Barriers and facilitators to physical activity among ethnic Chinese children: a qualitative systematic review

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ABSTRACT

Objective: The review aimed to synthesize the barriers and facilitators from the available studies that explored 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 prevalence of this has been low among ethnic Chinese children who reside in either 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: Studies were considered for inclusion if they explored the barriers and facilitators to physical activity among ethnic Chinese children aged six to 17 years in either Chinese or non-Chinese territories, or among people who had responsibility for them in school, home, and community settings. 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, the authors 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 The search for unpublished studies included EThOS, OpenGrey, ProQuest Dissertations and Theses, CNKI and Wanfang.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 to 10 December 2018 and no language restrictions were applied. The JBI guidelines for qualitative systematic reviews were followed in conducting 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. Using the JBI checklist for qualitative research (10 criteria), the critical appraisal scores of the majority of studies ranged from a moderate score of 6 (n = 1) to a high score of 7 and above (n = 9). Seven studies were from China, two from Australia, one each from the United Kingdom and the United States. The sample size ranged from 12 to 115 participants. A total of 56 findings were extracted and aggregated into 21 categories, based on the similarity of meaning. 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 14 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 seven aggregated categories. Based on the ConQual scores, confidence in the synthesized findings was moderate.

Conclusions: 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 role of adults. Future interventions are needed to address the identified barriers and enhance the facilitators.

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Keywords child; China; exercise; qualitative research; sports

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## Summary of Findings

| Type of Research | Dependability | Credibility | Comments |
|------------------|---------------|-------------|----------|
| Personal barriers and facilitators (Chinese territories): The personal barriers and facilitators for children include both physical and psychological factors that may determine their physical activity choices and participation. A child's perceived interests, enjoyment of physical activity, and their physically active pursuits may increase their physical activity level. In contrast, individuals with perceived lower value/utility of physical activity and time constraints may negatively influence children's participation in physical activity. | Qualitative | Remains unchanged | Moderate (Downgrade one level) | Downgraded one level as there was a mix of unequivocal and credible findings |
| Socio-cultural barriers and facilitators (Chinese territories): 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/conducts provided by supportive teachers and parents. In contrast, perceived lesser parental value/utility of physical activity and time constraints may negatively influence their children's participation in physical activity. | Qualitative | Remains unchanged | Moderate (Downgrade one level) | Downgraded one level as there was a mix of unequivocal and credible findings |
| Environmental barriers and facilitators (Chinese territories): A child's activity may be hindered by the unfriendly outer physical activity–related environmental characteristics, including environment structural elements (e.g., heavy transport), demographic characteristics (e.g., high population density), and physical activity resources (e.g., insufficient facilities). At the same time, having sufficient/physical activity–friendly resources within the community, including parks and playgrounds, may present opportunities for children's activity. | Qualitative | Remains unchanged | Moderate (Downgrade one level) | Downgraded one level as there was a mix of unequivocal and credible findings |
| Policy- and program-related barriers (Chinese territories): The national policies and related programs are the outer structure influencing a child's physical activity environment. A lack of appropriate physical activity programs/structures and attractive program content may inhibit children's participation in physical activity. | Qualitative | Remains unchanged | Moderate (Downgrade one level) | Downgraded one level as there was a mix of unequivocal and credible findings |
| Personal barriers and facilitators (non-Chinese territories): The personal barriers and facilitators for children include both physical and psychological factors that may determine their physical activity choices and participation. A child's perceived physical activity interests and positive attitude may facilitate their participation, while negative interpersonal influences may hinder their participation. | Qualitative | Remains unchanged | Moderate (Downgrade one level) | Downgraded one level as there was a mix of unequivocal and credible findings |
| Socio-cultural barriers and facilitators (non-Chinese territories): The socio-cultural barriers and facilitators include interactions brought by people who have a connection with children (e.g., parents, peers). A child's participation in physical activity 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 participation in activity. | Qualitative | Remains unchanged | Moderate (Downgrade one level) | Downgraded one level as there was a mix of unequivocal and credible findings |
Introduction

Childhood is the most physically active period in a person's life and has been recognized as the most crucial period in promoting the uptake of and adherence to physical activity.\(^1\) 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 may directly enhance 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, and promotes the establishment of social contacts and friendship.\(^6\) Regular physical activity among children may boost learning abilities, including improvement in concentration power, memory, intellectual development, and academic performance.\(^4,6,8\) In terms of economic health, physical activity improves self-esteem, and promotes the establishment of social contacts and friendship.\(^6\)

Available evidence has suggested that poor physical activity engagement may affect Chinese children’s mental health and well-being.\(^20\) It is reported that 15.4% of children have mental disorders and over 25% of children have experienced some form of mental or psychological disorder (such as poor dependability, mentality, and confidence) as a result of low rates of physical activity. In China, the combined percentages of children and adolescents who were overweight and obese reached 19.2% in 2010.\(^21,22\) This was higher than that of US children and adolescents (16.9%) in 2009 to 2010.\(^23\) Around 76% (>3 million) 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) to academic curriculum rather than physical activity.\(^25\) Only 24.7% of Chinese children are reported to have participated in extracurricular physical activity throughout school compared to an average level around 60% in high-income countries.\(^17\) In schools, health (physical) education and structured exercise programs are available and are delivered to 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.\(^26-28\)
Ethnic Chinese children are less physically active compared to children of other ethnic origins in many high-income countries. A study reported that around 45% of Chinese American children were not actively playing outdoor games and sports. 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. 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 demonstrating 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. As such, a “shrinkage” of available physical activity time for children has been reported at the school level, as well as a consistent decrease in the physical fitness of ethnic Chinese children. Additionally, the stereotypical views of ethnic Chinese (e.g., not being good at ball games such as football or basketball) make ethnic Chinese children self-exclude from the physical activity cultures of their adopted countries.

There are socio-cultural issues that 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. These children spend more time on academic studies after school hours and on weekends than on physical activity. Ethnic Chinese girls are also less likely to engage in physical activity than boys. In many conservative Chinese societies, there is a huge socio-cultural pressure on girls to avoid physical activity. The image of Chinese women is incongruent with being physically active, so there is a need for a socio-culturally appropriate intervention for ethnic Chinese children, addressing their specific barriers to physical activity.

Rationale for this systematic review
Several studies have been conducted to explore the barriers and facilitators to physical activity among ethnic Chinese children. 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 include Chinese databases) and their quality can be inconsistent. In these reviews, there are no details regarding the development of the search strategy or the procedures of screening, data extraction, synthesis, and quality appraisal. Evidence shows that parents, guardians, and teachers play an important role in shaping children’s health behaviors concerning areas such as physical activity. Extensive research has been conducted to explore which factors those with 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 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 policy makers.

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. 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. In Chinese territories there are some unique influential factors including the state-run sports system, the “one child” policy, and tight control at the school level due to the fear of sports injuries and accidents. In non-Chinese territories, ethnic Chinese children’s physical activity behaviors may be influenced by the sports trend in the local community. To uncover the particular views, experiences, attitudes, understandings, perceptions, and perspectives of ethnic Chinese children, this systematic review only included data that could be analyzed separately for ethnic 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.

Review questions
What are the barriers and facilitators found in available studies that explore physical activity among ethnic Chinese children?
What are the differences or similarities in these barriers and facilitators?

Inclusion criteria

Participants

This review included studies that were conducted among ethnic Chinese children (between six and 17 years of age) residing in either Chinese or non-Chinese territories, or among people who are responsible for these children (such as their ethnic Chinese/non-Chinese parents, guardians, or teachers). Studies were excluded if the ethnic Chinese children were not within the age range of six to 17 years, or if children of other ethnicities were included. Studies conducted among the people responsible for the children were excluded if their children were not within the age range of six to 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. The authors also included cross-sectional surveys where free-texts relating to the review question were collected using open-ended questions, as free-text data are suggested to be of intrinsic value and analysis enables the researcher to explore the important contextual value of participants’ responses. The free-text data could provide additional information that is examined beyond the surface-level analysis. The importance of free-text data in experience surveys has been acknowledged for its qualitative utility and for improving the health services.

Methods

The systematic review followed the JBI methodology for systematic reviews of qualitative evidence. It was conducted in accordance with an a priori protocol. This systematic review was registered with PROSPERO (CRD42018097124). The process adhered to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA).

Search strategy

An initial limited search was carried out on MEDLINE and China National Knowledge Infrastructure (CNKI) databases using the initial keywords “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 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 terms 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 were explored using “qualitative research” in the search strategy (the full search strategies are detailed in Appendix I, which were developed for MEDLINE and then adapted for other databases in consultation with an information specialist/librarian).

The search spanned a range of sources to find both published and unpublished studies. The following databases were searched until 10 December 2018: MEDLINE (from 1946, Ovid), Embase (from 1947, Ovid), CINAHL (from 1937, EBSCO), PsycINFO (from 1806, Ovid), BNI (from 1993, EBSCO), AMED (from 1985, Ovid), Web of Science (from 1900), Scopus (from 1788), CNKI (from 1979), Wanfang (from 1995), VIP (from 1989), EThOSS (from 1925), OpenGrey (from 1997), and ProQuest Dissertations and Theses (from 1980,
ProQuest). The reference lists 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 were independently involved in the translation and supplied comments. Consensus was reached through discussion between reviewers.

**Study selection**

Following the search, all identified citations were collated and uploaded into EndNote X8.2 (Clarivate Analytics, PA, USA), and duplicate citations removed. Titles and abstracts were screened for eligibility by two independent reviewers using the inclusion criteria. Studies identified as potentially eligible, or those without an abstract, had their full texts retrieved and their details were imported into the JBI System for the Unified Management, Assessment and Review of Information (JBI SUMARI; JBI, Adelaide, Australia). The full texts 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 reported. Any disagreements that arose between the reviewers were resolved through discussion or with 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. This tool uses a series of criteria that can be scored as being met, not met, or unclear or not applicable 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 with a third reviewer. The critical appraisal results are presented in tabular form (Table 1). All studies, regardless of the results of their methodological quality, underwent data extraction and synthesis. A cut-off score was not used to include or exclude studies in this systematic review, as many studies are likely to be of poor quality. Poor-quality studies can generate potentially valuable insights and 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. 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 on by the reviewers to extract findings. 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, 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 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) or 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-aggrega-
tion approach. 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. These categories were then subjected to a synthesis in order to produce a single comprehensive set of synthesized findings. Any free text from cross-sectional surveys was intended to 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 and 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 confidence 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 the Summary of Findings. The Summary of Findings included the major elements of the review and details of 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, a score for credibility, and the overall ConQual score.

Results

Study inclusion
The comprehensive literature search returned 12,533 records through database searching and 13 through additional resources, resulting in 12,546 potentially relevant records.

Following the removal of duplicates (n = 3086), the titles and abstracts of the remaining records were assessed (n = 9460). A further 9281 of these records were excluded with reasons, leaving 179 records in the full-text screening. All 179 papers were retrieved for a full review, following which, 168 were excluded (see Appendix II). No disagreements arose during the screening. The remaining 11 papers were critically appraised and included in the review. See Figure 1 for the full study selection process.

Methodological quality
The critical appraisal results of 11 included studies are presented in Table 1. The results for most studies were 6 and above out of 10. Only one study had a score of 4 out of 10. Nine of the 10 quality appraisal questions achieved a high proportion of "yes" ratings; however, question 7 (Is the influence of the researcher on the research, and vice versa, addressed?) had a significantly lower proportion of "yes" ratings. The issue of reporting of methodologies was identified in the majority of the included studies (except two studies conducted in Australia). It also highlighted a lack of reporting on the impact the researchers had on the studies. Despite this, the score of all 11 studies ranged between six and 10 on the JBI Critical Appraisal Checklist for Qualitative Research and, therefore, none were excluded for reasons of quality.

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, two from Australia, one from the United Kingdom, and one from the United States. Only one study was written in Chinese and a translation of the findings was conducted. Among the seven studies from China, four were from Hong Kong and three were from mainland China. Out of 11 studies, seven were conducted in schools, two in communities and two in both schools and communities. Only one study was an unpublished thesis. All studies were published between 2007...
and 2017, with most (eight of 11) being conducted since 2014. 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. Two studies were conducted with both children and parents, one with both children and teachers, two with parents only and six included children only. Two papers originated from the same study. Time constraints and other priorities were identified among both children’s and parents’ accounts as barriers to physical activity.
The number of study participants ranged from 12 to 115 and one study (conducted among teachers) did not mention the number of participants. In exploring the methodological aspects of the 11 studies, two made specific commitments to a critical and interpretive ethnographic methodology, while methodology was unspecified in the other nine. The data collection methods used were primarily semi-structured interviews, carried out in person or by telephone. Focus group discussion was used in two studies, and two studies only mentioned using interviews, of which one also used field observation. Specifically in two studies, alternative qualitative methods were used including self-completion education and nominal group technique. Regarding the trustworthiness of these qualitative approaches, it is considered that interviews are better for investigating experience compared to quantitative methods. Interviews are extremely helpful for in-depth exploration instead of broad surveys of surface patterns. A previous study reported that interviews could produce sufficient and trustworthy contributions when exploring children’s perceptions compared to focus group discussion. 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 identify the barriers and facilitators to physical activity, as observation mainly entails looking at the individuals’ behavior rather than their attitudes and opinions. In addition, observation is less appropriate to identify infrequent events, which might be of significance for physical activity.

The data analysis techniques were thematic analysis, inductive analysis, framework analysis, and content analysis. Two studies did not state the specific analysis but only stated using coding analysis, whilst no data analysis methods were specified in one study. All of these analytical approaches were considered to be suitable for answering the question. However, thematic analysis and inductive analysis were seen to be better for
comprehensively capturing all the themes of findings. This was because 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).\textsuperscript{72,73} As such, thematic and inductive analysis may be more appropriate to comprehensively evaluate each finding and avoid missing the potential barriers and facilitators that may have been neglected previously.

\textbf{Review findings}

As mentioned in the protocol, a standard structure with four themes was used to categorize all the extracted findings using the meta-aggregative approach.\textsuperscript{57} Findings related to the 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). The findings from these two themes were aggregated into two specific synthesized findings looking at the barriers and facilitators to ethnic Chinese children’s physical activity. In addition, findings related to structural elements (such as facilities and transport) and policies and programs (such as organizations and staff) were aggregated into environmental and policy- and program-related themes.

All 11 studies included in this review explored the barriers and facilitators to physical activity among ethnic Chinese children. A total of 36 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 14 categories and further aggregated into four synthesized findings. The first synthesized finding had 15 findings and six categories, of which 12 findings were unequivocal and three were credible. The second synthesized finding had 10 findings and three categories, of which eight findings were unequivocal and two were credible. The third synthesized finding had eight findings and three categories, of which one finding was unequivocal and seven were credible. The fourth synthesized finding had four findings and two categories, of which three findings were unequivocal and one was credible.

Among studies conducted in the non-Chinese territories, 19 extracted findings (17 unequivocal and two credible) were grouped into seven categories that were aggregated into two synthesized findings. The first synthesized finding had seven findings and three categories. Of these, six findings were assessed as unequivocal and one as credible. The second synthesized finding had 12 findings and four 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). This ranking system allowed the findings of individual studies to be downgraded based on their dependability and credibility. Downgrading for dependability occurred when the five criteria for dependability were not met across the included studies.\textsuperscript{61} Where four or five of the responses to these questions were “yes” for an individual finding, then the finding remained at its current level. If two or three of these responses were “yes”, it moved down one level (i.e. from high to moderate). If zero or one of these responses was “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 were not all unequivocal findings. Specifically, the synthesized finding would be downgraded one, two, three, or four levels if it contained a mix of unequivocal/credible findings, only credible findings, a mix of credible/unsupported findings or no supported findings, respectively.\textsuperscript{61}

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 one level, resulting in a credibility score of moderate. This represented a ConQual rating of moderate confidence in these qualitative synthesized findings and was supported by the evidence of sufficient quality.

\textbf{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. Both barriers and facilitators were identified in personal, socio-cultural, and environmental factors, while only barriers were identified in the policy- and program-related factors.

Synthesized finding 1: Personal barriers and facilitators

Personal barriers and facilitators include physical, emotional, and motivational factors that may determine children’s choices and participation in physical activity. A child’s perceived interest in, enjoyment in, and active pursuit of physical activity may increase their physical activity level. In contrast, factors such as individuals who place a lower value or perceived utility on physical activity, and time constraints may negatively influence a child’s participation in physical activity. This synthesized finding was derived from 15 findings, which merged into six categories (see Figure 2).

**Personal facilitators**

**Category 1.1: Fun.** Children generally had experience in physical activity and their positive feelings (e.g., fun, enjoyment, happiness) from those experiences were cited as important in facilitating physical activity participation.62,66

“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.”62(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

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**Finding**

- Families are an important factor in their physical activity participation (C)
- Feeling happy and competent and enjoying the sport and movement (U)
- As they grew up, time spent on a particular physical activity increased (U)
- High attainment value and high utility in physical activity (U)
- Having the positive outcomes for academic and/or career future (U)
- Improving on their health (U)
- Physical activity was not useful in relation to entering a better secondary school (U)
- Physical activity had a lower priority than academic studies (U)
- Lack of perceived improvement in the physical activity (U)
- Lack of social support (U)
- Feeling too tired after doing physical activity (U)
- Students were busy with too much homework during weekends (U)
- “Academic-focused” school environment seemed to be a major barrier for PA participation (U)
- Salient consequences of participating in physical activity (C)
- Circumstances that make physical activity easy and circumstances that make it difficult (C)

**Category**

- Fun
- Practice to gain skills and competence
- Child’s aspiration and understanding of the benefits of physical activity
- Have other priorities or commitments
- Low intrinsic values of physical activity
- Time constraints

**Synthesized finding 1**

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**Figure 2: Synthesized finding 1 (Chinese territories) – Personal barriers and facilitators**
hitting a badminton cock is really interesting, I feel very happy when I could hit the cock with that kind of special sound.”

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 in practicing a specific physical skill or to become more competitive or skilled in a particular activity.62,66

“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.”62(p.339)

“I can boast in front of my teammates in basketball, which I think is important for me to do better in it.”66(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 their physical health, clinical benefits (i.e., lower the risk of chronic conditions like chronic pain), and career.66

“Physical activity is important because it is good for my health, I get less pain and disease after doing physical activities.”66(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.”66(p.391)

Personal barriers

Category 1.4: Have other priorities or commitments. A particular barrier to physical activity mentioned by children was that physical activity was regarded as less important than other priorities or commitments.66

“Sometimes I think it [physical activity] is not really that useful at all as most schools do not think it is relevant to study.”66(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.”66(p.391)

Category 1.5: Low intrinsic values of physical activity. Low intrinsic values of physical activity among children were cited as a barrier inhibiting physical activity participation. Children stated that the negative feelings or experiences around physical activity delimited their motivation to be active; this included the perceived feeling of frustration, loneliness, and tiredness while doing or after physical activity.66

“I do not feel any differences or improvements and I think it is boring. I am always like that, not a bit better.”66(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.”66(p.392)

“I need to put in too much effort in sport. I do not like the feeling of tiredness after doing sport.”66(p.391)

Category 1.6: Time constraints. 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.63,64

“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 sleeps. I just don’t have time to exercise at all.”63(p.894)

“The most frequently mentioned disadvantage, ‘will take too much time,’ was mentioned by 40.6% of the students.”64(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.”  

Similarly, parents also cited that their child’s low participation in physical activity was a result of insufficient time being provided them, which may indicate the “academic-focused” school environment. 

“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.”

Synthesized finding 2: Socio-cultural barriers and facilitators.
The socio-cultural barriers and facilitators include interactions between children and people who have a connection with them (e.g., parents, peers). A child’s participation in physical activity may be facilitated when there is dynamic involvement by parents and teachers. Children may be more likely to take part in physical activity when there are available opportunities or examples provided by supportive teachers and parents. In contrast, perceived lower value or utility of physical activity by parents and time constraints may negatively influence their children’s participation in physical activity. This synthesized finding was derived from 10 findings, which merged into three categories (see Figure 3).

Socio-cultural facilitators

Category 2.1: Parental support. Parents were commonly identified as important people with regards to the approval and disapproval of children’s engagement in physical activity. Particularly, fathers were cited as responsible for creating physical activity opportunities for their children.

“Clearly, most of the salient referents for this behavior were family members, including parents, others, fathers, and grandparents.”

![Figure 3: Synthesized finding 2 (Chinese territories) – Socio-cultural barriers and facilitators](image-url)
“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.”

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

“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.”

“PE [physical education] is important because it makes my son healthier…. good health may help him study better.”

**Category 2.2: Teachers’ actions, behaviors, or concerns.** While at school, a child’s physical activity mostly took place at physical education class, and therefore physical education teachers were 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.

“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.”

“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.”

**Socio-cultural barriers**

**Category 2.3: Physical activity is not part of the family’s priorities.** Although parents did acknowledge the beneficial effects of physical activity, a child’s educational attainment and academic development were considered to be the universal priorities among Chinese parents.

“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.”

“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.”

“It was also reported that the work commitment may be a barrier that restricted parents of ethnic Chinese children who reside in Chinese territories to accompany their children to physical activities.”
“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.”

Synthesized finding 3: Environmental barriers and facilitators

A child’s physical activity may be hindered by environmental characteristics, including environmental 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 from eight findings, which merged into three categories (see Figure 4).

Environmental barriers

Category 3.2: Care concerns. A common consideration mentioned by both parents and children was safety. Parents stated that they worried that a child could get hurt doing certain types of activities while children identified their consciousness of 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.”

Category 3.1: Accessibility and proximity of facilities. The perceived physical activity-friendly environment was identified as a facilitator of physical activity. Specifically, it was identified that a child’s engagement in physical activity was positively associated with the accessible facilities (“recreation grounds, parks”) and the proximity of facilities (“convenient transportation, subway station”).

“...”

A child’s physical activity was also related to an individual’s perception of safety in the local environment, specifically through expressions of fear of surrounding safety (“afraid of being taken or hurt at...”)
night [crime]" and the awareness of danger ("few cars on roads [traffic]") were cited by the children as barriers that delimited their activity.

**Category 3.3: The unique condition in the Chinese mainland.** Three unique environmental barriers were mentioned by children who reside in China, which were pollution-related barriers, population density, and insufficient facilities. The air quality ("fresh air") and extent of noise ("too much noise") acted as barriers to children's engagement in activity. In addition, the large population density ("too many people in recreation grounds") was also cited as responsible for hindering a child's engagement in activity.

The insufficient facilities were cited as a complaint by children for restricting their physical activity.

"Other negative feelings, expressed by both boys and girls, included too many students in a class (40–45 students sharing one basketball court)."

**Synthesized finding 4: Policy- and program-related barriers**
The national policies and related programs are the outer structure influencing a child's physical activity opportunities. A lack of appropriate physical activity programs or attractive program contents may inhibit children's participation in physical activity. This synthesized finding was derived from four findings, which merged into two categories (see Figure 5).

**Category 4.1: Lack of opportunities to participate.** Physical education class was mentioned as the main physical activity opportunity provided to Chinese children. However, children cited that they had limited 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 mandatory physical education component of the high school entrance examination (i.e., commonly known as “Zhongkao” in Chinese). Instances of other academic curriculum displacing physical activity was also a barrier limiting physical activity opportunities for children at school.

“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.”

“... having academic subject lessons at the expense of PE (physical education) lessons, especially when it comes to the senior secondary level.”

**Figure 5: Synthesized finding 4 (Chinese territories) – Policy-and-program related barriers**
Category 4.2: Lack of appropriate programs/activities

Children identified a lack of appropriate programs or a deficiency within the available programs as a barrier. At school, children were identified as having a limited interest in physical education lessons due to the overly skill-oriented nature of the classes and the inappropriate provision of time for physical education lessons.32,66

“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.”62(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.”66(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 non-Chinese territories.

Synthesized finding 1: Personal barriers and facilitators

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

| Finding | Category | Synthesized finding 1 |
|---------|----------|-----------------------|
| Team sports, particularly basketball, are commonly listed as favorite sports or activities (C) | Individual physical activity preference | Personal barriers and facilitators |
| Physical activity occurred mostly at school or an after-school setting (U) | Child’s desire to be active |
| Experience as recognition in HPE and school sport - complementary (U) | | |
| Experience as misrecognition/less recognition in HPE and school sport - adaptive (U) | Interpersonal negative perspectives on self-identity |
| Physical activity inequity (U) | | |
| Overt forms of racism (U) | | |
| Exclusion experiences (U) | | |

Figure 6: Synthesized finding 1 (non-Chinese territories) – Personal barriers and facilitators
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. Team sports were reported to be most popular among ethnic Chinese children, and they stated that physical activity mostly took place at school and in after-school settings (e.g., home, neighborhood).

“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.”

“I sometimes play chase with my brother around the house, practicing hockey in the yard, or we do work outside in the garden.”

Category 1.2: Child’s desire to be active. A child’s own need and willingness to participate in physical activity were also noted as important. The participation in physical activity was dependent on whether the individual had the desire to do so.

“I like being a prefect 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.”

“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.”

Personal barriers

Category 1.3: Interpersonal negative perspectives on self-identity. A particular barrier mentioned by the ethnic Chinese children who reside in non-Chinese territories was their experiences of inequality, exclusion, and racism at school. Girls in general excluded themselves from physical activity, and captains in physical education sessions picked teammates from the boys over girls first. 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 go 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.”

“I just think they [Europeans] 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.”

“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.”

Synthesized finding 2: Socio-cultural barriers and facilitators

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

**Category 2.1: Parental or family support.** Parental and familial support were identified as facilitating children’s participation in physical activity. The availability of opportunities for physical activity for children was also associated with parental understanding and knowledge of the physical activity.

“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.”

“We just hope our children can fully develop their skills, I will let him try everything.”

**Category 2.2: Involvement of peers.** The wider social networks of a child presented both positive and negative impacts on their participation in physical activity. Specifically, the conduct of peers was important in determining an individual’s motivation for physical activity.

“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.”

“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.”

**Socio-cultural barriers**

**Category 2.3: Chinese cultural beliefs.** The Chinese ethnic ethos promotes the comprehensive development of an individual. 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 academic success was given more emphasis by parents and children.\(^{32,68}\) 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.”\(^{68}\)(p.1053)

These attitudes also highlighted the traditional familiar power relationship in the Chinese family. A child was culturally legitimized to value filial piety, including adopting parental discourse without questioning, which makes ethnic Chinese children feel obligated to excel in academic performance as expected by their parents.\(^{68}\)

“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.”\(^{68}\)(p.1059)

Category 2.4: Parental concerns. The perceived negative impacts of physical activity by parents were commonly cited as barriers to a child’s participation in physical activity. Four parental concerns were identified: academic concerns, aesthetic concerns, safety concerns, and weight concerns.\(^{68}\)

“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.”\(^{68}\)(p.1056)

“If all I got was getting 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.”\(^{68}\)(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.”\(^{68}\)(p.1056)

“For example if a child is already fat, that means he will have less interest in sport.”\(^{32}\)(p.1009)

Discussion

This systematic review explored qualitative evidence relating to barriers and facilitators to ethnic Chinese children participating in physical activity, and uncovered the similarities and differences in these barriers and facilitators. This is 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 21 categories. Four synthesized findings emerged from the data: personal,
socio-cultural, environmental (only in the Chinese territories), and 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. It is important to critically assess the barriers distinctive to ethnic Chinese children in the Chinese and non-Chinese territories. This systematic review identified personal barriers and facilitators similar to those identified by previous Chinese quantitative systematic reviews on this topic. 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). It was highlighted that children who experienced enjoyment and happiness while doing physical activity were more likely to participate in physical activity. In contrast, negative feelings (e.g., tiredness) about physical activity would inhibit their future participation in physical activity. Children’s motivations for physical activity increased when they perceived that benefits could be gained by engaging in physical activity.

In this systematic review, parents were consistently identified as integral “gatekeepers” in providing ethnic Chinese children with physical activity opportunities, in line with previous Chinese quantitative systematic reviews on this topic. Regardless of whether children resided in the Chinese or non-Chinese territories, their parents were aware of the responsibility to provide opportunities for their child to be active, such as going out at weekends. However, parents were generally seen to be overemphasizing children’s educational attainment. Their perception that physical activity was a factor negatively influencing their child’s academic performance was presented as a barrier inhibiting children from participating in physical activity. On the other hand, parental support and willingness to provide greater opportunities for children to participate in physical activity resulted in higher physical activity levels in their children.

Beyond 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 interest in physical activity increased when they had experiences of better performance than their peers in certain physical activities. As only one Chinese study involving teachers was included, it was not possible to distinguish the similarities or differences relating to teachers between the two settings. In Chinese territories, it was identified that physical education lessons that demonstrated a good approach to teaching (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. This may be potentially related to the social support from engaging in physical activity that is perceived by children. Children spent the majority of their time at school, and social interaction was a considerable factor in their decision to participate in sports. Children were more likely to engage in physical activity when 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. Children commonly expressed interest in engaging in physical activity, yet they had very little leisure time as they spent the majority of time at school or working on assignments. This was also consistent with other Chinese quantitative systematic reviews, suggesting that children who reside in Chinese territories commonly experience a great burden of academic study that limits the amount of time they have available for physical activity. A previous study shows that the school hours for primary school children in Chinese territories are nine hours on average. Children normally arrive at school around 7:30 a.m. to 7:55 a.m. and leave school around 4:30 p.m. to 5:30 p.m., which is significantly longer than the school periods in the United States and the United Kingdom (e.g., approximately 8:30 a.m. to 3:30 p.m.).
Experiences of exclusion, overt racism, and/or gender inequality were specific socio-cultural barriers that emerged among children in non-Chinese territories. In general, ethnic Chinese children had the feeling of being purposely 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. The general idea that girls are less competitive and strong compared with boys was identified as a barrier to girls being physically active and led to them self-excluding from participation in physical activity. Gender inequality was also reflected in the scenario where captains always picked teammates from the boys over girls first at physical education. Given the difficult experience of being a migrant, it is important for ethnic Chinese children who reside in 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.

An interesting socio-cultural barrier was identified among Chinese female children who reside in non-Chinese territories who claim that their physical activity is hindered by pressure from their parents to maintain “white” skin, as traditional Chinese culture considers “whiter” skin to be associated with higher social classes, while darker-skinned people (or those who are tanned) indirectly represent a low socio-economic status, as it implies working outside under the scorching sun. Although the preference for fair skin remains in Chinese culture, it was only identified as a barrier to physical activity in ethnic Chinese children who reside in non-Chinese territories, which may suggest conflicts in values between the first migrant generation and their descendants. It is important for parents of ethnic Chinese children who reside in non-Chinese territories to be aware of the cultural differences relating to preferences for skin color and not restrict children’s participation in physical activity as a result of this belief.

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 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. Children’s participation in physical activity may be hindered by 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).

Air quality and population density were additionally identified as barriers relating to environmental sanitation among ethnic Chinese children who reside in Chinese territories, and poor air quality and high population density negatively impacted children’s motivation to be physically active. Evidence suggests that children have different physical activity patterns compared with adults, such as playing outdoors, playing close to the ground, and engaging in more contact activities. These two sanitary barriers may inhibit children’s participation in physical activity, particularly for ethnic Chinese children who reside in the Chinese territories. Being aware of the unique Chinese environmental barriers to children’s physical activity and involving public health policymakers in promoting physical activity may help to increase the physical activity levels in ethnic Chinese children who reside in Chinese territories.

In terms of policy- and program-related barriers, ethnic Chinese children who reside in Chinese territories were repeatedly prevented from doing physical activity as a result of insufficient opportunities for participation in their preferred physical activity in physical education lessons. In Chinese territories, children are required to take a sports test before entering high school, which means physical education lessons are generally used as (examination-oriented) training by schools and, therefore, children lack opportunities to do their preferred physical activity at school. 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.
Several previous Chinese quantitative systematic reviews reported that physical education lessons in Chinese territories were not attractive to children (i.e., a lack of intriguing curriculum content/structure), and they are simply delivered by organizing children to do free self-practice. A child’s physical activity may be determined by their preferences and they will allocate more time to specific activities as they grow up, so age-specific physical activity guidance could assist in engaging children more broadly. It may be more appropriate to offer young children general and interesting physical activities while providing more skill-oriented sports for older children. Strategies to improve the content and structure of physical education lessons, as well as 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 schools could be considered in order to support school policy adoption.

**Strengths and limitations**

To the best of the authors’ knowledge, this is the first qualitative systematic review to synthesize the barriers and facilitators to physical activity in ethnic Chinese children between six and 17 years of age. This review applies rigorous JBI review methods, an extensive search strategy, and included all papers regardless of language or type of publication (i.e., published or unpublished). 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, United States, and United Kingdom) 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. The studies also provided narrative illustrations from all the participants, which give 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 reviews, 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 of this review is that publication bias cannot be ruled out, as a non-peer reviewed thesis was included in this review, possibly lowering the methodological quality and the credibility of synthesized findings. 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 identified theses or dissertations were left out in the process of screening. The majority of studies were not written in Chinese, which may lead to the conclusions being biased by a general view on Chinese territories held by Western society. One study was in Chinese and a translation of extracted findings was conducted by reviewers; however, the credibility of synthesized findings may be reduced due to language bias and the accuracy of the translation.

This review did not stratify the barriers and facilitators specific to children of different ages and genders because the participants included children, teachers, and parents, and the majority of included studies did not report the barriers and facilitators according to children’s gender. The perceived barriers and facilitators to physical activity may differ between younger and older children as well as between boys and girls, so future research may benefit from 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 for 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 Chinese territories, only six were published peer-reviewed studies, and these studies were generally conducted in large Chinese cities, such as Beijing and Hong Kong. Considering the limited number of included studies and the social differences between different jurisdictions it is not possible to claim a universal understanding of barriers and facilitators for children residing in Chinese territories.
Table 2: Recommendations for practice

| Recommendation                                                                 | Grade |
|-------------------------------------------------------------------------------|-------|
| 1. Appropriate physical activity programs (such as street basketball, street dance) should include elements that could increase children’s intrinsic value, enjoyment, interests, and knowledge of physical activity. | A     |
| 2. Parents need to encourage their children to participate in physical activity and create a more supportive environment/opportunities for them. | A     |
| 3. Schools/parents should review the appropriate time and workload for children and alleviate the academic burden on children. | A     |
| 4. Schools should provide education to help change the traditional academic-focused beliefs among parents. | A     |
| 5. Governments/schools should educate children and parents on the benefits of physical activity for physical health and increase motivation to be physically active. | A     |
| 6. Schools in non-Chinese territories need to have a greater awareness of children’s experiences of ethnic stigma while doing physical activity. | A     |
| 7. The Chinese government should consider the unique national demographic and environmental barriers to children’s participation in physical activity and take actions to address air quality and limited physical activity spaces. | A     |
| 8. Policymakers should review the implementation of available physical activity programs/physical education lessons at school and take necessary actions to ensure children are provided sufficient opportunities to take part in them. | A     |

Conclusions
The reasons for physical inactivity in ethnic Chinese children are complex and multi-factorial. A range of personal, social, environmental, and policy- and program-related barriers and facilitators have been identified that influence their participation in physical activity. 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 adults play in shaping children’s physical activity behaviors. There are fewer qualitative studies on this topic conducted with Chinese children who reside in non-Chinese territories than in the Chinese territories. It is important that future research examines this topic given there is a large population of ethnic Chinese children living outside Chinese territories and the differences noted regarding the barriers to physical activity among ethnic Chinese children in different countries. 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 programs to encourage and increase participation in physical activity within this population.

Recommendations for practice
Using the JBI guidance for recommendations, development implications for practice have been identified and recommendations made. 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’s, parents’, and teachers’ concerns as well as the unique Chinese social, cultural, environmental, and policy- and program-related influences. Specific recommendations are listed in Table 2.

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 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.

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Appendix I: Search strategy

MEDLINE (1946–December 10, 2018)
Date searched: December 10, 2018
Number of records: 1790

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 10, 2018)
Date searched: December 10, 2018
Number of records: 1950

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 behavior)).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.
26. 20 OR 21 OR 22 OR 23 OR 24 OR 25
27. exp Asian continental ancestry group/
28. exp China/
29. exp Chinese/
30. (Chinese OR China).mp
31. 27 OR 28 OR 29 OR 30
32. 12 AND 19 AND 26 AND 31

PsycINFO (1806–December 10, 2018)
Date searched: December 10, 2018
Number of records: 420

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 behavior)).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 10, 2018)
Date searched: December 10, 2018
Number of records: 1796

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 behavior)
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 S21 OR 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 10, 2018)
Date searched: December 10, 2018
Number of records: 14

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 10, 2018)
Date searched: December 10, 2018
Number of records: 67

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 10, 2018)
Date searched: December 10, 2018
Number of records: 1771

Search strategy
#1. TS=(physical fitness OR physical education OR physical training OR physical activity OR physical inactivity OR exercise* OR sport* OR sedentariness OR sedentary lifestyle OR sedentary behaviour*)
#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 adolescent* 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 10, 2018)
Date searched: December 10, 2018
Number of records: 1796 (BNI is a subscription included within CINAHL in our institution; the search in total returned 1796 results from BNI and CINAHL)

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 activity OR inactivity)).mp.
7. (exercise* OR sport* OR sedentariness).mp.
8. (sedentary adj (lifestyle OR behaviour)).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 adolescent* OR student* OR minor* OR kid* OR teen* OR youth* OR young OR juvenile*).mp.
23. 18 OR 19 OR 20 OR 21 OR 22
24. (Chinese OR China).mp
25. 9 AND 17 AND 23 AND 24
SYSTEMATIC REVIEW

CNKI (1979–December 10, 2018)
Date searched: December 10, 2018
Number of records: 1096
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' + '静坐生活方式' + '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' + '座谈会' + '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 10, 2018)
Date searched: December 10, 2018
Number of records: 880
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' + '静坐生活方式' + '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' + '座谈会' + '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 10, 2018)
Date searched: December 10, 2018
Number of records: 720
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' + '静坐生活方式' + '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' + '座谈会' + '横断面' + '调查') AND M=('中国' + '我国') AND M=('儿童' + '小孩' + '少年' + '青少年' + '学生' + '未成年' + '年轻人')
Gray literature

ProQuest Dissertations and Theses
Date searched: December 10, 2018
Number of records: 943
Search strategy
ab,ti(physical fitness OR physical education OR physical training OR physical activity OR physical inactivity OR exercise OR sport OR sedentariness OR sedentary lifestyle OR sedentary behaviour) AND ab,ti((barrier OR imped OR challenge OR hinder OR hindrance OR obstacle OR obstruct OR deter OR facilitate) OR (qualitative OR interview OR focus group OR cross-sectional OR cross sectional OR survey)) AND ab,ti(child OR adolescent OR student OR minor OR kid OR teen OR youth OR young OR juvenile) AND ab,ti(China OR Chinese)

OpenGrey
Date searched: December 10, 2018
Number of records: 13
Search strategy
(physical fitness OR physical education OR physical training OR physical activity OR physical inactivity OR exercise OR sport OR sedentariness OR sedentary lifestyle OR sedentary behaviour) AND ((barrier OR imped OR challenge OR hinder OR hindrance OR obstacle OR obstruct OR deter OR facilitate) OR (qualitative OR interview OR focus group OR cross-sectional OR cross sectional OR survey)) AND (child OR adolescent OR student OR minor OR kid OR teen OR youth OR young OR juvenile) AND (China OR Chinese)

EThOS
Date searched: December 10, 2018
Number of records: 25
Search strategy
physical activity OR physical fitness OR exercise OR sports OR sedentary AND Chinese

CNKI
Date searched: December 10, 2018
Number of records: 943
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' + '静坐活动方式' + '身体活动' + '体力活动' AND TI = '影响' + '障碍' + '阻碍' + '妨碍' + '阻止' + '挑战' + '不确定因素' + '促进' + '推动' + '推进' + '属性' + '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  
Date searched: December 10, 2018  
Number of records: 105  
Search strategy

題名或关键词: ("身体健康" + "体育课" + "身体锻炼" + "训练" + "运动" + "体育" + "静坐行为" + "久坐" + "静坐生活方式" + "身体活动") 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: Studies ineligible following full-text review

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: Ineligible phenomena of interest*

Bu SC, Zhao Y. Ji ning di qu nong cun chu zhong sheng ti yu duan lian xing wei xian zhuang de diaocha yu fei yang [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 [Jinan: Shandong Sport University]. 2012.

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

Bu YF, Du L, Li SL. Zhong xue sheng tao bi ti yu duan lian xing wei ji ying xiang ji zhi [A study of middle school students’ physical exercise evading behavior and its affecting mechanism]. Ti yu xue kan [Journal of Physical Education]. 2017;24(4):120–7.

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

Cai YH, Wang Y. Wo guo zhong xiao xue xiao yu jia tin ti yu lia de zhi feng xue yin su he fa zhan ce lue fen xi [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 [Journal of Education Institute of Jilin Province]. 2016;32(4):24–6.

*Reason for exclusion: Not a primary study*

Cen SH. Pu tian shi cheng qu qing shao nian er tong ke wai ti yu huo tong diaocha fen xi [Investigation and analysis of the present situation of children’s extracurricular sports activities in Putian city]. Qin shao nian ti yu [Youth Sport]. 2017;0(2):116-8.

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

Cen YL, Gong ZW. Ban zhu ren ti yu can yu dui xue sheng ti yu xing wei ying xiang yan jiu [Research into the influence of headteachers’ sports involvement upon students’ physical behavior [Master’s thesis]]. Chang sha hu nan shi fan da xue [Changsha: Hunan Normal University]. 2008.

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

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*

Chang F. Wo guo xue sheng ti zhi jian kang xing ying xiang yin su jian kang cu jin ce lue yan jiu [New Impact Factors and Health promotion strategies of...
students’ physical health in China]. Hu bei ti yu ke ji [Hubei Sports Science]. 2017;36(7):616-618+654.

Reason for exclusion: Not a primary study

Chen DQ, Xu L. Wo guo qing shao nian xue sheng ti zhi jian kang yin su yan jiu fen xi 我国青少年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 FP. Wo guo qing shao nian ti zhi xian zhuang yu ti yu jiao xue mo shi ce lue 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 [Youth Sport]. 青少年体育. 2015;0(8):123-4.

Reason for exclusion: Not a primary study

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

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

Chen ML, Ma XQ. Zhong shen jiao yu bei jing xia wo guo zhong xiao xue ti yu jiao xue mo shi 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: Cross-sectional survey without free-text

Chen YF. 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

Cheng HL, Yuan JG. 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 温州大学 [Wenzhou University]. 2014.

Reason for exclusion: Cross-sectional survey without free-text
Cheng J. Wo guo zhong xiao xue xue xiao ti yu jiao xue xian zhu yao wen ti de diao chao yan jiu [Investigation on the main problems of physical education teaching in primary and secondary schools in China. Ren jian. Human]. 2016;202(7):99.

Reason for exclusion: Not a primary study

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

Cheng L, Li Q, Song Y, Ma J, Wang HJ. 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 [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 (Journal of Peking University. Health sciences). 2016;48(3):436–41.

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

Cui ZL. Wo guo qing shao nian ti zhi jian kang ying xiang yin su fen xi ji dui ce tan tao [Analysis on influencing factors of adolescents’ physical health in China and discussion on countermeasures]. Zhong guo gao xin qu [Science & Technology Industry Parks]. 2018;18(4):71.

Reason for exclusion: Not a primary study

Dan D. Wo guo qing shao nian ti yu duan lian xing wei xi guan yao cheng de ying xiang yin su [Influencing factors and countermeasures of adolescents’ physical activity habits in China]. Ke cheng jiao yu yan jiu [Course education research]. 2018;(19):197.

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

Deng XM, Yang X. Kun ming chu zhong xue sheng ke wai ti yu duan lian dui xue sheng ti zhi jian kang de yan jiu [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 [Kunming: Yunnan Normal University]. 2015.

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

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
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: Ineligible phenomena of interest

Fan LR, Gu MR, Wang HZ, Yu X, Liu MJ, Wang XN. 目اظ, ٢嘬, ੡ڪ, 东营, 王小宁 Quan guo xue sheng can jia kw wai ti yu huo dong xian zhuang de yan jiu [A national survey on students’ physical activity after school]. Ti yu ke xue [Sport Science]. 2000;20(2):7–11.

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

Fan RY, Tang Y. 范弋, 潘弋 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 [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 [Shanghai: Shanghai University of Sport]. 2017.

Reason for exclusion: Not a primary study

Fu HL. 符黄良 Zhong guo qing shao nian ke wai ti duan lian xing wei de zong jie yue si kao [Summary and consideration on influencing factors of youth physical exercise behavior in China]. Su zhou jiao yu xue yuan xue bao [Journal of Suzhou Education Institute]. 2015;18(1):119–21.

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

Gao YC, Cui HY. 郭艳, 崔红艳 Wo guo qing shao nian ti zu shen hua wei de zong ji yue si kao [Summary and consideration on influencing factors of youth physical exercise behavior in China]. Su zhou jiao yu xue yuan xue bao [Journal of Suzhou Education Institute]. 2015;18(1):119–21.

Reason for exclusion: Not a primary study

Ge S, Chi J. 曾 Physi Sheng tai yin su dui wo guo cheng shi qing shao nian shen ti huo dong xing wei ying xiang yan jiu [Effect of ecological factors on physical activity of urban adolescents in China [PhD thesis]]. Bei jing ti yu da xue [Beijing: Beijing Sport University]. 2012.

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

Guo JQ, Liu YH, Yu YS, Fang YJ, Wei GH. 郭俊清, 刘永焕, 方议三, 房英杰, 魏国辉 Xin shi ji chu wo guo bu fen cheng shi qing shao nian jia ti zu shen hua wei cha yan jiu [Survey and research on adolescents family sports of our country in 21th century]. Ha er bin ti yu xue yuan xue bao [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. 悟强, 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 [PhD thesis]. Shanghai: East China Normal University. 2016.

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

Guo YH, Shi Y, Zhang YH, Li X. 悟強, 史鳴, 張永紅, 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]. Hubei ti yu ke ji [Hubei Sports Science]. 2017;36(10):922——924+935.

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

Guo YH, Shi B, 郭昱航, 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]. Xi'an: Shanxi Normal University. 2014.

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

Guo YY, Shi B, 郭昱航, 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]. Xi'an: Shanxi Normal University. 2014.

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

Guo YH, Shi Y, Zhang YH, Li X. 悟強, 史鳴, 張永紅, 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]. Hubei ti yu ke ji [Hubei Sports Science]. 2017;36(10):922——924+935.

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

He LL, Lin L, Fu YL. 何玲玲, 林琳, 付玉玲 Shang hai shi xue lin er tong jiao tong xin ti li huo dong yin su su yan jiu 上海市学校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]. Shanghai: East China Normal University. 2017.

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

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 zhuang xue bao bao 辽宁师范报: 自然科学版 [Journal of Normal College (Natural Science Edition)]. 2002;23(4):76-8.

Reason for exclusion: Not a primary study

Hu YM, 胡亚明 Zhong xi fang ti yu wen hua cha yi dui wo guo xiao hua jiao tong xie xia 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
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

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

Huo XY, Huan CD, Xiao LP, 霍兴彦, 鄧昌迪, 肖林鵬. Wo guo qing shao nian ti yu can yu de zhi yue yin su ji yi yang dui ce lue [Restrictive factors and countermeasures of teenagers’ sports participation in China]. Ti yu wen hua dao kan [Sports Culture Guide]. 2012;30(3):112–6.

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

Jia LJ, Peng XW. Ying xiang wo guo qing shao nian ti yu jian kang de jiao yu xin su fen xi [An analysis of educational factors affecting the physical health of adolescents in China]. He bei ti yu xue yuan xue bao [Journal of Hebei Institute of Physical Education]. 2013;27(1):54–6.

*Reason for exclusion:* Not a primary study

Jia C. Jia tin ti yu dui wo guo qing shao nian ti zhi de ying xiang fen xi [An analysis of the impact of family sports on physical fitness of adolescents in China]. Wu shu yan jiu [Wushu Science]. 2015;12(5):103–4.

*Reason for exclusion:* Not a primary study

Jin H. Qing shao nian ke wai ti yu huo dong zai cheng shi guang chang ti yu kai zhan zhong de yan jiu [The research of teenager’s extracurricular physical exercise in the city square sports development]. Shanghai: East China Normal University. 2011.

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

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

Zhou HW, Fu GQ. 周红伟, 傅国强. 2020 JBI Evidence Synthesis 2498 © 2020 JBI. Unauthorized reproduction of this article is prohibited.
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Reason for exclusion: Cross-sectional survey without free-text
### 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)   | 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 PA 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 born in the US (60.0%) and self-identified as bicultural (52.0%). | 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 and community settings, information packets were passed out by study staff to interested parents and/or children to review at home. | 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 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. | Thematic analysis | Major themes included: (1) team sports, particularly basketball, were commonly listed as favorite sports or activities; (2) PA occurred mostly at school or an after-school setting; and (3) family played a major role in PA. Some trends/differences were detected based on age, sex, and SES. Interventions to promote PA among Chinese–American children should emphasize team sports and encourage PA in schools, but also explore ways to involve families outside of school. |
| He et al.30 (2014)     | Children who were in 5th grade and 6th grade, living in a list of eligible residential buildings were eligible. | Qualitative study | Identify the environmental facilitators and barriers of PA behaviors among Hong Kong Chinese children | School | Children from 5th and 6th grades (aged 10–11 years) | 34 | Participants were recruited from three primary schools and living in four types of neighborhoods varying in SES and "walkability," the urban form attributes that might impact travel and activity patterns: 1. Introduction of nominal group technique purpose and process to the participants. 2. Asking nominal group technique questions of the participants. 3. Individual silent generation of items in writing by participants. 4. Listing of items on a flip chart in a 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 the five most important items, which are reserved for final vote. 7. Discussion of the result of preliminary vote. 8. Final vote to establish. | Nominal group technique | Specific PA–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 PA–environment relationship among 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. |
| 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 |
|-----------------------|---------------------------------|--------|-----------------------|---------|-----------------------------|-------------|--------------------|-------------------------------|------------------------|----------------------|
| Ha et al.62 (2010) HK, China | Not mentioned | Qualitative study | To understand the PA culture in the lives of Hong Kong Chinese children and their parents | School | Children (9–16 years) (male = 24, female = 24); 22 parents of the students | 70 | Participants were from four primary and six secondary schools in the regions of Hong Kong Island, Kowloon and the New Territories. The schools represented a diversity of SES. After obtaining the written consent of all school principals and parents, the children were purposefully selected by teachers from different SES backgrounds, geographical locations, and attitudes and participation patterns in relation to their PA and PE domains. All the parents agreed to be interviewed through telephone at a time most convenient to them. | (Children) In all cases, the interviews were arranged by the school teachers and were conducted 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. | Using an open coding system | In conclusion, the children selected from Beijing and Nanjing, two major cities in China, one in the North and one in the South, reported 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 future family- and school-targeted health promotion interventions, including childhood obesity prevention. Intervention framing must consider the unique Chinese social and cultural context. |
| Wang et al.63 (2017) Beijing & Nanjing, China | Not mentioned | Qualitative study | To understand how children and parents in China make eating and PA decisions, considering individual, family, community, social, and environmental factors, and to collect parents’ recommendations for interventions to promote healthy eating and PA. | School | Children (ages 10–15, n=41) and their parents (n=41) | 82 | We recruited participants (students and their parents, one parent per 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, 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. | Children and their parents participated in eight semi-structured focus groups in Beijing (North China) and Nanjing (South China). Each site conducted two focus groups with children and two focus groups with parents. | 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 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 future family- and school-targeted health promotion interventions, including childhood obesity prevention. Intervention framing must consider the unique Chinese social and cultural context. |
| 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 |
|-----------------------|---------------------------------|--------|-----------------------|---------|-----------------------------|-------------|-------------------|-------------------------------------|-----------------------|------------------|
| Zhang J et al. (2007)  Beijing, China | One class ranking high and one class ranking low (with respect to the average academic grades) was selected from two schools 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. | Qualitative study | Identify salient consequences, referents, and circumstances about PA as perceived by middle school students and to provide suggestions for interventions and quantitative research | School | Children (98%) were aged 13-15 years and half were male and half were female | 155 | Participants were students selected from four classes of two middle schools. In Beijing, middle school or junior high school consists of three grades: Grade 1, 2 and 3. | The self-completion instrument was administered during PE class by two members of the research team who were not associated with the school. | Content analysis | The results of this qualitative study suggest that student perceptions of the relationship between their participation in PA and their school work might be more important factors underlying their decisions to participate in PA than their beliefs about the health benefits. Programs to increase PA should address the social and environmental factors underlying these perceptions with the goal of strengthening student engagement in PA 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 PA. In addition, given the role of the parents as a social referent and the students’ perception of the connection between PA and academic performance, research is needed to understand the views of parents, teachers, and school administrators. |
| Zhang MM et al. (2015) Shanxi, China | Not mentioned | 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 do not value PE, parental attitude, Facilitator: build equal student/teacher relationship, adopt course structure. |
| Pang (2014) HK, China | Not mentioned | Qualitative study | To examine the factors that contribute to Hong Kong Chinese young people’s values and expectancy beliefs in PA. | 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, and their parents. All agreed and gave consent for the young people to participate in the interview. | Content analysis | The deeply rooted capitalistic economy and the philosophy of Confucianism that act hand-in-hand in shaping the PA values and expectancy beliefs of contemporary Hong Kong Chinese young people. |
| 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 |
|-----------------------|---------------------------------|--------|-----------------------|---------|---------------------------|-------------|-------------------|-------------------------------|-----------------|------------------|
| Pang et al. (2008) HK, China | Not mentioned | Qualitative study | Examines the parental concerns in facilitating their children’s PA participation in Hong Kong | Community | Parents (10 fathers and 12 mothers) of children (aged 10-16 years) | 22 | Participants were randomly 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 overemphasis in children’s academic pursuits were found to be their major concerns in facilitating children’s further engagement in PAs. |
| Pang et al. (2016) Queensland, Australia | Not mentioned | Qualitative study | Examining how young Chinese Australians (dis)engaged in HPE and school sport | School | 10 girls: (Year 8 = 5, Year 9 = 4, Year 10 = 1) 2 boys: (Year’9) | 12 | Participants were recruited through two schools (not specified). | Paper draw on the interviews and observations with the students from the full data set. Seven sets of interviews 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.” | Thematic analysis | The results suggest that some aspects of the experiences of culturally diverse groups in HPE and school sport 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 central HPE. |
Reference and country

Pang et al. (2015)
Brisbane, Australia

Inclusion and exclusion criteria
Not mentioned

Design
Qualitative study

Phenomena of interest
Understanding the young people’s experiences in PA and health, both in schools and out-of-school contexts

Context
School and community

Participant characteristics
Children (aged 10-15 years)
Boys (n=2)
Girls (n=10)

Sample size
12

Recruitment method
The schools were purposively selected on the basis of their school population, geographical locations, gender structure, likelihood of gaining access and varied SES, as research showed that these social and cultural factors have an impact on young people’s PA opportunities and practices.

Data collection procedure and tool
Six sets of interviews were aimed at understanding the young people’s experiences in PA 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 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.

Data analysis technique
Inductive content analysis

Authors’ conclusion
Dominant discourses in the “talk” of these young people included their notions of excelling, hyperinvestment in academic success and, especially for the girls, skin color and safety. Traditional Chinese family power relations limited the choices these young people had regarding PA 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 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 PA and health promotion.
## Phenomena of interest

Explore parental views of children's physical activity (PA) in a multi-ethnic sample living in a large city in the northwest of England.

## Context

School and community

Parents (5 Asian Bangladeshi, 4 Black African, 7 Black Somali, 6 Chinese, 8 White British, 6 Yemeni).

## Sample size

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 venues. Letters were sent to parents who 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), parents were also recruited through schools and community centers by teaching staff and community workers.

## Data collection procedure

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 refreshments were provided. Focus groups were conducted using semi-structured topic guides. 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 (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.

HPE, health and physical education; PA, physical activity; PE, physical education; SES, socio-economic status.

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**Reference and Country Inclusion and Exclusion Criteria**

- **Design**: Trigwell et al. (2015), northwest of England, UK
- **Inclusion**: 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.
- **Exclusion**: Study included children in a multi-ethnic sample. Participants who participated in the previous study were based on their proximity to the location of the focus group venues. Parents who consented to further contact from the research team were also recruited through schools and community centers by teaching staff and community workers.

**Authors’ conclusion**

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## Appendix IV: Study findings with illustrations

| 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 physical activity 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) |
| 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) |
| 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) |
| Study                                                                 | Finding                                                                 | 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) |
| 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 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 health and physical education and school sport. Phys Educ Sport Pedagogy. 2016;21(4):441-58. | 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 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 physical activity 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)
| Study                                                                 | Finding                                                                                                                                                                                                 | Illustration                                                                                                                                                                                                 |
|----------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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)                                                                                                                                                           |
| 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)                                                                                                       |
| Study                                                                 | Finding                                                                                       | Illustration                                                                                   |
|----------------------------------------------------------------------|---------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| Physical activity was not useful in relation to entering a better    | “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) |
| secondary school (U)                                                 |                                                                                               |                                                                                               |
| 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 | “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) |
| curriculum and after school hours (U)                               |                                                                                               |                                                                                               |
| 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 | Safety (crime) (C)                                                                           | “Afraid of being taken or hurt at night” (p.4)                                                |
| physical activity; a qualitative study using nominal group technique. |                                                                                               |                                                                                               |
| PLoS One. 2014;9(9):e106578.                                          | 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   | 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) |
| Phys Act. 2007;4(1):38-47.                                           |                                                                                               |                                                                                               |
| Salient referents (C)                                                | “Clearly, most of the salient referents for this behavior were family members, including parents, others, fathers, and grandparents.” (p.43) |
| Study                                                                 | Finding                                                                                                                                   | Illustration                                                                                                                                                                                                                                                                                                                                 |
|----------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                     | 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 jì bei yang ce lue yan jiu [Study on the factors of motivation and influencing sports learning [Master’s thesis]]. Lin fen shan xi shi fan da xue [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) |
| 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) |                                                                                                                                                                                                                                                                                                                                                                                  |