior in Suzhou city [Master's thesis]]. Su zhou su zhou da xue 苏州：
2178 苏州大学［Suzhou: Soochow University]. 2013.

2179 **Reason for exclusion: Cross-sectional survey without free-text**

2180 Li HS. 李会帅. Wo guo qing shao nian ti yu can yu ying xiang yin su fen xi 我国青少年体育参
2181 与影响因素分析 [Analysis of influencing factors of youth sports participation in China]. Fu zhi
2182 shi dai 智富时代 [The Fortune Times]. 2017;0(1):358.

2183 **Reason for exclusion: Not a primary study**

2184 Li W, Zhou B. 李伟, 周兵. Chu zhong ti yu yu jian kang jiao xue zhong cu jin xue sheng zhu
2185 dong can yu de ce lue yan jiu 初中体育与健康教学中促进学生主动参与的策略研究 [Strategies
2186 for promoting students' active participation in junior middle school physical education and health
2187 teaching [Master's thesis]]. Nan jing nan jing shi fan da xue 南京：南京师范大学[Nanjing:
2188 Nanjing Normal University]. 2011.

2189 **Reason for exclusion: Cross-sectional survey without free-text**

2190 Li PH, Wang M. 李培红, 王梅. Zhong guo er tong qing shao nian shen ti huo dong xian zhuang
2191 ji xiang guan ying xiang yin su 中国儿童青少年身体活动现状及相关影响因素. [Investigation on
2192 Chinese children and youth physical activity status and influence factors]. Zhong guo xue xiao
2193 wei sheng 中国学校卫生 [Chinese Journal of School Health]. 2016;37(6):805–809+813.

2194 **Reason for exclusion: Cross-sectional survey without free-text**

2195 Li Q, Yu WQ. 李强, 于文谦. Chu zhong ti yu ke xue sheng zhu ti can yu de diao cha yan jiu 初
2196 中体育课学生主体参与的调查研究 [Investigation and research on students' participation in
2197 physical education in junior middle school [Master's thesis]]. Da lian liao ning shi fan da xue 大

连：辽宁师范大学［Dalian: Liaoning Normal University]. 2004.

Reason for exclusion: Cross-sectional survey without free-text

Li N. 李楠. Guan yu cu jin wo guo qing shao nian ti yu can yu de yan jiu 关于促进我国青少年体育参与的研究 [Research on improving teenagers' participation in sports]. Ti yu ke ji wen xian tong bao 体育科技文献通报 [Bulletin of Sport Science & Technology]. 2015;(10):129–30.

Reason for exclusion: Not a primary study

Li S, Wang XX. 李爽, 王秀香. Da lian shi 14-17 sui cheng shi qing shao nian can jia ke wai ti yu duan lian de xian zhuang yu fen xi 大连市14-17岁城市青少年参加课外体育锻炼的现状调查与分析 [The investigation and analysis of status on youth aged 14-17 to participate in extra-curricular physical activity in Dalian [Master's thesis]]. Da lian liao ning shi fan da xue 大连：辽宁师范大学 [Dalian: Liaoning Normal University]. 2009.

Reason for exclusion: Cross-sectional survey without free-text

Li YY, Xu YY, Hu ML. 李瑛瑛, 徐元玉, 胡曼玲. Yang zhou chu zhong xue sheng ti yu xu qiu de diao cha yan jiu 扬州市初中学生体育需求的调查研究 [Investigation and research on sports needs of junior middle school students in Yangzhou city [Master's thesis]]. Yang zhou yang zhou da xue 扬州：扬州大学 [Yangzhou: Yangzhou University]. 2018.

Reason for exclusion: Cross-sectional survey without free-text

Li M, Wang XC. 李萌, 王晓春. Shi jia zhuang gao zhong xue sheng sheng tai ti yu yi shi yu xing wei de diao cha yan jiu 石家庄市高中学生生态体育意识与行为的调查研究 [Investigation on the ecological sports consciousness and the physical behaviors of high students in Shijiazhuang [Master's thesis]]. Shen yang shen yang ti yu da xue 沈阳：沈阳体育大学［Shenyang: Shenyang Sport University]. 2010.

Reason for exclusion: Cross-sectional survey without free-text

Li YS, Wang J. 李页思, 王健. Tian jin shi nan kai zhong xue xue sheng can yu ti li huo dong fang shi yu ri chang sheng huo xi guan diao cha bao gao 天津市南开中学学生参与体力活动方式与日常生活习惯调查报告 [Investigation report on physical activity styles and daily life habits of students in Nankai middle school in Tianjin [Master's thesis]]. Tian jin tian jin ti yu xue yuan 天津：天津体育学院 Tianjin: Tianjin University of Sport. 2014.

Reason for exclusion: Cross-sectional survey without free-text

Yang J, Luo, J. 杨娇, 罗炯. She hui zhi chi ji can yu dong ji dui qing shao nian huo dong can yu de ying xiang yan jiu 社会支持及参与动机对青少年运动参与的影响研究 [Social support and participation motivation influenced the sport participation of the youth [Master's thesis]]. Ching qing xi nan shi fan da xue 重庆：西南师范大学 [Chongqing: Southwest Normal University]. 2017.

Reason for exclusion: Cross-sectional survey without free-text

Yang Y, Chen PJ, Wu YQ, Shao ZY, Peng NN, Zou DH. 杨漾, 陈佩杰, 吴艳强, 邵宗义, 彭宁宁, 邹大华. Shang hai shi xue sheng shen ti su zhi xian zhaung ji qi ying xiang yin su fen xi 上海市学生身体素质现况及其影响因素分析 [Current situation of students' physical fitness in Shanghai and analysis of its influencing factors]. Zhong guo xue xiao wei sheng 中国学校卫生 [Chinese Journal of School Health]. 2012;33(8):1007–10.

Reason for exclusion: Cross-sectional survey without free-text

Yang TL, Liu HY, Chen J. 杨铁黎, 刘海元, 陈钧. Dui wo guo zhong xue key u xun lian xian zhuang diao cha yu fen xi 对我国中学课余训练现状调查与分析 [Investigation and analysis of after-class physical training situations in middle schools in China]. Shou du ti yu xue yuan xue bao 首都体育学院学报 [Capital University of Physical Education and Sports]. 2004;16(2):20–3.

Reason for exclusion: Cross-sectional survey without free-text

Sang CY. 桑传跃. Ti yu jiao shi dui xue sheng ti zhi jian kang xia jiang yuan yin de si kao ji fen xi 体育教师对学生体质健康下降原因的思考及分析 [Physical education teachers' consideration and analysis of the reasons for the decline of students' physical fitness]. Shi chang zhou kan li lun yan jiu 市场周刊(理论研究) [Market Weekly]. 2016;39(9):133–6.

Reason for exclusion: Cross-sectional survey without free-text

Liang X. 梁霄. Ying xiang wo guo qing shao nian ti zhi jian kang de zhu yao yin su ji dui ce yan jiu 影响我国青少年体质健康的主要因素及对策研究 [Study on the main factors affecting the physical health of adolescents and the countermeasures in China]. Chi feng xue yuan xue bao zi ran ke xue ban 赤峰学院学报(自然科学版) Journal of Chifeng University (Natural Science Edition). 2012;28(10):143–4.

Reason for exclusion: Not a primary study

Tang MY, Chen PY. 汤梅燕, 陈培友. Jiang su sheng zhong xiao xue xue sheng ti yu huo dong ji ying xiang yin su yan jiu 江苏省中小学学生体力活动及影响因素研究 [Influencing factors of physical activity for primary and secondary school students in Jiangsu province [Master's thesis]]. Nan jing nan jing shi fan da xue 南京：南京师范大学 [Nanjing: Nanjing Normal University]. 2014.

Reason for exclusion: Cross-sectional survey without free-text

Tu ZC, Wang FX. 涂琢成, 王飞雄. Bu ji gao ji zhong xue xue sheng ti yu ke xue xi xin qu de diao cha yu yan jiu 布吉高级中学学生体育课学习兴趣的调查与研究 [Investigation and research on student's interest in physical education in Buji senior middle School [Master's thesis]]. Xi an shan xi shi fan da xue 西安：陕西师范大学［Xi'an: Shanxi Normal University]. 2018.

Reason for exclusion: Not a primary study

Wang W, Shen Y. 王伟, 沈越. Shang hai shi xi nan pian qu chu zhong xue sheng yu xian ti yu xian zhuang diao cha ji yan jiu 上海市西南片初中学生余暇体育现状调查及研究 [Investigation on the current situation of leisure sports in junior middle school students in Southwest Shanghai [Master's thesis]]. Shang hai shang hai shi fan da xue 上海：上海师范大学 [Shanghai: Shanghai Normal University]. 2012.

Reason for exclusion: Cross-sectional survey without free-text

Wang DE, Du FQ, Han YJ. 王佃娥, 杜发强, 韩亚娟. Wo guo cheng shi qing shao nian xiao wai ti yu duan lian xing wei bian hua jie duan yu bian hua cheng xu guan xi de yan jiu 我国城市青少年校外体育锻炼行为变化阶段与变化程序关系的研究 [Relationship between the stage and process of exercise behavior of teenagers]. Guang zhou ti yu xue yuan xue bao 广州体育学院学报 [Journal of Guangzhou Sport University]. 2018;38(1):11–6.

Reason for exclusion: Cross-sectional survey without free-text

Wang Q, Fang XP. 王奇, 方新普. Wo guo qing shao nian ti zhi xia jiang you yin fen xi ji gai shan tu jing 我国青少年学生体质下降诱因分析及改善途径 [Analysis of the causes of the physical fitness decline in Chinese adolescent students and its solutions]. An hui shi fan da xue xue bao zi ran ke xue ban 安徽师范大学学报(自然科学版) [Journal of Anhui Normal University (Natural Science)]. 2015;38(4):392–6.

Reason for exclusion: Not a primary study

Wangfu BH, Wang M, Zhang YF, Wu DM, Feng Q, Cai R, et al. 王富百慧, 王梅, 张彦峰, 武东明, 冯强, 蔡睿, et al. Zhong guo jian tin ti yu duan lian xing wei te dian ji dai ji hu dong guan xi yan jiu 中国家庭体育锻炼行为特点及代际互动关系研究 [Study on the characteristics and interactive relationship of family physical exercise in China]. Ti yu ke xue 体育科学 [China Sport Science]. 2016;36(11):31–8.

Reason for exclusion: Not a primary study

Wang JX, Lu AM. 王建鑫, 陆阿明. Nan tong qing shao nian ti yu fa zhan ying xiang yin su diao cha yan jiu 南通青少年体育发展影响因素调查研究 [Research on influential factors of sports development among the teenagers in Nantong [Master's thesis]]. Su zhou su zhou da xue 苏州：苏州大学 [Suzhou: Soochow University]. 2016.

Reason for exclusion: Cross-sectional survey without free-text

Wang ZH, Dong YH, Song Y, Yang ZP, Ma J. 王政和, 董彦会, 宋逸, 杨忠平, 马军. Zhong guo 2014 nian 9-22 sui xue sheng ti yu duan lian shi jian bu zu 1 xiao shi de liu xing xian zhuang yu ying xiang yin su fen xi 中国2014年9～22岁学生体育锻炼时间不足1小时的流行现状与影响因素分析 [Analysis on prevalence of physical activity time <1 hour and related factors in students aged 9—22 years in China, 2014]. Zhong hua liu xing bin xue za zhi 中华流行病学杂志 [Chinese Journal of Epidemiology]. 2017;38(3):341-5.

Reason for exclusion: Cross-sectional survey without free-text

Wang Y, Zheng JF. 王英, 郑风家. Zhi yue yan bian chao xian zu zi zhi zhou nong cun xiao xue ti yu jiao yu fa zhan de yin su ji dui ce yan jiu 制约延边朝鲜族自治州农村小学体育教育发展的因素及对策研究 [The study on factors and countermeasures of restricting the development of rural primary physical education in the Yanbian Korean autonomous prefecture [Master's thesis]]. Chang chun dong bei shi fan da xue 长春：东北师范大学[Changchun: Northeast Normal University]. 2010.

Reason for exclusion: Cross-sectional survey without free-text

Sheng JL, Huang LM, Wang DW, Zhang XH, Liu YY, Dong QG, et al. 盛俊林, 黄丽敏, 王大为, 张新华, 刘燕颖, 董勤广, et al. Zhong guo hei long jiang ri ben bei hai dao 8-18 sui nan zi xue sheng ti zhi xian zhuang diao cha yan jiu 中国黑龙江、日本北海道8～18岁男子学生体质现状调查研究 [Investigation on physical fitness of 8-18-year-old male students in Heilongjiang

province and Hokkaido, Japan]. Ha er bin xue yuan xue bao jiao yu 哈尔滨学院学报(教育) [Journal of Harbin University. 2001;22(5):61–5.

Reason for exclusion: Inappropriate phenomena of interest

Cheng L, Li Q, Song Y, Ma J, Wang HJ. 程兰, 李钦, 宋逸, 马军, 王海俊. Zhong guo 9-11 sui xiao xue sheng ti yu duan lian jin tai xing wei he chao zhong yu fei pang de guan xi 中国9-11岁小学生体育锻炼、静态行为和超重与肥胖的关系 [Association of physical activities, sedentary behaviors with overweight /obesity in 9-11-year-old Chinese primary school students]. Bei jing da xue xue bao yi xue ban 北京大学学报(医学版) [Beijing Da Xue Xue Bao Yi Xue Ban]. 2016;48(3):436–41.

Reason for exclusion: Cross-sectional survey without free-text

Cheng J. 程娟. Wo guo zhong xiao xue xue xiao ti yu jiao xue xian zhuang zhu yao wen ti de diao chao yan jiu 我国中小学学校体育教学现状主要问题的调查研究 [Investigation on the main problems of physical education teaching in primary and secondary schools in China. Ren jian 人间. 2016;202(7):99.

Reason for exclusion: Not a primary study

Cheng HL, Yuan JG. 程龙海, 袁建国. Wen zhou xiang zhen jiang qing shao nian ti yu fa zhan xian zhuang ji ying xiang yin su yan jiu 温州乡镇青少年体育发展现状及影响因素研究[Research and developments status and the effects of physical factor of adolescents in Wenzhou township [Master's thesis]]. Wen zhou wen zhou da xue 温州：温州大学 [Wenzhou: Wenzhou University]. 2014.

Reason for exclusion: Cross-sectional survey without free-text

Fu HL. 符黄良. Zhong guo qing shao nian ke wai ti yu duan lian xian zhaung ji ying xiang yin su yan jiu 中国青少年课外体育锻炼现状及影响因素研究 [Research on the current situation and influencing factors of Chinese teenagers' extracurricular physical exercise]. Wen zhai ban

jiao yu 文摘版:教育. 2015;0(1):153.

Reason for exclusion: Cross-sectional survey without free-text

Mao, J. 缪佳. Cu jin qing shao nian shen xin jian kang yu wo guo jin ji ti yu fa zhan 促进青少年身心健康与我国竞技体育发展 [Improving Youngsters' physical and mental health and the development of China's competitive sports]. Ti yu ke yan 体育科研 [Sport Science Research]. 2014;35(1):25–7.

Reason for exclusion: Not a primary study

Luo J, Tang Y, Gong LZ. 罗炯, 唐炎, 公立政. Xi nan di qu qing shao nian ke wai ti yu duan lian xing wei xian zhuang ji fang ai yin su yan jiu bao gao 西南地区青少年课外体育锻炼行为现状及妨碍因素研究报告 [Research report on the status-quo and restrictive factors on the extracurricular physical exercises of the teenagers in Southwest China]. Bei jing ti yu da xue xue bao 北京体育大学学报 [Journal of Beijing Sport University]. 2012;35(1):80–6.

Reason for exclusion: Cross-sectional survey without free-text

Luo Y, Wang XM. 罗锐 王晓明. Si chuan sheng zhong xiao cheng shi qing shao nian xiu xian ti yu kai zhan qing kuang diao cha ji dui ce yan jiu 四川省中小城市青少年休闲体育开展情况调查及对策研究 [Research on developing situation of leisure sports in small and medium-sized cities of Sichuan province and solutions [Master's thesis]]. Cheng du si chuan shi fan da xue 成都：四川师范大学 [Chengdu: Sichuan Normal University]. 2010.

Reason for exclusion: Cross-sectional survey without free-text

Hu YM. 胡亚明. Zhong xi fang ti yu wen hua cha yi dui wo guo xue xiao ti yu jiao yu ying xiang de yan jiu 中西方体育文化差异对我国学校体育教育影响的研究 [A study on the impact of the differences between Chinese and Western sports culture on school physical education in China]. Ke cheng jiao yu yan jiu 课程教育研究 [Course Education Research]. 2015;4(5):207.

Reason for exclusion: Not a primary study

Hu M. 胡明. Wo guo zhong xue sheng ti zhi xia jiang yuan yin pou xi yu dui ce 我国中学生体质下降原因剖析与对策 [Analysis of the reasons for the physical fitness decline in middle school students in China and the countermeasures]. Liao ning shi zhuan xue bao 辽宁师专学报：自然科学版 [Journal of Normal College (Natural Science Edition)]. 2002;23(4):76-8.

Reason for exclusion: Not a primary study

Fan RY, Tang Y. 范卉颖, 唐炎. Shang hai shi 13-15 sui qing shao nian chu zhong ke wai ti li huo dong de te zheng ji ying xiang yin su 上海市13-15岁青少年（初中）课外体力活动的强度特征及影响因素 [Intensity characteristics and influencing factors of extracurricular physical activity in adolescents (13-15) in Shanghai [Master's thesis]]. Shang hai shang hai ti yu xue yuan 上海: 上海体育学院 [Shanghai: Shanghai University of Sport]. 2017.

Reason for exclusion: Not a primary study

Fan LR, Gu MR, Wang HZ, Yu X, Liu MJ, Wang XN. 范立仁, 顾美蓉, 王华倬, 于秀, 刘玫瑾, 王小宁. Quan guo xue sheng can jia kw wai ti yu huo dong xian zhuang de yan jiu 全国学生参加课外体育活动现状的研究 [A national survey on students' physical activity after school]. Ti yu ke xue 体育科学 [Sport Science]. 2000;20(2):7–11.

Reason for exclusion: Cross-sectional survey without free-text

Cai YH, Wang Y. 蔡颖辉, 王越. Wo guo zhong xiao xue xiao yu jia tin ti yu lia dong ji zhi de zhi yue yin su he fa zhan ce lue fen xi 我国中小学校与家庭体育联动机制的制约因素和发展策略分析 [Analysis on the restrictive factors and strategies of the linkage mechanism between primary and secondary schools and family sports in China]. Ji lin sheng jiao yu xue yuan xue bao 吉林省教育学院学报 [Journal of Education Institute of Jilin Province]. 2016;32(4):24–6.

Reason for exclusion: Not a primary study

Xue YX, Tang ZY. 薛应心, 唐征宇. Zhong dong bu di qu cheng shi gao zhong sheng ti yu huo dong xian zhaung de bi jiao yan jiu – yi he nan sheng xi xia xian he pu tuo qu wei an li 中、东部地区城市高中生体育活动现状的比较研究 - 以河南省西峡县和上海市普陀区为案例 [Survey and comparative study of senior high school students' physical activities between central region and the eastern region city of China - Xixia county of Henan province and the Shanghai Putuo district as a case [Master's thesis]]. Shang hai hua dong shi fan da xue 上海：华东师范大学 [Shanghai: East China Normal University]. 2009.

Reason for exclusion: Cross-sectional survey without free-text

Xue SE, Xiong Y. 薛苏娥, 熊焰. Si yang di qu liu shou er tong ti yu can yu xing wei diao cha yan jiu 泗阳地区留守儿童体育参与行为调查研究 [Siyang left-behind children's sports participation survey [Master's thesis]]. Su zhou su zhou da xue 苏州：苏州大学 [Suzhou: Soochow University]. 2017.

Reason for exclusion: Cross-sectional survey without free-text

Xie H, Chen LN, Xu GQ. 谢红, 陈立农, 徐国琴. Nong cun xiao xue liu shou er tong ke wai huo dong xian zhuang diao cha ji dui ce yan jiu 农村小学留守儿童课外体育活动现状调查及对策研究 – 以双鄀县为例 [Current situation of ex-curricular sports activities in rural primary school left-behind children investigation and countermeasure research - with a Shuangpai county as an example [Master's thesis]]. Guang zhou guang zhou ti yu da xue 广州: 广州体育学院 [Guangzhou: Guangzhou Sport University]. 2017.

Reason for exclusion: Cross-sectional survey without free-text

Tan XC, Yao HZ. 谭小春, 姚辉洲. Fu mu wen hua cheng du yu zhi ye di wei dui er tong yu ti yu xing wei de ying xiang yan jiu 父母文化程度与职业地位对儿童参与体育行为的影响研究 [A study on influence of parents' education level and occupational status on children's participation

of sports [Master's thesis]]. Gui lin guang xi shi fan da xue 桂林：广西师范大学 [Guilin: Guangxi Normal University]. 2011.

Reason for exclusion: Cross-sectional survey without free-text

Yun FQ, Dong DL, Zhang XG. 员富强, 董德龙, 张喜光. Qing shao nian ti li huo dong te zheng yu cu jin ce lue yan jiu 青少年体力活动特征与促进策略研究 - 以聊城为例 [A study on physical activity characteristics and promoting strategies of adolescents - take Liaocheng as an example [Master's thesis]]. Yan tai lu dong da xue 烟台：鲁东大学 [Yantai: Ludong University]. 2018.

Reason for exclusion: Cross-sectional survey without free-text

Jia LJ, Peng XW. 贾丽娟, 彭小伟. Ying xiang wo guo qing shao nian ti zhi jian kang de jiao yu xue yin su fen xi 影响我国青少年体质健康的教育学因素分析 [An analysis of educational factors affecting the physical health of adolescents in China]. He bei ti yu xue yuan xue bao 河北体育学院学报 [Journal of Hebei Institute of Physical Education]. 2013;27(1):54–6.

Reason for exclusion: Not a primary study

Jia C. 贾灿. Jia tin ti yu dui wo guo qing shao nian ti zhi de ying xiang fen xi 家庭体育对我国青少年体质的影响分析 [An analysis of the impact of family sports on physical fitness of adolescents in China]. Wu shu yan jiu 搏击·武术科学. 2015;12(5):103–4.

Reason for exclusion: Not a primary study

Zhao JL, Feng HL. 赵俊玲, 冯惠玲. Yin chuan shi zhong xiao xue sheng ti zhi xia jiang yuan yin de diao cha fen xi 银川市中小学生体质下降原因的调查分析 [Analysis of the causes of physical fitness decline of primary and secondary school students in Yinchuan city]. Ning xia da xue xue bao zi ran ke xue ban 宁夏大学学报(自然科学版) [Journal of Ningxia University (Natural Science Edition)]. 2010;31(1):98–100.

Reason for exclusion: Cross-sectional survey without free-text

Zhao N, Huang J, Wang QH. 赵楠, 黄健, 王青辉. Nong cun liu shou er tong ti yu can yu yu xian zhuang diao cha ji dui ce yan jiu 农村留守儿童体育参与现状调查及对策研究 [Research and countermeasures on sports conditions of rural stay-at-home children-taking Dong Changfu district of Liaocheng as an example [Master's thesis]]. Yan tai lu dong da xue 烟台：鲁东大学 [Yantai: Ludong University]. 2017.

Reason for exclusion: Cross-sectional survey without free-text

Zhao YY, Zhang YL. 赵莹莹, 张雅玲. Re dai di qu xiao xue sheng ti yu duan lian qin xu xiao ying de diao cha yan jiu 热带地区小学生体育锻炼情绪效应的调查研究 [Research on Emotional effects of physical exercise about pupils in tropical areas]. Hai nan shi fan da xue 海南师范大学学报(自然科学版) [Journal of Hainan Normal University (Natural Science)]. 2015;28(3):338–42.

Reason for exclusion: Cross-sectional survey without free-text

Deng XM, Yang X. 邓西明, 杨霞. Kun ming chu zhong xue sheng ke wai ti yu duan lian dui xue sheng ti zhi jian kang de yan jiu 昆明市初中学生课外体育锻炼对学生体质健康影响的研究 [Study on the effect of extracurricular physical exercise on physical health of junior middle school students in Kunming [Master's thesis]]. Kun ming yun nan da xue 昆明：云南师范大学 [Kunming: Yunnan Normal University]. 2015.

Reason for exclusion: Cross-sectional survey without free-text

Qiu Y. 邱远. Ying xiang wo guo xue sheng jian kang she hui huai jin yin su ji qi ti yu gan yu dui ce yan jiu 影响我国学生健康的社会环境因素及其体育干预对策研究 [A study on the socio-environmental factors affecting students' health and the intervenient measures of sports]. Bei jing ti yu da xue xue bao 北京体育大学学报 [Journal of Beijing Sport University]. 2004;27(1):85–7.

Reason for exclusion: Not a primary study

Bu YF, Du L, Li SL. 部义峰, 杜蕾, 李双林. Zhong xue sheng tao bi ti yu duan lian xing wei ji ying xiang ji zhi 中学生逃避体育锻炼行为及影响机制 [A study of middle school students' physical exercise evading behavior and its affecting mechanism]. Ti yu xue kan 体育学刊 [Journal of Physical Education]. 2017;24(4):120–7.

Reason for exclusion: Cross-sectional survey without free-text

Guo JQ, Liu YH, Yu YS, Fang YJ, Wei GH. 郭俊清, 刘永焕, 于友三, 房英杰, 魏国辉. Xin shi ji chu wo guo bu fen cheng shi qing shao nian jia tin ti yu xian zhuang diao cha yan jiu 新世纪初我国部分城市青少年家庭体育现状调查研究 [Survey and research on adolescents family sports of our country in 21th century]. Ha er bin ti yu xue yuan xue bao 哈尔滨体育学院学报 [Journal of Harbin Institute of Physical Education]. 2010;27(6):22–5.

Reason for exclusion: Cross-sectional survey without free-text

Guo Q, Wang XZ. 郭强, 汪晓赞. Zhong guo er tong qing shao nian shen ti huo dong shui ping ji qi ying xiang yin su de yan jiu 中国儿童青少年身体活动水平及其影响因素的研究 [The influencing factors on physical activity level among children and adolescents in China [PhD thesis]]. Shang hai hua dong shi fan da xue 上海: 华东师范大学 [Shanghai: East China Normal University]. 2016.

Reason for exclusion: Cross-sectional survey without free-text

Guo YY, Shi B. 郭昱漾, 史兵. Xiao xue liu nian ji xue sheng ti yu su yang diao cha yu fen xi 小学六年级学生体育素养调查与分析 [Analysis of physical education literacy of sixth grade primary school students [Master's thesis]]. Xi an shan xi shi fan da xue 西安：陕西师范大学 [Xi'an: Shanxi Normal University]. 2014.

Reason for exclusion: Cross-sectional survey without free-text

Guo YH, Shi Y, Zhang YH, Li X. 郭艳花, 史岩, 张永红, 李鑫. Qing shao nian ti yu duan lian

ping jing wen ti ji qi dui ce yan jiu 青少年体育锻炼瓶颈问题及其对策研究 [Bottleneck problems and countermeasure of juvenile physical exercise]. Hu bei ti yu ke ji 湖北体育科技[Hubei Sports Science]. 2017;36(10):922----924+935.

Reason for exclusion: Cross-sectional survey without free-text

Jin SF. 金福顺. Wo guo chao xian cu zhong xue jiao yu xian zhuang diao cha fen xi 我国朝鲜族中学体育教育现状调查分析 [Investigation and analysis on the current situation of sports education in Korean middle school s in China]. Shen yang ti yu xue bao 沈阳体育学院学报 [Journal of Shenyang Physical Education Institute]. 2006;25(4):88–90.

Reason for exclusion: Cross-sectional survey without free-text

Jin QY. 金秋艳. Wo guo qing shao nian ti yu jian kang cu jin yan jiu jin zhan 我国青少年体育健康促进研究进展 [Research progress of adolescents' sports health promotion in China]. Dang dai ti yu ke Ji 当代体育科技. 2017;7(18):217–8.

Reason for exclusion: Not a primary study

Jin H. 金辉 Qing shao nian ke wai ti yu huo dong zai cheng shi guang chang ti yu kai zhan zhong de yan jiu 青少年课外体育活动在城市广场体育开展中的研究 [The research of teenager's extracurricular physical exercise in the city square sports development [Master's thesis]]. Shang hai hua dong shi fan da xue 上海: 华东师范大学 [Shanghai: East China Normal University]. 2011.

Reason for exclusion: Cross-sectional survey without free-text

Jin QY, Jiang YZ, Q. 金青云, 姜允哲. Wo guo chao xian zu zhong xue sheng ke wai ti yu huo dong xian zhuang ji ying xiang yin su de yan jiu 我国朝鲜族中学生课外体育活动现状及影响因素的研究 [Research on the current situation of extra-curriculum PE and physical activities of middle school students of Chinese Korean middle school and the influential factors]. Bei jing ti

yu da xue xue bao 北京体育大学学报 [Journal of Beijing Sport University]. 2006;29(4):541–542+551.

Reason for exclusion: Cross-sectional survey without free-text

Jin QY, Jiang YZ. 金青云, 姜允哲. Zhong guo chao xian zu zhong xue sheng ke yu ti yu huo dong xian zhuang ji qi ying xiang yin su yan jiu 中国朝鲜族中学生课余体育活动现状及其影响因素研究 [Researches on present conditions and factors of the spare-time sports activities among the Korean minority students in China [Master's thesis]]. Yan bian yan bian da xue 延边：延边大学 [Yanbian: Yanbian University]. 2004.

Reason for exclusion: Cross-sectional survey without free-text

Zhong QH, Li XR, Luo XD. 钟全宏, 李晓蕊, 罗向东. Xi bei pin kun min zu ju ju qu xue xiao ke wai ti yu huo dong xian zhuang de diao chao fen xi 西北贫困民族聚居区学校课外体育活动现状的调查分析 [Investigation on students' of after-class sports activities in poverty ethnic minority groups in Northwest China]. Xi bei shi fan da xue xue bao zi ran ke xue ban 西北师范大学学报(自然科学版) [Journal of Northwest Normal University (Natural Science)]. 2008;44(5):110–3.

Reason for exclusion: Cross-sectional survey without free-text

Zhong YY, Zhu CY. 钟燕银, 朱昌义. Xiao xue yi nian ji jia tin ti yu xing wei de diao cha yu fen xi 小学一年级学生家庭体育行为的调查与分析 [Investigation and analysis of family sports behavior of primary school students [Master's thesis]]. Fu jian fu jian da xue 福建：福建大学 [Fujian: Fujian Normal University]. 2017.

Reason for exclusion: Cross-sectional survey without free-text

Lu SW, Li ZR. 陆素文, 李志荣. Sheng tai yin su dui wo guo cheng shi qing shao nain sheng ti huo dong xing wei ying xiang yin su fen xi – yi jiang su sheng wei li 生态因素对我国城市青少

年身体活动行为影响分析 - 以江苏省为例 [Impact of ecological factors on physical activity behavior of urban adolescents in China - take Jiangsu province as an example]. Yun dong 运动 [Sport]. 2016;8(17):6–7+129.

Reason for exclusion: Not a primary study

Chen FP. 陈副平. Wo guo qing shao nian ti zhi xian zhuang yu ti yu jiao xue mo shi ce lue 我国青少年体质现状与体育教学模式策略 [The current situation of teenagers' physical fitness and the strategies of physical education teaching model in China]. Qing shao nian ti yu 青少年体育. 2015;0(8):123-4.

Reason for exclusion: Not a primary study

Chen DQ, Xu L. 陈德钦, 许良. Wo guo qing shao nian xue sheng ti zhi jian kang yin su yan jiu fen xi 我国青少年学生体质健康影响因素分析 [Analysis of influencing factors on physical health of adolescent students in China]. He ze xue yuan xue bao 菏泽学院学报 [Journal of Heze University]. 2010;32(5):86–9.

Reason for exclusion: Not a primary study

Chen ML, Ma XQ. 陈美玲, 马小青. Zhong shen jiao yu bei jing xia wo guo zhong xiao xue ti yu jiao yu mian lin de tiao zhan 终身教育背景下我国中小学体育教育面临的挑战 [Challenges of physical education in primary and secondary schools in China under the background of lifelong education]. Gao deng han shou xue bao zi ran ke xue ban 高等函授学报(自然科学版) [Journal of Higher Correspondence Education (Natural Sciences)]. 2009;22(6):82–3.

Reason for exclusion: Not a primary study

Chen YF. 陈雁飞. Wo guo xue sheng ti neng xia jiang yuan yin ji dui ce yan jiu 我国学生体能下降原因及对策研究 [Research of causations and countermeasures to descending of the students' body ability]. Tian jin ti yu xue bao 天津体育学院学报 [Journal of Tianjin University

of Sport]. 2005;20(4):82–4.

Reason for exclusion: Cross-sectional survey without free-text

Lei KC, Yang X. 雷开春, 杨雄. Zhong ri han gao zhong sheng de shen xin jian kang zhi biao xian zhuang ji ying xiang yin su 中日韩高中生的身心健康:指标、现状及影响因素 [Physical and mental health of high school students in China, Japan and Korea: indicators, current situation and influencing factors]. Qing nian yan jiu 青年研究 [Youth Studies]. 2011;34(3):11–21+94.

Reason for exclusion: Cross-sectional survey without free-text

Huo XY, Huan CD, Xiao LP. 霍兴彦, 郇昌店, 肖林鹏. Wo guo qing shao nian ti yu can yu de zhi yue yin su ji ying dui ce lue 我国青少年体育参与的制约因素及应对策略 [Restrictive factors and countermeasures of teenagers' sports participation in China]. Ti yu wen hua dao kan 体育文化导刊[Sports Culture Guide]. 2012;30(3):112–6.

Reason for exclusion: Cross-sectional survey without free-text

GU H, Tang Q. 顾洪, 汤强. Xiao xue er tong ti li huo dong te zheng ji qi xiang guan ying xiang yin su yan jiu 小学儿童体力活动特征及其相关影响因素研究 [Study on physical activity characteristics and related influencing factors of primary school children [Master's thesis]]. Yang zhou yang zhou da xue 扬州：扬州大学 [Yangzhou: Yangzhou University]. 2016.

Reason for exclusion: Cross-sectional survey without free-text

Ma DH, Ji L. 马德浩, 季浏. Wo guo zhong xiao xue sheng ti zhi jian kang zhong cun zai de wen ti zhi yin ji qi dui ce 我国中小学生体质健康中存在的问题、致因及其对策 [Research on causes and countermeasures of Chinese primary and middle school students' physical health problems]. Xi an ti yu xue yuan xue bao 西安体育学院学报 [Journal of Xi'an Education University]. 2017;34(2):182–188+236.

Reason for exclusion: Cross-sectional survey without free-text

Luo GJ, Zheng ZL. 骆功建, 郑志磊. Wo guo xue sheng ti zhi xian zhuang diao cha yu dui ce yan jiu 我国学生体质现状调查与对策研究 [Research on the current situation of students' physical fitness in China and the countermeasures]. Ke ji xin xi 科技信息 [Science & Technology Information]. 2013;30(26):8.

Reason for exclusion: Not a primary study

Gao YC, Cui HY. 高永成, 崔红艳. Wo guo qing shao nian ti yu duan lian xing wei de zong jie yue si kao 我国青少年体育锻炼行为影响因素的总结与思考 [Summary and consideration on influencing factors of youth physical exercise behavior in China]. Su zhou jiao yu xue yuan xue bao 宿州教育学院学报 [Journal of Suzhou Education Institute]. 2015;18(1):119–21.

Reason for exclusion: Not a primary study

Wei YD, Shi HY. 魏亚东, 石海燕. Zhong xue ban zhu ren tai du dui xue sheng ti yu xing wei ying xiang de diao cha yan jiu 中学班主任体育态度对学生体育行为影响的调查研究 [Investigation and research on the effect of middle school headteacher's sports attitude on students' sports behavior [Master's thesis]]. Xi an shan xi da xue 西安：陕西师范大学 [Xi'an: Shanxi Normal University]. 2015.

Reason for exclusion: Cross-sectional survey without free-text

2586 **Appendix III. Characteristics of included studies**

Reference and country	Inclusion and exclusion criteria	Design	Phenomena of interest	Context	Participant characteristics	Sample size	Recruitment method	Data collection procedure and tool	Data analysis technique	Authors' conclusion
Diep et al.[29] (2017) Houston, US	Children aged 9–13 years who self identified as Chinese or Taiwanese (either in part or full); children and their parents provided written informed assent and consent, respectively. Children were excluded if they did not speak, read, and write in English, or were unwilling or unable to complete an interview.	Qualitative study	Chinese–American children's physical activity and its influences	Community	Children (9-13 years) Boys (52.0%), Chinese/Taiwanese alone (88.0%), from households with at least one parent completing post-graduate study (60.0%), and from households with an annual income above $70,000 (56.0%). Based on acculturation factors, a majority were	25	Participants were recruited through Houston-area Chinese language schools, a community center frequented by people of Chinese descent, and the Children's Nutrition Research Center's volunteer database. At the cultural	All interviews were conducted in English by the first author, trained in qualitative data collection methods, in person or over the phone. Before each interview, the interviewer introduced herself, explained the purpose of the interview, informed the participant that interviews would be audio-recorded, and obtained verbal consent. The	Thematic analysis	Major themes included: (1) team sports, particularly basketball, were commonly listed as favorite sports or activities; (2) physical activity occurred mostly at school or an after-school setting; and (3) family played a major role in physical activity. Some trends/differences were detected based on age, sex, and socioeconomic status. Interventions to promote physical activity among Chinese–American children should emphasize team sports and encourage physical activity in schools, but

					born in the US (60.0%) and self-identified as bicultural (52.0%).		and community settings, information packets were passed out by study staff to interested parents and/or children to review at home.	interviewer followed a semi-structured interview guide with open-ended, non-leading questions and probes, which were guided by constructs from the adapted model of dietary acculturation.		also explore ways to involves families outside of school.
He et al.[38] (2014) HK, China	A list of eligible residential buildings Children who were at 5th grade and 6th grade, living in a list of eligible residential buildings (i.e., high socio-economic status/high	Qualitative study	Identify the environmental facilitators and barriers of physical activity behaviors among Hong Kong Chinese children	School	Children from fifth and sixth grades (aged 10–11 years）	34	Participants were 34 children aged 10–11 years, recruited from three primary schools and living in four types of neighborhoods varying in	1. Introduction of NGT purpose and process to the participants. 2. Asking NGT question to the participants. 3. Individual silent generation of items in writing by participants. 4. Listing of items on a flip chart in a	Nominal group technique	Specific physical activity-related environmental facilitators and barriers, which are unique in an ultra-dense city, were identified by Hong Kong children. These initial findings can inform future examinations of the physical activity environment relationship among

	walkability, high socio-economic status/low walkability and low sociol-economic status/high walkability) will be eligible.						socio-economic status (SES) and 'walkability', the urban form attributes that might impact travel and activity patterns	round-robin fashion. 5. Discussion of items listed on the flip chart to clarify the meaning of each item. 6. A preliminary vote on the items to elect five most important items which are reserved for final vote. 7. Discussion of the result of preliminary vote. 8. Final vote to establish.		children in Hong Kong and similar Asian cities. A total of 16 neighborhood environmental factors were identified as either facilitators or barriers to PA by Hong Kong children. Future research that examines the association between environmental factors identified in this study and children's specific types of PA in Hong Kong and similar Asian cities is warranted.
Amy et al.[64] (2010) HK, China		Qualitative study.	To understand the physical activity culture in the lives of Hong Kong	School	Children (9-16 years) (male=24, female=24). 22 parents of the student	70	Participants were from four primary and six secondary schools in the regions	(Children) In all cases, the interviews were arranged by the school teachers and were conducted	Using an open coding system	Junior students (aged 9-12) expressed their interest in physical activities. However, older students (12 or above) in secondary school, think or are told

			Chinese children and their parents				of Hong Kong Island, Kowloon and the New Territories. The schools represented a diversity of socio-economic status. After obtaining the written consent of all school principals and parents, the children were purposefully selected by teachers from different socio-economic backgrounds	individually at school. The research assistants followed a semi-structured interview schedule that enabled the further probing of responses and a flexible flow of the interview as appropriate. All the parents agreed to be interviewed through telephone at a time most convenient to them.		that academic study is the most important aspect of their life and that physical activities are not a priority. When examining parents' and children's involvement in physical activity, the barriers to the parents' involvement in their children's physical activities included lack of time and a habitual sedentary lifestyle at home.

							, geographical locations, and attitudes and participation patterns in relation to their physical activity and PE domains. All the parents agreed to be interviewed through telephone at a time most convenient to them			
Wang et al.[65] (2017) Beijing& Nanjing, China		Qualitative study	To understand how children and parents in China make eating	School	Children (ages 10–15, n=41) and their parents (n=41)	82	We recruited participants (students and their parents, one parent per	Children (n=41, aged 10-15 years) and their parents (n=41) participated in eight semi-	Framework analysis	In conclusion, the children selected from Beijing and Nanjing, two major cities in China, one in the North and one in the South, reported

			and physical activity (PA) decisions, considering individual, family, community, social, and environmental factors, and to collect parents' recommendations for interventions to promote healthy eating and physical activity.				child) using a multilevel recruitment process to ensure an adequate and heterogeneous sample, i.e., in each site, we recruited the students from two schools, but from different classrooms, an elementary school and a middle school. At student/parent level recruitment,	structured focus groups (FGs) in Beijing (in North China) and Nanjing (South China). Each site conducted two FGs with children and two FGs with parents.		that they chose food often based on flavor. Their consumption of unhealthy snacks was prevalent. There are inconsistent standards for school lunch services, and school meal services varied across schools. There are mixed perceptions among students and parents toward school meals. Children had limited PA time due to an emphasis on academic performance. The parents made some recommendations for improving school food services and increasing PA for children during and after school. These findings provide useful insights to help develop

							individual families were given a consent form with a cover letter that explained the importance of the study and expressed the teacher's approval and support for the project. Recruitment flyers were also distributed to students in the classes.			future family- and school-targeted health promotion interventions, including childhood obesity prevention. Intervention framing must consider the unique Chinese social and cultural context
Zhang J et al.[66](2007)	One class ranking high and one class ranking low (with respect to	Qualitative study	Identify salient consequenc es, referents,	School	Children (98%) were aged 13-15 years and	155	Participants were students selected	The self-completion instrument was administered	Content analysis	The results of this qualitative study suggest that student perceptions of the

Beijing, China	the average academic grades) was selected from two school respectively. All the students from each of the four classes were invited to participate in the study; all students who were asked agreed to participate in this study.		and circumstances about physical activity as perceived by middle school students and to provide suggestions for interventions and quantitative research		about half were male and about half were female		from four classes of two middle schools. In Beijing, middle school or junior high school consists of three grades: Grade 1, 2 and 3.	during physical education class by two members of the research the team who were not associated with the school		relationship between their participation in physical activity and their school work might be more important factors underlying their decisions to participate in physical activity than their beliefs about the health benefits. Programs to increase physical activity should address the social and environmental factors underlying these perceptions with the goal of strengthening student engagement in the physical activity and improving learning potentials. Quantitative studies with a larger and representative sample and with close-ended items based on the

										qualitative research are needed to more fully understand middle school students' decisions to engage in daily physical activity. In addition, given the role of the parents as a social referent and the students' perception of the connection between physical activity and academic performance, research is needed to understand the views of parents, teachers, and school administrators.
Zhang MM et al.[66] (2015) Shanxi, China		Mixed method study	To understand the sports motivation of middle school students in Shanxi	School	Teachers and experts	Not specified	Not specified	Questionnaire, interviews	Not specified	Students are mostly passive in PE class, the reasons are schools don't value PE, parental attitude, Facilitator: build equal student/teacher

										relationship, adopt course structure.
Pang[68] (2014) HK, China		Qualitative study	To examine the factors that contribute to Hong Kong Chinese young people's values and expectancy beliefs in physical activity.	School	Children (aged 10-12 years) Boys (n=6) Girls (n=6)	12	The participants were selected purposefully for this qualitative interview study from three government-funded schools that had participated in a larger mixed method study	The semi-structured interviews were conducted in Cantonese by two Chinese Hong Kong-born female researchers who were familiar with the study and primary school contexts. Each interview lasted for approximately 30 minutes to an hour and was conducted in a classroom environment. Consents were sought from the principals, the young people,	Content analysis	The deeply rooted capitalistic economy and the philosophy of Confucianism that act hand in hand in shaping the physical activity values and expectancy beliefs of contemporary Hong Kong Chinese young people.

								and their parents. All agreed and gave consent for the young people to participate in the interview.		
Pang et al.[69] (2008) HK, China		Qualitative study	Examines the parental concerns in facilitating their children's physical activity participation in Hong Kong	Community	Parents (10 fathers and 12 mothers) of children (aged 10-16)	22	Participants were randomonly chosen from the children's family in a larger study. Informed letter was sent to the principal and delivered by the children to their parents	Parents were contacted by the phone to arrange a mutually convenient time for the interview. All interviews were conducted by the same interviewer through the phone.	An open coding system	Three themes emerged from the interview data and results in relation to Confucianism showed that parental long working hours, safety issues and overemphasize in children's academic pursuits were found to be their major concerns in facilitating children's further engagement in physical activities.
Pang et al.[36] (2016) Queensland, Australia		Qualitative study	Examining how young Chinese Australians (dis)engaged	School	10 girls: (Year 8=5, Year 9=4, Year 10=1)	12	Participants were recruited through two schools (not	Paper drew on the interviews and observations with the students from the full data set.	Thematic analysis	The results suggest that some aspects of the experiences of culturally diverse groups in HPE and school sport

			in HPE and school sport		2 boys: (Year 9)		specified)	Seven sets of interview were conducted with the young people in two years. All interviews were conducted by the first author, self-identified as a 'young Hong Kong Chinese female Australian'.		engagement at the practical, everyday level may be inconsistent with multicultural education policies. The discussion and a heuristic of difference model presented in this paper have application beyond promoting the engagement of, and teaching and research in, multicultural education in HPE in Australia. We envision a cultural 'contact zone' (Pratt 1992) where multicultural education means drawing on theoretical resources from the East/Chinese (e.g., 'Complementary difference'), the recognition of Chinese students' resources and 'ambivalence habitus',

										and moving beyond a Western view of exclusive opposites and Anglo-Celtic centred HPE.
Pang et al.[70] (2015) Brisbane, Australia		Qualitative study	Understanding the young people's experiences in physical activity and health, both in schools and out-of-school contexts	School and community	Children (aged 10-15 years) Boys (n=2) Girls (n=10)	12	The schools were purposively selected on the basis of: their school population, geographical locations, gender structure, likelihood of gaining access and varied socio-economic status, as research showed that these social and cultural	Six sets of interviews were aimed at understanding the young people's experiences in physical activity and health, both in schools and out-of-schools contexts. The interviews were carried out by the first author, a Chinese Hong Kong-born female. The first interviews were conducted individually or in pairs according to	Inductive content analysis	Dominant discourses in the 'talk' of these young people included their notions of excelling, hyperinvestment in academic success and, especially for the girls, skin colour and safety. Traditional Chinese family power relations limited the choices these young people had regarding physical activity which was complicated by the cultural and social fluidity of their lived experiences. The inter-generational flow of habitus and capital of these Chinese migrant

							factors have an impact on young people's physical activity opportunities and practices	the participants' preferences. This arrangement was to initiate the rapport with the students. Each interview lasted for approximately 30 minutes to an hour, and was conducted in either a classroom, a quiet environment within the school, or in a coffee shop.		young people's families tended to privilege a particular set of discourses based on gender, race, social class and hierarchical practices that resonated with traditional Confucian philosophy. Success in promoting and supporting more physically active and healthy lives for Chinese young people in Australia will depend on taking into account several factors. These include traditional Chinese gender structures, the inculcation of preordained trajectories for children's futures, the hyper-investment in economic capital for social mobility, the lack

										of investment in emotional capital between parents and children and the engagement with a strengths-based approach within the dominant discourses of physical activity and health promotion.
Trigwell et al.[32] (2015) North-West of England, UK	Parents of children aged 4 to 16 years who self-identified their ethnic background as Asian Bangladeshi, Black African, Black Somali, Chinese, White British and Yemeni were eligible to take part	Qualitative study.	Explore parental views of children's physical activity in a multi-ethnic sample living in a large city in the North-West of England	School and community	Parents (5 Asian Bangladeshi, 4 Black African, 7 Black Somali, 6 Chinese, 8 White British, 6 Yemeni).	36	Purposive sampling techniques were employed to select parents who participated in the previous study based on their proximity to the location of the focus group venue.	All focus groups were held in local primary schools and community centers after school hours or at weekends based on the preferences of participants. Free crèche facilities were provided. Focus groups were conducted using semi-	Inductive analysis	many similarities in parental views across ethnic groups, including a lack of awareness of PA recommendations, challenges of supporting children's PA and a perception that children receive sufficient PA whilst at school. parental views might act as barriers to children's PA levels, most notably in those cultures with a strong emphasis on educational attainment

							Letters were sent to parents who had consented to further contact from the research team and were followed up with telephone calls. Where participant numbers were low for particular ethnicities (Asian Bangladeshi, Black Somali, Chinese and Yemeni groups),	structured topic guides.		(Chinese, Yemeni, Asian Bangladeshi) or with a Muslim faith (Asian Bangladeshi, Black Somali, Yemeni). It is recommended children's PA interventions address influential factors at all levels of the socio-ecological model, and reflect the cultural and religious needs of different ethnic minority groups.

							parents were also recruited through schools and community centres by teaching staff and community workers			

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Study	Finding	Illustration
Physical Activity Behaviors and Influences among Chinese–American Children aged 9–13 years: a qualitative study. J Immigr Minor Health. 2017;19(2):358-66.	Team sports, particularly basketball, are commonly listed as favorite sports or activities (C)	"Of the team sports, the most commonly mentioned were basketball and soccer. Other examples were baseball, dodgeball, football, volleyball, badminton, kickball, tennis, hockey, ping pong, and ga–ga (a variation of dodgeball), which were mostly played during physical education (PE), at summer camp, or on an extracurricular team" (p.361)
	Physical activity occurred mostly at school or an after-school setting (U)	"I sometimes play chase with my brother around the house," practicing hockey in the yard, or "we do work outside in the garden." "I'm usually at school during PE or during recess running around" (p.362)
	Family played a major role in physical activity (U)	"My mom and dad … because they're the ones that tell me: okay, you can go to the park or you can go outside and play, so they'd be the ones that control what I do after school" (p.362)
Parental views of children's physical activity: a qualitative study with parents from multi-ethnic backgrounds living in England. BMC Public Health. 2015;15(1):1005-15.	Skill acquisition (U)	"We just hope our children can fully develop their skills, I will let him try everything" (p.1009)
	Parents perceived intrapersonal influences on participation in PA to relate to children's health and overweight status (U)	"For example if a child is already fat, that means he will have less interest in sport" (p.1009)
	Cultural requirement to be active (U)	"Because our nation requires us to pursue all kinds of development including moral, intellectual and physical aspects" (p.1010)
	Educational commitments (U)	"You will understand how to balance and you will make your children have sport, for activities, and have time for study too" (p.1010)

'Do I have a choice?' The influences of family values and investments on Chinese migrant young people's lifestyles and physical activity participation in Australia. Sport Educ Soc. 2015;20(8):1048-64.	Chinese familial investment strategies (C)	"Academics is important because if I don't do well at school, I would let down my Mum and Dad, coz I mean what would it feel like if you were the parent of your child, others will say, oh my god, that person is so dumb, that child is so stupid, you know what I mean? I don't wanna feel that way or have my parents looked down upon by others like that" (p.1053)
Illustration	Parents legitimized a 'Whiter' body (U)	"…all I got was getting tanner and tanner and tanner in my sport and my Dad starts complaining, like oh my gosh, you look like you're getting darker, no no no! They prefer me to be Whiter… they don't really want me to get tanner coz they think it's like the marine people. They just don't want me to be dark, not like a chocolate" (p.1055)
Finding	Surveillance for safety (U)	"I would spend most of the time in my house. I sit in front of the computer, haha. I just do my homework, go on to the Internet, I sometimes go and watch TV. Sometimes when I go outside, I ride my bike but my parents don't want me to ride outside, coz there's more cars in the place where I lived before, the place I lived before was like a circuit" (p.1056)
Illustration	Parents disapproved the child's behavior once they wanted to become serious with sport (U)	"My parents don't really like me doing fencing…My parents are like whenever I ask to join a new sport, they're like What's the point of that? Are you going to get world champion? Are you going to get number 1 like gold medal in sailing? If not, I don't think you should do it, coz it's not going to get you any money and it's not going to get you an OP1 (highest school leavers academic score)" (p.1056)
Finding	Familial power relations and inter-generational differences (U)	"Pretty stilted, I mean they don't know what to do with me, my problems, like the Asian thing. Basically, to be Asian daughter, it's like I need to get A+ and everything, though they say they don't mind me getting a B in English…Chinese kids wouldn't ask to go out, they'd be too busy

		studying. I'm meant to like learning, I'm supposed to take what they say without questions, you know, and to look after my sister, just basically be a model daughter…I'm different from this model, I think I'm reasonably ok, because I don't go out and party and drink and stuff like that, a lot of other people do. I'm ok. I mean I'm not ashamed of myself" (p.1059)
Parental Concerns in Facilitating Children's Physical Activity Participation in Hong Kong. Journal of Physical Education & Recreation (Hong Kong). 2008;14(1):39-46.	Parental work commitment (U)	"Both of us need to work six days a week, well… we're not rich and we must work for the money for the family. Sometimes we would go out with the kids on Sundays and we usually go shopping or dining out" (p.41)
	Safety issue (U)	"Some dangerous activities, like skating, it's not too safe for my girl to play. Children usually can't decide what is dangerous for them. They just play for fun but neglect the importance of safety. For example, I won't let him go climbing hills or rock…it's too dangerous. I've seen quite a lot of accidents happened in people climbing, it's definitely not suitable for children, especially girls), it's just not right for her to play such rough sport and Hong Kong don't have much safe climbing places for younger ones and there is a lack of qualified teachers" (p.42)
	High expectation of children's academic success (U)	"My son is now in the soccer team and he practices for many days a week …he comes back home at 7 pm and I think soccer is distracting him from studying well… I'm so afraid that he'll get hurt and I'm thinking not let him play anymore. I usually let him do whatever he wants in sports but if the exam is near, I'd advise him to play less basketball, I think it's better for him to spend more time studying than on playing" (p.42)
Understanding young Chinese Australian's (dis)engagement in	Experience as recognition in HPE and school sport-normal (U)	"I have been known in my class to be one of the best long-jumpers . . . I'm really proud of my quick thinking, coz of debating, you do a lot of

Health and Physical Education and school sport. Phys Educ Sport Pedagogy. 2016;21(4):441-58.		debating on the spot . . . people say I'm a good public speaker in debating and sometimes in HPE, so I'm really proud of that one" (p.447)
	Experience as recognition in HPE and school sport-complementary (U)	"I like being a perfect but I wouldn't want to be house captain, because if you want to be a house captain, you have to be really active, you always have to cheer up and do this and do that, and I'm not that kind of sporty person, so I signed up for the prefect (role) instead" (p.448)
	Experience as misrecognition/less recognition in HPE and school sport-problematic (U)	"Well, when I was skinny, I just look(ed) so fragile that I'll be pushed over by wind, and now when I'm not that skinny, people just assume that I don't do much exercise anyways . . . they just don't pick me first" (p.449)
	Experience as misrecognition/less recognition in HPE and school sport-adaptive (U)	"I don't really study, because I hate studying, it's boring, I like to have fun . . . I'm having fun and feeling good. I like sports but I'm not good at it because I'm not as fast as everyone else, and I can't swim that well either. I'd like to join an AFL club but I haven't found a club yet that I like. AFL is fun" (p.451)
	Physical activity inequity (U)	"Yeah, well I guess in PE, the captain chooses the boys first, like you know, they are the stronger players, and he kind of chooses the girls last . . . Some of the girls are strong as well, but coz the boys always want those who's able to kick and able to goal. Well, in HPE class, not many girls participate in it, coz like we're girls, we don't want to do it, and the teachers is like, you can walk around the field and do nothing" (p.449)
	Overt forms of racism (U)	"Like back in primary school, you don't notice that much, since your English is not good enough, you won't know what they're saying, but when your English gets better, sometimes, you hear stuff, sometimes in playing sport, they'll say you're Asian and you can't play sport, they like to start things like that" (p.450)

	Exclusion experiences (U)	"I just think they [European] think they are better, my other friends, they used to be in the A team, but then they are too inside, they don't express much things in schools, they don't talk to other people, they're just not used to it, that's why they don't pass the ball to them" (p.450)
Child and parental perspectives on diet and physical activity decisions: implications for childhood obesity prevention in China. Asia Pac J Clin Nutr. 2017;26(5):888-98.	I exercise only during the physical education (PE) class, and I exercise primarily to pass the high school entrance examination, commonly known as "Zhongkao" (U)	"We have a morning recess. Usually we start with group rhythmic gymnastics and then jump roping. We have PE class, and each class content is arranged by teachers for us to run or do items for Zhongkao. We are not given free play time during PE class. I like playing badminton, but my PE teacher said I can only play badminton after I am capable of receiving full credits for all Zhongkao-tested items" (p.894)
	Students were busy with too much homework during weekends (U)	"I do not have time for leisure time exercise at all from Monday to Friday. I came home late from school in the evening, and when I finish my homework, it's time to sleep. I just don't have time to exercise at all" (p.894)
	"Academic-focused" school environment seemed to be a major barrier for PA participation (U)	"I personally think the childhood obesity nowadays is due to the fact that kids eat too much and move too little. The environment now is so different from the environment of my childhood. My kid is sitting there all day studying and no time for exercise. It seems that he does not like exercise at all, and when he has spare time, he watches TV" (p.894)
Physical activity in the lives of Hong Kong Chinese children. Sport Educ Soc. 2010;15(3):331-46.	Confucian beliefs in taking 'good care' of children (U)	"I know doing more physical activity is good for my child, but I'd rather have her study first and only allow her to play for a while if she could finish her school work. You know, too much play will negatively affect her academic performance" (p.338)
	Confucian father played a leading role in determining the different dimensions in his children's life (C)	"Interestingly, within the group we interviewed, only fathers provided actual facilitation of their children's physical activity. One of them acted as an assistant coach regularly in his boy's rugby team, while a few

		attended their children's sports competitions, such as badminton and swimming during their leisure time, and two parents assisted with transporting children to playgrounds" (p.338)
	Families are an important factor in their physical activity participation (C)	"Doing physical activity is fun and when I see other people playing, I want to be one of them . . . My parents also encouraged me. They would spend time jogging with me and I still remember we had so much fun" (p.390)
	As they grew up, time spent on a particular physical activity increased (U)	"I play table tennis more now and therefore have less time for other activities. I'd rather focus my time on improving in it than spending time doing various sports which seem to be wasting my time" (p.339)
	Physical activity to be another responsibility in their lives (U)	"There was a time a basketball club invited me to join them, and I know this was a chance for me to play in a professional level. However, my mother opposed my decision, and I did not dare to argue with her. Well, actually I don't really feel too regretful as I treated it as an interest. It only matters if I could play basketball happily or not. After practicing for a long time, I saw there was not much improvement, and I felt that I had reached the top already. Therefore, I gave up the interest in swimming" (p.340)
	An instrumental orientation to physical activity engagement (U)	"Students in Hong Kong, as far as I know, are not doing much sports and exercise. I'm sure exercise can help my son to be fit and maintain a good shape and weight" (p.341)
	Overly skill-oriented nature of their classes (U)	"It's not very nice because we always learn traditional sports, such as track and field, soccer, basketball, volleyball, and gymnastics. It is no fun at all. Teachers are actually repeating the same content we have already learnt in senior primary schools. I dislike running long distances; it is so boring" (p.343)
	Complained about the teacher and the curriculum (C)	"Having academic subject lessons at the expense of PE lessons, especially when it comes to the senior secondary level" (p.343)

	Other negative feelings (U)	"Too many students in a class (40-45 students sharing one basketball court)" (p.343)
	The importance of PE was linked closely to their children's academic advancement (U)	"PE is important because it makes my son healthier . . . good health may help him study better" (p.342)
Promoting physical activity in Hong Kong Chinese young people: Factors influencing their subjective task values and expectancy beliefs in physical activity. Eur Phy Educ Rev. 2014;20(3):385-97.	Feeling happy and competent and enjoying the sport and movement (U)	"I feel satisfied when I can shoot a basketball into the ring . . . and usually I am able to hit the shuttlecock with a swift sound and therefore I feel really happy and have fun playing with it . . . When I play badminton, I think the sound of hitting a badminton cock is really interesting, I feel very happy when I could hit the cock with that kind of special sound" (p.390)
	High attainment value and high utility in physical activity (U)	"I can boast in front of my teammates in basketball, which I think is important for me to do better in it" (p.390)
	Physical activity was not useful in relation to entering a better secondary school (U)	"Sometimes I think it [physical activity] is not really that useful at all as most schools do not think it is relevant to study" (p.392)
	Physical activity had a lower priority than academic studies (U)	"I would like to excel in my academic studies. I think studies may affect my future but not sport. I always place academic studies first" (p.391)
	Improving on their health (U)	"Physical activity is important because it is good for my health, I get less pain and disease after doing physical activities" (p.390)
	Having positive outcomes for academic and/or career future (U)	"Sport may be useful for my future job because I will find sport-related careers, like being an athlete. I want to be as good as those Olympic athletes, I think they are gorgeous" (p.391)
	Lack of perceived improvement in physical activity (U)	"I do not feel any differences or improvements and I think it is boring. I am always like that, not a bit better" (p.392)
	Lack of social support (U)	"I always do sport alone by myself and this is why sport is not interesting to me. I do not like it because there is no one to compete or compare

		with me. There is no one to encourage me and I do not feel happy when doing sport" (p.392)
	Insufficient time provision both in the school's physical education curriculum and after school hours (U)	"Well, it seems that during PE lessons, most of the time, about 15 to 20 minutes was allocated to doing stretching and warm up, and the time for us to really learn a sport is not enough" (p.392)
	Feeling too tired after doing physical activity (U)	"I need to put in too much effort in sport. I do not like the feeling of tiredness after doing sport" (p.391)
Understanding Neighborhood Environment Related to Hong Kong Children's Physical Activity: A Qualitative Study Using Nominal Group Technique. PLoS One. 2014;9(9):e106578.	Safety (crime) (C)	"Afraid of being taken or hurt at night" (p.4)
	Safety (traffic) (C)	"Few cars on roads" (p.5)
	Functionality (C)	"Convenient transportation" (p.5)
	Destination (C)	"Recreation grounds" (p.5)
	Aesthetic (N)	"Fresh air" (p.5)
	Others (C)	"Too many people in recreation grounds" (p.5)
Psychosocial factors underlying physical activity. Int J Behav Nutr Phys Act. 2007;4(1):38-47.	Salient consequences of participating in physical activity (C)	"The most frequently mentioned disadvantage, "will take too much time," was mentioned by 40.6% of the students" (p.43)
	Salient who approve referents (C)	"Clearly, most of the salient referents for this behavior were family members, including parents, others, fathers, and grandparents." (p.43)
	Circumstances that make physical activity easy and circumstances that make it difficult (C)	"Many of the circumstances (e.g., assignments, time, and weather) were mentioned both as circumstances that make physical activity easy and as circumstances that make it difficult. The most frequently reported

		facilitator of physical activity, "having fewer assignments", was mentioned by 27.7% of the students. The most frequently mentioned barrier, "having too many assignments", was mentioned by about half (48.4%) of the students. Additionally, "time" was the second most frequently mentioned circumstance; 14.2% of the students mentioned having more time as a facilitator and 18.8% mentioned not having enough time as a barrier. These data also suggest that "having fun activities," "having others to participate with," approval from others" and "making facilities more available" operate as facilitating and hindering circumstances" (p.43)
Shan xi sheng chu zhong xue sheng ti yu xue xi dong ji ying xiang yin su ji pei yang ce lue yan jiu 山西省初中学生体育学习动机影响因素及培养策略研究 [Study on the factors of motivation and influencing sports learning [Master's thesis]]. Lin fen shan xi shi fan da xue 临汾: 山西师范大学 [Linfen: Shanxi Normal University]. 2015.	Strengthen the teaching and management regulation (U)	"The PE teachers should respect and care about students rather than criticize students at will. Teachers should equip a positive attitude and be the role model so that the students will feel the equality between themselves and teachers. In addition, they may be attracted to the class. With the establishment of a harmonious relationship between students and teachers, students will thus take the teachers as examples and change their behavior" (p.25)
Illustration	Make tailored objectives for students (U)	"We should combine the collective goal with an individual goal. Each student's physical quality and individual ability are different. We should fully consider the individual difference of each student when setting the teaching goal. When setting the collective teaching goal, we should make the goal has a certain range of fluctuation, because the requirement is universal for each student. We should ensure that for students whose sports learning ability are not strong enough can improve their sports

		achievements through hard work and their interest in sports learning can be increased due to the establishment of motivation in sports learning. In the other way, this goal should also apply to those who have higher sports learning abilities" (p.24)

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