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Operationally Defining Physical Literacy in Chinese Culture: Results of a Meta-Narrative Synthesis and the Panel's Recommendations

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Abstract

Purpose: The definition of physical literacy (PL) needs to be explored by researchers from educational, public health, and sports organisations in Chinese culture; an adequate definition and theoretical framework of PL can then be embraced within different contexts and according to cultural influences.

Methods: This meta-narrative synthesis of literature in this area included a series of planning, search, mapping, appraisal, synthesis, and recommendation phases. The literature was translated into English and circulated among international experts to seek suggestions. A total of 74 articles were included in the PL definition synthesis and 28 were included for philosophical synthesis in this study.

Results: Based on three rounds of discussions, the final agreement was reached among panel members regarding the defining statements and practical and theoretical models of PL in Chinese culture. According to consensus, PL is the integration of physical, perceptual, cognitive, psychological, and behavioural capabilities, echoing with the need for an active, healthy, and fulfilling lifestyle, which involves continuous positive interactions with the environment and embodied engagement in physical activities for life. The framework addressed five domains (physical, sensory-perceptual, cognitive, psychological, and behavioural) and one important overlapping factor (dynamic environment). A further explanation was provided in the defining statement to assist in understanding the concept.

Conclusion: It is suggested that the cultural interpretation and historical background of PL in Chinese discourse should be addressed and respected. The development of a specific cultural

definition statement of PL in one country could provide implications for PL researchers worldwide.

Keywords: Physical literacy; Meta-narrative synthesis; Chinese culture; Systematic review

1. Background

There is a growing recognition and acceptance of the need to embrace physical literacy (PL) for promoting individuals' physical activities in the sports and public health fields.¹ Research on PL is essential for addressing the global concerns of prevailing sedentary lifestyles and for establishing pursuits of engagement in physical activity, as PL is believed to provide a wide range of such opportunities and has been identified as an antecedent to children's successful participation in the movement's environment. It is also regarded as the ultimate outcome in the field of physical education.² As a multidimensional concept, PL encourages the view that all young people benefit from participation in physical activity, rather than just the small proportion of children who specialise in elite levels of competitive sports. Furthermore, PL applies to all children and adults throughout every stage of life.³ Several countries across the world, such as Canada, Australia, the United States, and the United Kingdom, have embraced the concept of PL as a guiding ideology embedded in physical education curricula. Nonetheless, there is continued controversy as to the definitions of PL used by educational, public health, and sports organisations worldwide.⁴ For example, previous studies have reported over 20 different PL-related concepts adopted by scholars in the literature.^{5, 6} The ambiguity regarding its definition and the inconsistency in how PL is understood and used have been raised as ongoing issues for debate.

Whitehead⁷ suggests that the concept of PL exists along a ladder of abstraction. The most advocated definition of PL, consistently recognised by the International Physical Literacy Association,⁸ is: ‘The motivation, confidence, physical competence, knowledge and understanding to value and take responsibility for engagement in physical activities for life’. This definition focuses on the necessary attributes that lead one to aspire to and attain lifelong engagement in physical activity. There is no doubt that the philosophical foundations and underpinnings of PL have drawn the world’s eyes in response to the sedentary lifestyle trend among children and adults; Whitehead³ also suggests that the concept of PL may be interpreted differently with consideration to cultural discourse and diverse nations. As the Greater China Region (Mainland China, Hong Kong, Macau, and Taiwan) occupies a unique historical path of development and belongs to a unique governing policy (‘One Country, Two Systems’), there is a need for researchers of the Greater China Region to embrace the definition and theoretical framework of PL with recognition of the importance of sensitivity to differing cultural influences and contexts. The development of a specific and culturally sensitive definition of PL in one country could provide implications for PL researchers worldwide.

Interpreted on humanistic and economic levels, the Greater China Region is a broad term for Chinese nations; it represents the majority of the Chinese population and has a long history of over 4000 years of cultural development.⁹ China is estimated to occupy 9.6 million square kilometres (making it the third largest country in the world) and is currently the most populous country, with an estimated 1.4 billion people in 2019. Under the policy of ‘One Country, Two Systems’ all the districts share a common sense of Chinese culture, while also developing unique trajectories with regard to historical development. For example, Hong Kong and Macau (located

in the southern part of China) have underwent colonial rules and are mostly influenced by Western culture;¹⁰ Taiwan also has a distinctive cultural background within the Greater China Region; it was an aboriginal culture in ancient times and then was ruled as a colony. Chinese culture has been greatly influenced by Confucianism, Buddhism, and Taoism—with an emphasis on the body and the mind; such influences have led to a unique interpretation of the concept of PL that is in sharp contrast to the Western world's Christian beliefs and Japan's samurai spirit.¹¹ As the concept of PL has been embraced as a new way for understanding how sports-related behaviour is rooted in our daily lives within different contexts, the philosophical underpinnings of the PL concept have been explored.^{3, 12} The aforementioned definition emphasises holistic engagement, encompassing the embodied dimensions of human movement, which can also be viewed from an Eastern perspective (the Taoist approach to PL)¹³ and offers insight into a wider range of contemporary perceptions of PL in the Greater China Region. As such, it is believed that the concept of PL can be further understood, interpreted, aligned, and adapted by Chinese scholars, practitioners, and policy makers in the context of Chinese culture as influenced by Confucianism, Buddhism, and Taoism.

In the Greater China Region, researchers have regarded PL as an important ideology in directing students' participation in physical activity, which mainly occurs in school settings. The plurality of PL definitions has led to different understandings regarding PL assessments for educators. For example, researchers have constructed and validated the Perceived Physical Literacy Instrument for physical education teachers¹⁴ to further investigate the self-perception of PL in students, while other assessment tools have been adopted to evaluate PL among school-aged students.¹⁵ PL has been proposed to appeal to a holistic embodiment that encompasses perceptions with

regard to experience, memory, anticipation, and decision-making.¹² According to these views, the concept of PL refers to the potential to engage in physical embodiment, as well as the intention to engage in lifelong participation in physical activity. Discrepancies in the conceptualisation of PL have aroused significant debate in academia in the Greater China Region.^{13, 16, 17} Furthermore, these documents have been written and read in local Chinese – which cannot be broadly circulated among scholars from different countries and districts. Therefore, an appropriate approach should be adopted, which resonates with scholars and enables the understanding of the concept of PL in this region with adaptations to local conditions. To achieve the goal of exploring diversity and multiple sources of PL in researchers from the Greater China Region, it is essential to adopt a method that is inclusive, while also enhancing the rigour of the findings by following the standards of the research process. The appropriate approach is to develop a local, contextually sensitive framework that achieves the following research aims: 1) it is important to synthesise the framework from a complex body of evidence into a comprehensive compilation that is not limited to the world of academia; 2) there should be consensus for a PL definition within this region that prevents confusion and further debate⁴ followed by comparison with findings in other countries. As such, the resulting approach should offer a synthesis of local cultural and practical perspectives from the existing literature and allow discussion or evaluation of the agreed framework and defining statement, thus informing the scientific discourse.¹⁸

With the need for appropriate methods to address the research objectives, this study deploys a meta-narrative synthesis of the literature within the Greater China Region and places an emphasis on the panel recommendation phase to achieve a consistent defining statement and

philosophical framework of PL. This could then be advocated by researchers, practitioners, and policy makers in the education and health departments of the Greater China Region and ultimately lead to the recognition and insights of leading colleagues worldwide. Therefore, the research question of this study was: how do we define, clarify, and conceptualise 'PL' for its application and use in the Greater China Region?

2. Methods

The meta-narrative synthesis was selected as the most appropriate approach because the multifaceted concept of PL has been researched in different ways by multiple groups of scientists and key terms have different meanings in different literature sources.¹⁹ We referred to the six guiding principles (Table 1) as we explored the current literature and comprehensively organised the information found. For the current research, we followed procedures described in the meta-narrative protocol by MacDonald, O'Leary²⁰ in planning and organising the research phases. These phases included the following: 1) the planning phase – the beginning phase for drafting research questions based on the aims of this study. The research team, including the panel members, reviewed the research questions and were asked to add additional questions that were relevant to their information needs; 2) the search phase – the literature search process was conducted and included an initial search of the literature to facilitate and set the formal literature search strategy by establishing search terms, search fields, and databases. Consultation and networking meetings with colleagues were held to ensure that the overall approach was approved; 3) the mapping phase – the analytical process, which included the initial list of papers to be mapped (by the research team) into disciplinary categories in order to acquire a general sense of the topic areas; seminal texts and research papers were identified as guiding frameworks

for the synthesis of findings; 4) the appraisal phase – the phase during which article quality was determined as well as the extent to which the articles could influence the overall conclusions; 5) the synthesis phase – the research team used a deductive coding framework to guide the data extraction process and identified commonalities in concepts, theories, and findings (paradigm bridging), and described differences in research and understanding (paradigm bracketing);²¹ and 6) the recommendation phase – the final phase for panel members to comment and disseminate findings across a broad range of potential stakeholders in order to achieve consistency in the defining statement and philosophical framework of PL in Chinese (Supplementary File). The information was then translated into English and circulated among international experts to seek suggestions.

The quality standards²¹ and materials²² of the meta-narrative synthesis methodology have guided the development of this research design; the process was non-linear in the sense that a different process may have occurred in one step or was repeated during the review process²². Details of this process are introduced in the following paragraphs.

2.1 Procedure

2.1.1 Planning phase

The first step was to clarify the importance of the PL concept to be defined in the Greater China Region and to assemble a group of experts and practitioners to focus on this topic.^{21, 23} The principal investigator (first author) developed draft research questions based on the aims of this study. The members of the core research team were academicians from the Chinese University of Hong Kong, led by the corresponding author. They worked as experts who provided review

comments and added additional questions if they thought relevant information was left out.

Meanwhile, team members became familiar with the research topic, aims, and specific duties through informal communication throughout this phase.

2.1.2 Search phase

Starting with the researchers' overview of the topic in the different districts within the Greater China Region, the research team discussed, searched literature, and communicated with panel members through inquiries.¹⁹ A preliminary search was used as a starting point, and the research team identified a few seminal papers on the PL concept within several disciplines and contexts.^{3, 8, 14, 16, 17, 24-27} The main purpose of this step was to identify synonyms or surrogate terms used in the literature for different databases. Accordingly, a formal literature search strategy was developed by the research team (Supplementary File).

Search terms included 'physical literacy', '体育素养 (*ti yu su yang*)', '身体素养 (*shen ti su yang*)', '体育素质 (*ti yu su zhi*)', '身体素质 (*shen ti su zhi*)', AND/OR 'elements', 'definition', 'philosophical underpinning', 'concept'. Databases included the China National Knowledge Infrastructure database (Mainland China), WanFang Data (Mainland China), HKInChiP (Hong Kong), Airiti Library (Taiwan), Cumulative Index to Nursing and Allied Health Literature database with full text (EBSCO), MEDLINE (Ovid) (second search), PubMed, SPORTDiscus (EBSCO), Web of Science (Science Citation Index, the Social Sciences Citation Index) (ISI), and ProQuest. The search was conducted in September 2020, covering the period from 2000 to 31 August 2020. An additional check was conducted manually in March 2021 to supplement the literature pool.

Inclusion and Exclusion Criteria All published academic articles discussing the definition of PL in the Greater China Region and publications on PL's philosophical concepts and elements were included. These publications covered articles, discursive and empirical, theses, conference abstracts, and government documents. These were manually searched for in major/top journals including China Sport Science, the Journal of Beijing Sport University, and the Journal of Shanghai Sport University. Documents were excluded if: 1) the topic was not relevant to PL or 2) the topic was not related to the main sub-topics of PL (philosophical tenets, elements, or definitions). The grey literature retrieved from the policy papers of the government and newsletters from NGOs/NGBs were important for further mapping results [they covered various seminal texts²⁸] and for understanding the controversies and debates concerning the concept of PL. An original study by Greenhalgh et al. focused on the meta-narrative approach and also included grey literature, such as editorials, opinion articles, and non-systematic reviews for similar considerations.^{19, 29} Theses and dissertations were also included as potential contributors and focused only on the definitions, elements, and philosophical tenets of PL. References of the seminal articles were also checked to verify that no articles were missed.

2.1.3 Mapping phase

The main aim of this phase was to initially map the included articles and characterise them by research field, year of publication, and type (i.e., conceptual or conference papers, literature reviews, research reports, dissertations, and policy documents). The research field was identified by the journal category and study title.³⁰ During this phase, the seminal texts were identified before mapping all the included articles and documents. Seminal texts were defined as those that

have influenced the development of PL in the Greater China Region and had the potential to be the basis on which to guide the tracking, selection, and further synthesis of findings.³¹

As the meta-narrative process is iterative and non-linear, there was some back and forth between phases, such as when seminal texts were identified and discussions with panel experts were conducted. Panel experts were considered to be the most important references in this case because they could provide important insights as to which seminal texts would be adequately influential in this district. The research team needed to reflect on and discuss the results and preliminary implications for policy and academia before the appraisal and synthesis phases were conducted.²⁰ One research meeting was specifically arranged for a presentation of the articles by the research team to the panel members to seek their feedback on interpretations of the findings and obtain further suggestions on the seminal texts.

2.1.4 Appraisal phase

During this phase, all the initially-included articles were appraised for quality to determine the extent to which they would influence the overall conclusions.¹⁹ Three reviewers from the research team rated each study, and consistency was addressed by the first author. The included articles or documents were assessed against the following quality criteria: 1) outstanding, 2) having some limitations, or 3) having many important limitations; at the same time, they were also rated for relevance as 1) being essential, 2) to be included, or 3) of marginal relevance.²⁹ The quality criteria of ‘outstanding’ referred to studies that included all the domains listed in the research aims, including philosophical foundations, definitions, and elements of PL— the more relevant the material included, the lesser the possibility of classification as ‘having limitations’.

The relevance rating referred to the quantity of data related to the three domains of PL listed in each article. A consultative meeting was held to discuss the appraisal results within the research team in order to identify a consistent final result of the included articles for further synthesis.

2.1.5 Synthesis phase

For the included articles and documents, the first author adopted a deductive coding method to extract data during this process.³² Random checks were performed by the research team (during the regular project meeting) on 10% of the included articles, with coding disagreements being discussed and addressed at the same time to achieve a consensus. Two other project meetings were held to summarise the data through paradigm bridging (by identifying commonalities in assumptions of underlying concepts and theories from the literature) and paradigm bracketing (by exploring the differences among the assumptions for generating higher-order insights) and to describe the definitions, elements, and philosophical underpinnings of PL among different research fields.²¹ During the first meeting, the main focus of definitions and elements/domains was addressed by extracting the similarities and contrasts within and between fields. During the second meeting, the data of the philosophical foundations were particularly reflected upon. Concept sub-categories of data sources that were found through the meta-narrative synthesis to be most commonly associated with PL were categorised into sub-themes; further themes were included according to panel experts' recommendations (details described below). An initial framework was created to describe the philosophical underpinnings that emerged in the meta-narrative synthesis and the progression/relationship within and between the domains of PL and physical activity.

2.1.6 Recommendation phase

This phase was especially emphasised in the current study, because involving panel experts in the review process was essential to achieve consistency in the definition, elements, and philosophical foundations of PL in the Greater China Region. After preparing the draft definition, elements, and theoretical philosophical framework, the research team presented their findings to the panel experts in an online Zoom meeting. This meeting, held in Chinese, began by introducing the panel to the research aims, key considerations, and critical issues in the development of the framework and defining statements. The first round of discussion was then raised, and the panel members were requested to comment on the meta-narrative synthesis progress and provide inquiries and clarifications if they had any. Following a brief discussion, the panel members were shown the initial review results, including the mapping findings, the seminal texts, the draft-defining statement, and the framework of the philosophical model. In particular, the Chinese version of the draft-defining statement and the philosophical framework were presented to the panel experts for feedback. Each of the panel experts offered suggestions, which were recorded in the meeting notes by one team member. After the meeting discussion, panel experts were required to provide written feedback on the designed answer sheets in email attachments (sent together with the draft results). The panel experts needed to provide specific comments for the following items: 1) a document including an overall definition of PL and specific definitions of the PL domains; 2) a document regarding the meta-narrative synthesis sources of codes and the respective themes and sub-themes. The panel experts were asked to rate the extent of the relevance of each emerging category with all the sub-themes and themes from (lowest relevance) to 10 (highest relevance); and 3) a third Word file including the theoretical philosophical model.

There were three rounds of panel expert comments received, with each round inviting different scholars to participate in the review process. During the first round, all panel members from the Greater China Region were invited to comment on the preliminary results that were generated from the meta-narrative synthesis, including the Chinese wordings used, the principals of the defining statements, etc. During the second round, two international PL experts were invited to evaluate the English translations of the Chinese results and to provide their suggestions on theoretical and practical models, especially regarding specific terms in English. During the third round, a bilingual PL expert who was proficient in both English and Chinese was invited to provide further comments on the overall results of the defining statements and models to achieve consensus across the panel experts. When the feedback was returned during each round, the results were discussed by the leading author and the corresponding author first, with a follow-up discussion with other research team members to re-confirm the findings with appropriate revisions. The results were then sent back to all panel members for further comments until consistency was achieved (>80% consensus). The consensus was sought using the phrases agree, agree with suggestions, and disagree with reason and alternative. The final consensus was reached regarding the following research aim statements: 1) 'I agree that the PL defining statements support and explain the definitions, explanations, and domains' (up to 80%); and 2) 'I agree that the models are presented in a practical and theoretical way and agree with how the domains and philosophical tenets are portrayed' (up to 80%). The final products were generated from academic materials into standardised resources and references for use by all stakeholders in the education, social science, and public health fields within the Greater China Region.

3. Results and discussion

In total, 74 papers were included in the definition synthesis and 28 were included in the philosophical synthesis in this study. A review flow diagram which followed PRISMA statement³³ is presented in Figure 1. All results were categorised according to disciplinary field and publication type (Table 2). The social science field contributed the most among all the articles (49 of 74), followed by the education field (19 of 74), public health field (3 of 74), and others (3 of 74). The most common types of articles were conceptual (36 of 74).

The historical perspective of PL

In the late 1980s to 90s, the term ‘physical literacy’ was explored and developed with the rise of quality education promotion in Chinese discourse. From a practical implementation perspective, PL was not presented in a concrete and operable way that could be adopted by the stakeholders in the field of physical education, nor did it work as a philosophical concept or guiding ideology for physical education. In academia, interest in PL research has increased since the 2000s in the fields of physical education, sports science, and social science. The current study included articles published from 2000 to 2020—from multiple disciplines—and consistently advocated for more PL studies.

Four key studies have provided definitions and typologies of PL in China from 2005 to 2020: Ren,¹⁷ Chen et al.,¹⁶ Yu,²⁴ and Sum et al.¹⁴ – all of which had a lasting influence across disciplines based on their citation records. All of the definitions, except for that by Yu,²⁴ adopted a broad perspective under the Whiteheadian PL concept.

Definitions and related terms of PL in Chinese literature

In the mapping phase, seminal texts were identified by extensive reading of as many different sources as possible for the purpose of informing the definition and uses of PL in the literature.¹⁹ Multiple definitions and terms are reported and summarised in Table 4. The related terms of PL included: 1) ‘体育素养 (*ti yu su yang*)’; 2) ‘身体素养 (*shen ti su yang*)’; and 3) ‘Ti Yu He Xin Su Yang’. Two articles discussed the Chinese translation of ‘physical literacy’. Gao and Lu³⁴ analysed the theoretical background information concerning how the term ‘PL’ came about, the interpretation of the meaning of PL as proposed by Whitehead,³ and Whitehead’s discussion on its defining principles; rather than solely focusing on sport, they advocated that PL be viewed with a broader scope and be translated into ‘身体素养 (*shen ti su yang*)’ – in accordance with the philosophy of monism and in terms of a lifelong journey for the pursuit of physical activity. Shi et al.³⁵ explained their intention to translate PL into ‘身体素养 (*shen ti su yang*)’ based on its dimensions, development goals, and target groups. They assume that PL is a multidimensional concept that can be developed for each individual throughout life. There were also advocates for ‘体育素养 (*ti yu su yang*)’ in the Chinese translation; for example, Chen et al.¹⁶ have provided evidence for the term ‘体育素养 (*ti yu su yang*)’ within Chinese academia, which emphasised definitions proposed by Lai³⁶ that state that ‘physical literacy refers to the cultural level of sports, which mainly includes sports awareness, basic physical activity ability, basic athletic ability, basic sports knowledge, and the ability to engage in physical exercise, sports entertainment, and sports appreciation’. Based on this interpretation, Yu²⁴ also adopted a broad definition of PL – that an individual has a congenital literacy foundation through family and physical education in school; also considered in the definition are the social effects of environment, culture, and

spirituality that are inherent to the physical pursuit of a comprehensive cultural shaping that gradually occurs.

Zhou et al.³⁷ provided an overview of PL with different terms used in the Chinese literature under the scope of sports ontology. The philosophy of monism, embodiment, existentialism, and phenomenology have well aligned with the ancient Chinese philosophical theory about body and movement— in this case, they align with the PL translation of ‘身体素养 (*shen ti su yang*)’, which represents the unity of body, mind, action, and knowledge. This covers a broader and wider research scope and includes the concept of PL with the translation of ‘体育素养 (*ti yu su yang*)’. They assumed that PL with the translation of ‘体育素养 (*ti yu su yang*)’ is suitable for the field of physical education, as it condenses and sublimates the value function of physical education. It covers a smaller scope but is accurate for interpretation in the field of physical education. Based on extensive reading and research through Chinese literature, stakeholders from the Greater China Region provided detailed comments on the initial results during the recommendation phase. A summarised table was distributed to all the members to collect their detailed opinions and – based on prior synthesis and discussion – we confirmed to support the use of ‘身体素养 (*shen ti su yang*)’, rather than ‘体育素养 (*ti yu su yang*)’ in the Chinese definition throughout the process.

A second point to confirm was whether the Whiteheadian definition of ‘physical literacy’ should be used within the Greater China Region rather than a newly created one. The definition was to align with the two broad aspects of the concept of PL according to Whitehead,⁷ the determination to commit to physical activity for life and an appreciation of the holistic nature of human beings

that must be recognised and addressed if the first commitment is to be realised. This point was advocated by the panel experts based on the fact that 28 out of 74 included articles (which provided the philosophical underpinnings of PL) proved to be in alignment with aspects of Whitehead³⁸ Western interpretation of the philosophical grounding of PL. For instance, Sum and Whitehead¹³ argued that ancient Chinese Tao philosophy can be used as a framework for understanding PL, as the attributes of motivation, confidence, physical competence, knowledge, and understanding can be conveyed through Taoist-Chinese perspectives. From the conceptual argument by Zhou et al.,³⁷ it is clear that Chinese sport ontology has provided common connotations and denotations connected with the philosophy of monism, embodiment, existentialism, and phenomenology – which further inform the philosophical foundations of PL – while the Chinese culture has provided its own unique and additional findings with regards to PL development in the Greater China Region. Therefore, it is important to explore PL definitions, domains, and elements based on the original definition, while also providing a unique discourse to inform PL from the Greater China cultural perspective.

As discussed in the conceptual paper by Sum and Whitehead,³⁹ to ‘literate’ – known as ‘Xiuyang’ or ‘cultivation’ in Chinese culture – is a concept unique to Chinese culture and is characterised by different attitudes toward teaching and learning.⁴⁰ It can include the process of perceiving, interpreting, and executing as with the concept of *ming* (knowing or understanding, 明), and it is reflected by the holistic structure of *jing* (essence of qi, 精), *qi* (a representation of matter existence, 氣), and *shen* (spirit, 神) – Tao’s holistic structure of achieving integration of heaven and humankind.³⁹ As such, each individual acquires a broad range of skills in order to read (perceive information) and interact with the environment (self-regulate decision-making and

actions), with the need to support whole-person development in terms of functional capabilities, including perceptual-cognitive, perceptual-affective, physical, and behavioural capabilities, and interaction with the environment.⁴¹

Attributes of PL in the Greater China Region

The next step in the meta-narrative synthesis was to extract from the literature a list of defining characteristics that gave broad insights and to then report the frequencies in the literature. Table 5 presents a summary and categorisation of attributes from the sources of Chinese PL literature. Each attribute can be conceptualised on a continuum and varies depending on whether it pertains to perceptual-cognitive, perceptual-affective, physical, and behavioural capabilities and interaction with the environment. A higher-order theme was generated as the inclination for visible, invisible, and (in)/visible based on the conceptual research of Sum et al.⁴²

The results showed that attributes of motivation (76.4%), confidence (81.9%), knowledge (80%), and interaction with the environment (76.4%) were the most frequent among all the attributes in the literature. Motivation was considered more broadly as emerging from the individual's engagement with the affordances of objects, surfaces, events, or other people in the environment, which may (or may not) have value and meaning for each individual.⁴³ A physically literate individual will have a positive attitude toward participation in physical activity and will take steps to be involved in this activity on a weekly or perhaps daily basis.³ This can encourage participation, and this involvement can enhance the confidence to engage in more physical activities. Physically literate individuals are more likely to present with assurance and self-confidence,⁴⁴ and they will be at ease with themselves as embodied and accept their physical

potential.³ Positive feedback from successful experiences in sports reinforces their confidence and enjoyment in the deployment of their movement abilities.^{3, 45} With the development of motivation and confidence, they can facilitate fluent interaction with a wide range of environments, and they possess the capability to ‘read’ or ‘perceive’ the environment.³ The physically literate individual perceiving the environment (through a range of senses) will appreciate experiences as meaningful embodiment, and this will further facilitate more interactions and participation in physical activities. These attributes of PL are concerned with the acquisition of knowledge and understanding, which involves grasping the essential principles of movement and performance, as well as a basic understanding of issues related to health and fitness.⁴⁶

There were some interesting findings regarding the ratio of results for different attributes. For example – based on our common understanding – PL should be highly related to physical competence, which is a central attribute displayed by a physically literate individual. However, for the findings from Chinese literature, the physical domain does not receive the most attention. First, a number of scholars emphasised that PL advocates a broad development space for the body rather than focusing on just the ‘physical’. It is not limited to the field of sports, but involves all explicit physical activities, including labour work. It concerns not only the various stages of physical education in school, but also the whole life trajectory and even the long-term intergenerational inheritance of human population development.³⁴ Second, the unique Chinese cultural discourse advocates the philosophies of Confucianism, Buddhism, and Taoism and emphasises the notion of *wuwei*, which is a kind of effortless action that an athlete, musician, craftsman, or artist may experience while ‘in the zone’ or in the state of flow— moving and

acting with intelligent and effective spontaneity.³⁹ It is the idea (from the holistic perspective) that when one realises that nothing is lacking, one belongs to the world. This sentiment can be expressed as ‘our belonging to the world and the world being instrumental in realising the fulfilment of human potential’, which belongs to each individual as the uniqueness of their own PL journey.³⁹

In addition, the attribute of morality in the Chinese discourse was introduced (it was mentioned frequently in the included articles). It refers to the pursuit of spiritual and moral aspects of the ability to participate in sports. As mentioned in research by Zhang et al,⁴⁷ life-care on a moral level is of vital importance for education, especially for developing PL. Furthermore, moral education should concern students' real lives and behaviours, allow students to experience joy and happiness with respect to education, and promote a level of physical fitness, mental health, social interactions, and spiritual openness that lends to the achievement of all-around development. Individuals with full development can achieve a good understanding of and belief in life, love, and respect for life; such individuals are good at getting along with others and interact with society and nature in a state of harmony and morality.⁴⁷ This is in line with the concept of PL in that it considers the development of the body and mind through education, the shaping of the personality, and living an active lifestyle.

Model and philosophical underpinnings of PL in Greater China Region

Figure 2 outlines the dynamic framework of PL, physical activity, and the environment with regard to the conceptualisation of movement behaviour. This was informed as a practical perspective for directing the use of PL in the Greater China Region. PL, lifelong participation in

physical activity, and a dynamic environment are closely inter-related in the model; physical activity involves structured and unstructured patterns and is a lifelong journey, indicating that PL is seen as a lifelong journey of interaction with the dynamic environment and reinforcement of continuous participation in physical activity.⁴⁸

Figure 3 presents the philosophical model of PL in the Greater China Region. Apart from the domains of PL, the philosophical terms generated from the 28 included articles were categorised into the three philosophical underpinnings proposed by Whitehead.³ The categorisation is not based on a strict principle, as the philosophies themselves are interconnected and overlapping with each other. The main purpose was to identify philosophical terms with a tendency toward monism, existentialism, and phenomenology based on their interpretations of the article. Traditional Chinese Confucianism, Buddhism, and Taoism philosophy are consistent with the essence of monism. For example, dating back to the Ming Dynasty, the description of ‘people are endowed with *yin* and *yang*, three talents are the same as the world’ emphasised that the balance of *yin-yang* was, in fact, conceived of as an intermediate stage toward the solidification of human beings, which is holistic.^{39,49} As the Taoist view advocates *yin* and *yang* – and also the balance of *yin-yang* – it represents the transformation of philosophy from dualistic to holistic, and from holistic to monistic, and provides an arena to compare the similarities and differences between PL and Chinese philosophy.¹³

The philosophy of Marxism has provided a Chinese perspective on the development of PL rooted in this area. It is the concretisation of a comprehensively-developing theory that emphasises the individual’s comprehensive development and fully strengthens the overall development of

physical strength, intelligence, imagination, creativity, and other abilities.⁵⁰ Secondly, PL emphasises the cultivation of ‘whole person’, which not only focuses on individual abilities, but also plays an essential role in the overall development of social relations and the improvement of individuality. Physically literate individuals are more likely to have strong communication skills, moral qualities, and good conduct.⁵⁰

Constructivism was advocated by the scholars from the Taiwan district – where they have emphasised the cultivation of people-oriented ‘lifelong scholars’ through the policy of Twelve-year National Basic Educational Curriculum – Core Literacy Directed PE. The curriculum adopts constructivism/cognitivism as a guiding framework to develop PL in individuals. It includes three aspects: ‘autonomous action’, ‘communication and interaction’, and ‘social participation’ as approaches to understanding the principles, concepts, and mechanisms of physical fitness and sport; the relevant knowledge is to be applied to physical activity, nutrition, and health fields. The process involves the knowledge and understanding of how various activities promote independent learning skills in children and how teachers can appropriately play supportive roles in the learning process. The philosophy of constructivism/cognitivism aligns with the educational curriculum in Taiwan and works as a philosophical foundation for promoting PL development.

4. Defining statements of PL in the Greater China Region

The definitions, attributes, and philosophical underpinnings identified in this meta-narrative synthesis were sent to panel experts, who reached a consensus that the definition was to be explicated through an official statement that covered specific definitions, explanations, and domains. The final consensus was reached regarding the research aims: 1) ‘I agree that the PL

defining statements support and explain the definitions, explanations, and domains' (88.9%); and
2) 'I agree that the models present a practical and theoretical way of portraying the domains and
philosophical tenets' (88.9%).

The panel members consistently agreed with the final version and processed the following
defining statements:

- *Definition:* PL is the integration of physical, perceptual, cognitive, psychological, and behavioural capabilities, echoing with the need for an active, healthy, and fulfilling lifestyle, which involves continuous positive interactions with the environment and embodied engagement in physical activities for life.
- *Further explanation:* As an integrated concept, PL equips an individual with purposeful knowledge, skills, understanding, and values pertaining to the physical, psychological, and cognitive aspects of life. It is comprehensively manifested through the internalisation of a variety of physical activities and a desire for lifelong participation. PL is characterised as perceptual, cognitive, behavioural, and physical attributes integrated through the dynamic environment, and refers to the ability of communication between an individual and the environment. It helps an individual to apprehend, interpret, and create within the field of physical activity.
- *Domains:* physical, sensory-perceptual, cognitive, psychological, behavioural, and dynamic environments.

5. Conclusion

In this study, we contribute to the critical Chinese discourse on PL through a meta-narrative synthesis of the literature and the panel members' opinions on PL. Our objectives were to define, clarify, and conceptualise PL from the perspective of Greater China through the synthesis of the literature and the panel members' recommendations. This report provides a broad perspective of PL for application in the Greater China Region and presents definitions, core elements, and philosophical underpinnings of the concept across research fields. Finally, through our synthesis and discussions, we reach a conceptual definition for PL in the Greater China Region which can support the adoption of a consistent understanding and recognition of the indispensable nature of this relevant concept for sound development in all research fields.

There are multiple definitions and typologies of PL in different research fields. As the criteria used for developing these typologies varied, it was difficult to identify one that was complete or well-adapted to guide the development of the PL defining statements. In this case, we have combined, compared, and critically analysed PL through definitions in the Chinese discourse, related concepts, attributes, and philosophical underpinnings found in the literature. The meta-narrative synthesis approach was useful for framing the relevant aspects and dimensions of the concept of PL and for providing a sound structure to guide data extraction and analysis.³⁰

Despite the interesting findings, the results of this study have some limitations. A limitation of this synthesis was the challenge of including all the articles explored on this topic, especially those relevant to grey literature. The implementation of a systematic search during the search

phase and mapping procedures were valuable in that they allowed researchers to identify the relevant literature for this synthesis. In addition, managing such a great pool of literature was difficult, as there was a wide range of possible definitions of PL among the sources. It was helpful to clarify the term ‘PL’ as it is used in Chinese discourse, and it was also helpful to analyse the frequencies of the terms occurring in the literature so as to acquire a deeper understanding of the concept. Moreover, as the amount of literature on the topic was large, it was difficult to introduce each article; rather, the research team highlighted the references that were necessary to interpret the results.

A thorough analysis of the literature and comprehensive recommendations by panel members have provided a useful strategy to develop a comprehensive definition of PL in the Greater China Region. The current synthesis highlighted the uniqueness of PL attributes and domains and their definitions in the Greater China Region. It is suggested that the cultural interpretation and historical background of PL in the Greater China Region should be addressed and respected. The development of a specific cultural definition statement of PL in one country could provide implications for PL researchers worldwide.

Declarations

Ethics approval and consent to participate

Not applicable.

Consent for publication

Not applicable.

576

577 **Availability of data and materials**

578 Not applicable.

579

580 **Competing interests**

581 All the authors declare that they have no competing interests with the content of this review.

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587 **Authors' contributions**

588 ML conceived the study design, ML, SMC, YH and RM searched the literature and screened the
589 references as a team, RKWS has guided all the team members to review the articles and exported
590 the data. They also evaluated the risk of bias and applicability of the studies. HR, CFC, LLCL,
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593 defining statements. ML wrote the draft of the manuscript and RKWS revised the original
594 manuscript. All authors read and approved the final manuscript.

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Figure legends

Figure 1. PRISMA 2009 flow diagram for the meta-narrative process

Figure 2. Practical Model of Physical Literacy in the Greater China Region

Figure 3. Theoretical Model of Physical Literacy in the Greater China Region

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Journal Pre-proof

Table 1. Six guiding principles of meta-narrative synthesis applied in the current study

Principle	Explanation	Application in the current synthesis
Principle of pragmatism	Not self-evident. Guided by what intended audience needed most or promote their sense making	The need to address the research questions regarding how to define PL in the Greater China Region, and to evaluate the evidence by constructing overarching narratives and conflicts
Principle of pluralism	From multiple perspectives and “to expose the tensions, map the diversity and communicate the complexity of understanding the different traditions”	Preliminary mapping identified several seminal texts in both international and local, and from policy and academia field. Many debates occurred on the definition of PL, and no consistent recognition towards PL elements, and underpinning philosophy.
Principle of historicity	Various research traditions – not a “unified voice” but a unfolding of current agreements and disagreements over time	The PL concept rooted in the Chinese culture has traced back to the emergence of key relevant terms and the relevant evidence has been explored through meta-narrative. This progress could contextualize how it could be understood, interpreted, and taken up within different fields.
Principle of contestation	From simple description (conflicting) to higher-level interpretation that uses similar principles	At the stage of search and selection, contestation emerged and conflicting perspectives remained for review. At the stage of synthesis, the research team aimed to explore epistemological, pragmatic explanations for conflicting recommendations
Principle of reflexivity	Continually reflect, individually and as a team, throughout the process	Critical reflexivity was needed to cultivate for the research team to reflect each round of emerging results, and include further panel members’ recommendation, to challenge our own, and each other’s assumptions and interpretations.
Principle of peer review	To present emerging findings to external reviewers in a formative way, which result in the subsequent reflection and analysis	At the final stage of panel’s recommendation, the whole progress and methodology was reported with details to experts for their further comments and review. Feedbacks were collected in each round and at various points in the process.

Table 2. Mapping results (n=72) with disciplinary fields and publication type

Main focusing field	No. Included	Year	Type of articles					
			Concept	Lit. Review	Study Report	Thesis	Conference	Policy paper
Public Health	3	2020 (n=3)	1	-	2	-	-	-
Education	19	2011 (n=1); 2016 (n=1); 2017 (n=3); 2018 (n=7); 2019 (n=5); 2020 (n=2);	16	-	3	-	-	-
Social Science	49	2005 (n=1); 2013 (n=1); 2015 (n=1); 2016 (n=4); 2017 (n=6); 2018 (n=8); 2019 (n=13); 2020 (n=13)	20	12	13	3	1	-
Other	3	2014 (n=1); 2016 (n=1); 2019 (n=1)	-	-	-	-	-	3

Table 3. A summary of the Chinese PL seminal texts related to definitions and elements from the researchers and research teams

Scope/researcher or research team	Focus	Findings	Evolution	Overall contribution
International level				
International Physical Literacy Association (2017); Whitehead (2010)	The “Whiteheadian” conceptual framework was translated, developed and proposed to identify the definition of PL in the Chinese context	Fully explored the meaning, significance and philosophical rationale behind the important and emerging concept, and applied it to the lifecourse	An essential concept developed for numerous researchers, educationalists and practitioners, and contributions to all students and professionals working in physical education, sport, exercise and health	Important influencers as the modern champion of PL development. An obvious impact for promotion in regards to internationalization of defining PL
Basis for PL development in modern society				
National/Regional level				
<i>In Policy</i>				
In Mainland China – National Fitness Program Plan (2016-2020)	Emphasize “PL” in PE curriculum: By 2020, to improve the youth’s PL and help develop healthy behaviors are the most important part of school PE and education aims; To ensure students’ level of physical fitness and health in the PE evaluation system, and strengthen school sports performance evaluation and administration	N/A	An guiding policy paper involves the term “PL” into the national fitness plan – the first step that introduces PL as the guiding ideology	N/A

In Mainland China – Outline of Building China into Sports Leader	Incorporating “PL” as the major tasks and goals for national circular - People who often take exercise should account for over 45 percent of the population by 2035; China should become a modern leading sports socialist country by 2050, and its people’s PL and fitness, comprehensive levels and global influence in sports should be ranked near the top globally	N/A	To develop PL is becoming a consistent national ultimate goal and competitive national power within Mainland China	N/A
In Taiwan – Twelve-year National Basic Educational Curriculum –Core Literacy Directed PE	To emphasize the cultivation of people- oriented “lifelong scholars”. Divided into three aspects: “autonomous action”, “communication and interaction”, and “social participation.”	N/A	Further subdivided into nine major projects, and applied into PE setting, which indicates PL as an important core element for PE	N/A
<i>In Academia</i>				
Yu (2005) PL is one essential concept for human development in 21 st century	Research on defining PL from its connotation and denotation	PL refers to an individual’s physical and psychological potential in in PA and sport through continuous learning and participation based on the combination of their	Widely recognized as the fundamental explanation for PL in Chinese context and the role of PL has contributed to some evolving conceptual	Inspired PL development with the quality PE agenda and in particular emphasized a comprehensive approach for PA participation in sport and public health

		genetic inheritance and acquired environment	frameworks in the Chinese literature	
Chen, Liu, Tang, and Chen (2017)	Interpretation of the concept of PL according to Whitehead's definition and applied into the Chinese PE setting	An adaptive definition of PL as a comprehensive capability integrating different components that benefit individual active lifestyles and health throughout lifespan, involving affective, cognitive, behavioral and fitness dimensions	Most widely used interpretation derived from Whitehead's definition in the Chinese context	Many subsequent studies have adopted the definitions designed by Chen et al. (2017). Attempts to create a consistent national definition for educators and practitioners in China
Work focuses on interpreting Whitehead's definition of PL and its application in Chinese PE classes				
Sum et al. (2016); Sum, Cheng, Kuo, Wang, and Choi (2018)	Empirical research data for developing instrument for use and evaluating PL perceptions in PE school settings	Identified 3 dimensions: Sense of self and self- confidence, self- expression and communication with others, and knowledge and understanding	Adopted by a number of scholars used across Chinese society to measure PL perceptions. Reinforce the principles in the International Physical Literacy Association (IPLA) Conference and	Introduced perceived PL into Chinese literature
Constructing PL perceptions and validated its instrument in HK PE classes				
Ren (2018)	Exploration of PL with more focus on the social meaning and embodiment through an individual's lifecourse – a translation with wider perspective	Identified the significance of promoting PL worldwide, the definition of PL according to Whitehead (2010), and its influence on PE and sport in China	Advocated by researchers across the nation to emphasize the profound meaning of human development, not restricted in the PE setting	A comprehensive interpretation of PL based on the conceptual framework from Whitehead (2010)
Interpreting PL for the promotion of PA for lifespan and providing a refined translation of the term "Physical Literacy" as "Shen Ti Su Yang" in Chinese				

Table 4. Examples of PL definitions found in different disciplines of Chinese literature

Public Health	As appropriate to each individual, physical literacy (<i>Shen Ti Su Yang</i>) can be described as motivation, confidence, physical competence, knowledge and understanding to value and take responsibility for engaging in physical activities for life (Whitehead, 2016, 2019).
Education	Physical literacy (<i>Ti Yu Su Yang</i>) refers to an individual's cultural and educational level in sport (Lai, 2003). Physical literacy (<i>Ti Yu Su Yang</i>) is the combination of the level of operational knowledge and practical outcomes based on the competency in the physical aspects, while the practical outcomes refer to the inheritance of culture, the improvement of physical fitness and the accumulation of sportsmanship (Zhang, 2000). Physical literacy (<i>Ti Yu Su Yang</i>) is the comprehensive physical quality and accomplishment produced by the influence of acquired environment and physical education on the basis of congenital heredity (Yu, 2005). Sport literacy (<i>Ti Yu Su Yang</i>) refers to the accomplishment gained from sports training and practice, including sports ethics, perceptions, knowledge and skills, embodies the educational function of sports and the goal of cultivating adaptable and sound social people (Zhou, Cheng, Zhang, & Li, 2020).
Social Science	Physical literacy (<i>Shen Ti Su Yang</i>) is “the motivation, confidence, physical competence, knowledge and understanding to value and take responsibility for engagement in physical activities for life (International Physical Literacy Association, 2017). Core literacy includes not only knowledge and skills, but also students' emotions, perceptions, attitudes and values as the core attributes, so sport core literacy (<i>Ti Yu He Xin Su Yang</i>) is the core sports qualities that each individual should possess, including physical fitness and health, sports skills, and sports social emotions (Shang & Cheng, 2017).

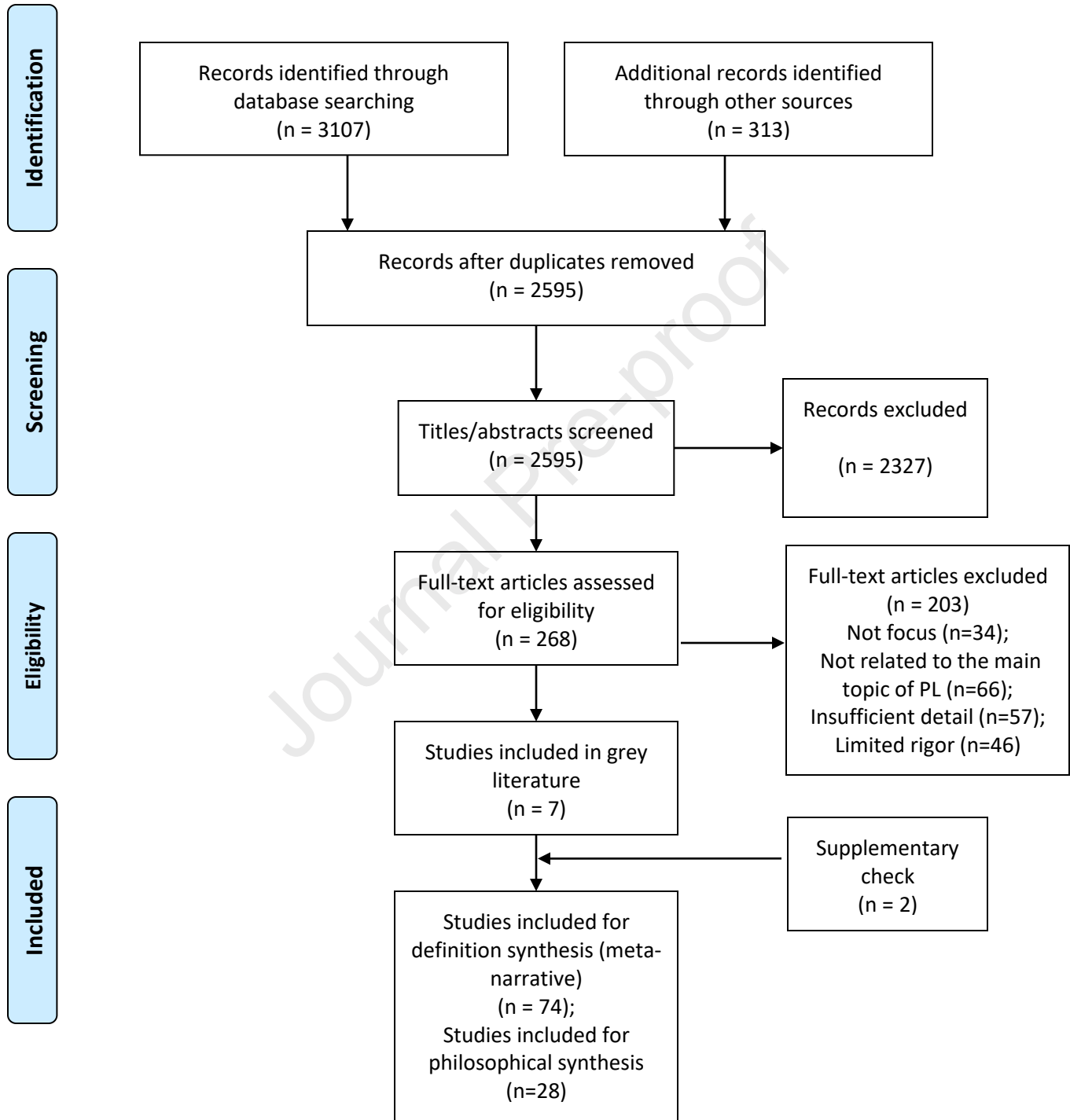
Table 5. Summary and categorization of the attributes from the sources of Chinese PL literature

Theme	Sub-themes	Categories	Sources ratio*
Visible	Perceptual-Affective	Confidence	81.9%
		Motivation	76.4%
		Manner & Appearance	50%
		Enjoyment	9.4%
	Physical	Competence	67.1%
		Movement skills	64.3%
		Physical fitness	47.1%
		Exercise	28.6%
		Well-being	4.3%
	Perceptual-Cognitive	Knowledge	80%
		Decision-making	10%
Invisible	Perceptual-Affective	Sport value	68.1%
		Attitude	26.4%
		Cultural dispositions	14.3%
		Responsibility	14.3%
		Autonomy	10%
		Aesthetics & appreciation	9.7%
	Perceptual-Cognitive	Moral	47.1%
		Awareness	42.9%
		Optimizing potential	20%
		Ideology	5.7%
(In)/Visible	Behavioral	Engagement	71.4%
		Lifelong participation	61.4%
		Experience	34.3%
		Active lifestyle	18.6%
		Performance	14.3%
		Survival ability	12.9%
	Dynamic environment	Interaction with the environment	76.4%
		Integration	17.1%

* Ratio was calculated by the frequency that the term occurred divided by the total quantity of articles



PRISMA 2009 Flow Diagram



From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 6(7): e1000097. doi:10.1371/journal.pmed1000097

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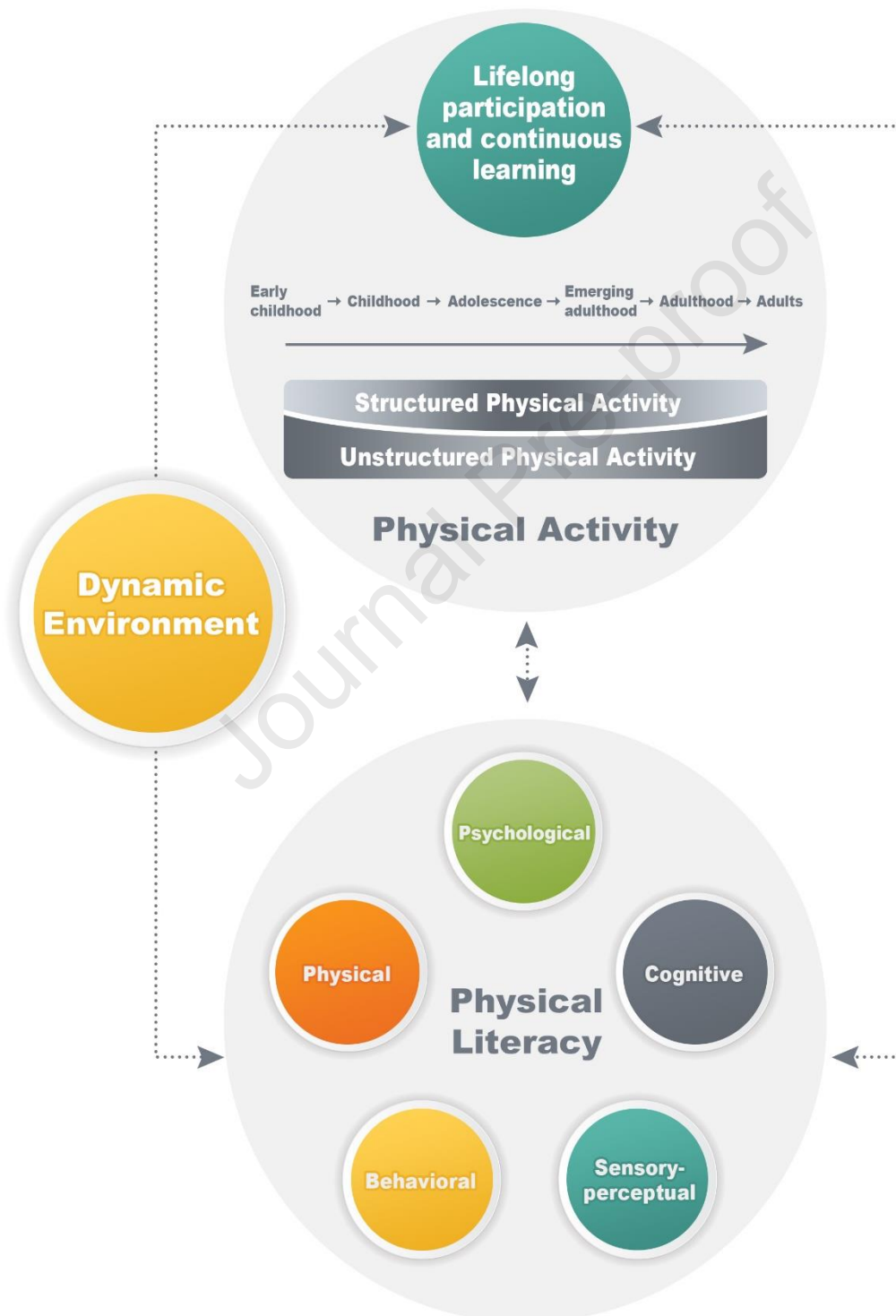
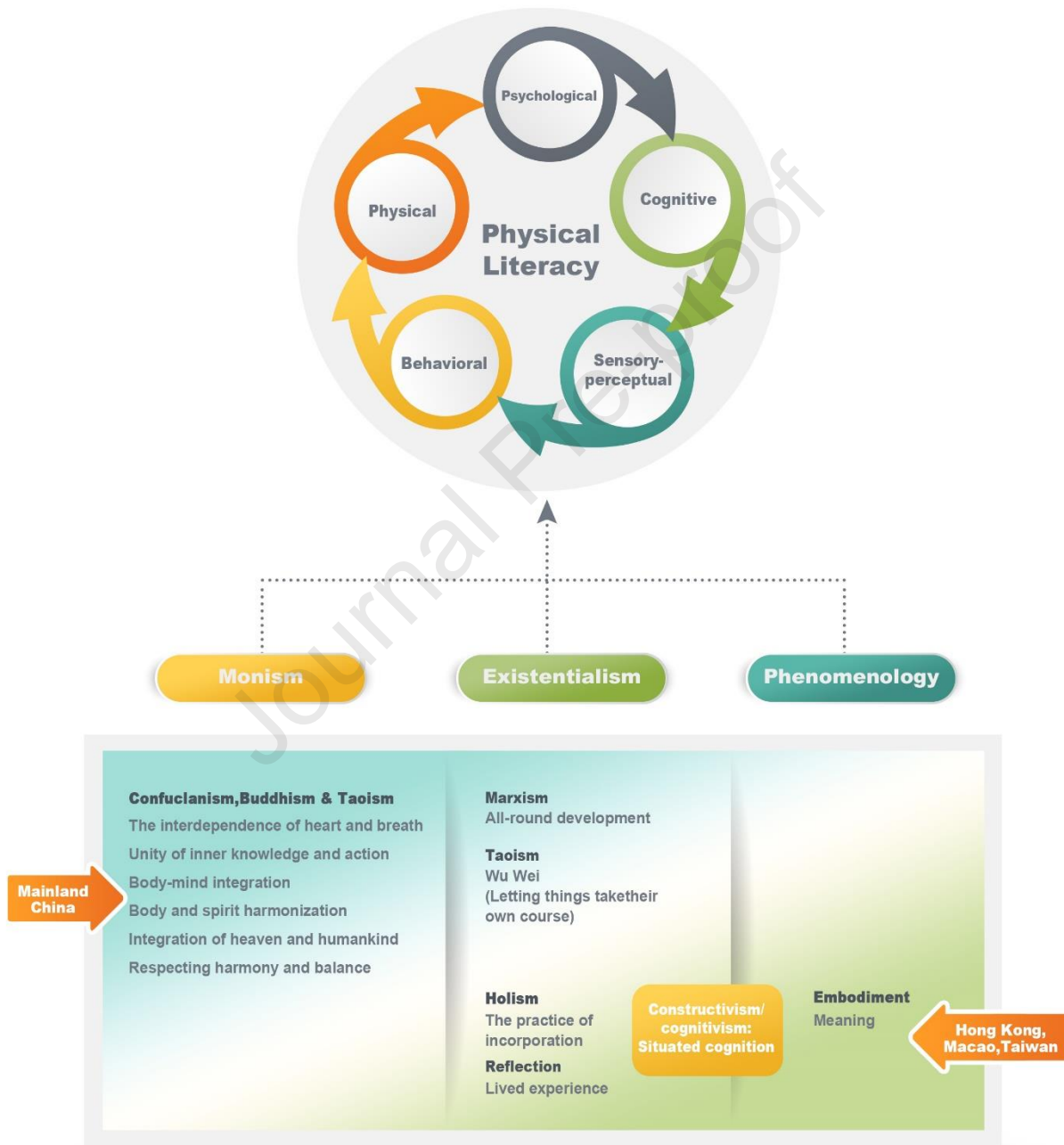
Figure 2: [Practical Model of Physical Literacy in the Greater China Region]

Figure 3: [Theoretical Model of Physical Literacy in the Greater China Region]



Author Statement

ML conceived the study design, ML, SMC, YH and RM searched the literature and screened the references as a team, RKWS has guided all the team members to review the articles and exported the data. They also evaluated the risk of bias and applicability of the studies. HR, CFC, LLCL, CPL, YL, XW, SML, HL, DYS, YT, FJW, and SC provided valuable suggestions during consultation meetings. MW and NG provided important suggestions for the manuscript and defining statements. ML wrote the draft of the manuscript and RKWS revised the original manuscript. All authors read and approved the final manuscript.