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EDITED BY
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Autonomous University of Chihuahua, Mexico

*CORRESPONDENCE
David Grecic
✉ dgrecic1@uclan.ac.uk

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Can Cypriot physical education teachers fully embrace physical literacy? An initial exploratory sequential study

Efstathios Christodoulides[1], David Grecic[2]*, Olia Tsivitanidou[1] and Andrew Sprake[2]

[1]School of Sciences, Sport and Exercise Sciences, University of Central Lancashire, Larnaca, Cyprus, [2]School of Health, Social Work, and Sport, University of Central Lancashire, Preston, United Kingdom

Introduction: The purpose of this project was to explore whether Cypriot Physical Education (PE) teachers can fully embrace Physical Literacy (PL) and to determine the contributory factors.

Methods: An exploratory sequential mixed methods design collected data from 135 Cypriot PE teachers utilizing the Teacher Change Questionnaire—Physical Education (TCQ-PE) and the Perceived Physical Literacy Instrument (PPLI) questionnaires. Follow-up semi-structured interviews were conducted and thematically analyzed (n = 6).

Results: Findings revealed that only 23% of teachers demonstrated a willingness to change current practice. Most had generally high levels of the PPLI Knowledge construct (M = 4.59; SD = 0.08) but interviews found that actual self-reported knowledge was limited especially in relation to their awareness of PL's basis, its identification and aligned teaching behaviors. Key barriers and enablers to PL adoption were described and practical recommendations made.

Discussion: In conclusion the study identifies that both Top-down and bottom-up strategies are required with aligned professional development for PL to be embedded in Cyprus' Physical Education classes and achieve its health benefits for children.

KEYWORDS

change, disposition, physical education, physical literacy, teacher training, mixed methods

1 Introduction

Physical Education (PE) is recognized as a crucial component of school curricula, encompassing a broad spectrum of interests, traditions, philosophies, and perspectives that shape its implementation across various educational levels globally. This diversity has urged ongoing debate among researchers and practitioners regarding the discipline's purpose and focus (Enright et al., 2020; Jess et al., 2023; Kirk, 2009; McEvoy et al., 2017; Macdonald et al., 2018). The United Nations Educational, Scientific and Cultural Organization (UNESCO), however, describes Quality Physical Education (QPE) as "the planned, progressive, inclusive learning experience that forms part of the curriculum in early years, primary and secondary education. In this respect, QPE acts as the foundation for a lifelong engagement in physical activity (PA) and sport" (UNESCO, 2015, p. 9). The recognition of PE as an essential part of the school curriculum, as outlined by UNESCO, underscores its role in promoting lifelong PA and sport. This foundational principle is mirrored in the evolution of PE in Cyprus, where the traditional term 'γυμναστική' (gymnastiki) has gradually

been replaced by PE, a term that has gained prominence through policy and curricular reforms (Christodoulides et al., 2022). In Cyprus, the emphasis on 'lifelong exercise' or 'δια βίου άσκηση' aligns with the global perspective of QPE in promoting healthy lifestyles and well-being. Examples here include the World Health Organisation's (WHO) Global Physical Activity Action Plan 'More Active People for a Healthier World', that proposes a number of actions relating to PE (WHO, 2018) alongside UNESCO reports promoting quality PE as key factor in achieving worldwide health targets for all ages (UNESCO, 2015, 2023a, 2023b).

The Cypriot Ministry of Education, Sport and Youth (MOECSY) has been actively modernizing the education system since 2015–2016, aiming to enhance PE through comprehensive models and assessment processes. However, the marginalization of PE as a school subject in Cyprus, and its subsequent challenges, reflect a global trend (Carl et al., 2023; UNESCO, 2023a, 2023b). The decline in PA among children and the undervaluing of PE in school curricula represent significant challenges to public health and education systems worldwide. The WHO has highlighted its concern around physical inactivity, noting that 81% of the world's adolescents do not meet the recommended levels of PA, a situation that has profound implications for children's health and well-being (WHO, 2018, 2022). This issue is not confined to any single region that varies in severity due to cultural, structural, and economic factors (Biddle et al., 2019). The latest Eurobarometer data on PA levels in Cyprus highlights several key points regarding children. A significant proportion of children in Cyprus do not meet the recommended levels of PA, with various factors contributing to this trend, including the availability of facilities and parental involvement in physical activities (European Commission, 2022). The importance of PE to combat this decline and forward lifelong health and well-being among children is well documented. Research evidence underscores the role of PE in not only improving physical health but also in contributing to emotional and social development (Bailey, 2022). However, PE's effectiveness is contingent upon the attitudes and beliefs of those involved, including pupils, teachers, and the wider community. Studies show that positive attitudes towards PE are crucial for successful implementation of PE programs and the promotion of children's active lifestyles (Hagger et al., 1997; Lynch, 2022; Murfay et al., 2022; Subramaniam and Mercier, 2017). Participation in QPE is recognized for its comprehensive impact across physical, social, affective, and cognitive domains (Bailey et al., 2009). It is the potential of PE, operating on multiple factors, to support children's lifelong holistic development that underpins the authors' position on the subject's purpose and role (Grecic and Palmer, 2021).

Physical Literacy (PL) has become an influential concept in various countries reshaping PE and its curricular frameworks (Carl et al., 2023) and guides this study. Despite its widespread adoption, however, PL is a "widely contested concept" (Young et al., 2020, p. 946) with varied interpretations and definitions (Shearer et al., 2018) mostly emanating from organisations and researchers in English speaking countries (Martins et al., 2021). These definitions vary considerably and range from an embodied, monist philosophical position where PL is presented as a holistic concept that focuses on developing the whole person with body and mind as one (Whitehead, 2010) with PL being a dynamic and nonlinear, unique, lifelong journey, to more pragmatic outlooks often focusing on one core component (Corbin, 2016; Edwards et al., 2017). Here PL can be seen more as a means to an end, such as its application to develop and assess movement, health and sport performance-based outcomes in a linear quest to become 'physically literate' (Krader, 2018; Longmuir et al., 2015; Sport for Life Society, 2022). For the purposes of this paper, we situate ourselves and our interpretation of PL mid-way between idealistic and pragmatic approaches (Edwards et al., 2017) and identify with those whom Young et al. (2023a, 2023b) term as the 'green cluster' of social actors that see PL as an important antecedent of PA but who value its holistic potential to foster healthy and fulfilling lives through movement and PA. For us, education and school-aged children are the focus of delivery, with PE and PE teachers becoming valued PL conduits. Here PL has great potential for PE too, as it can influence children's relationship with PA and prepare them for a healthy life (Sum et al., 2016). When fully embraced, PL within PE can help children become more aware of their embodied capabilities in all the learning domains (Grecic and Palmer, 2021). It can facilitate connections to the wider PA community (Hastie and Wallhead, 2015, p. 136), and it can support children's lifelong and life-wide positive experiences of movement (Dudley, 2023; Durden-Myers, 2020; Durden-Myers and Bartle, 2023; Whitehead et al., 2018). This is the basis of our advocacy for the importance of PL to be embraced by Cypriot PE teachers. As such we align most with the International Physical Literacy Association's (IPLA) definition as, "the motivation, confidence, physical competence, knowledge, and understanding to value and take responsibility for engagement in physical activities for life" (IPLA, 2017). Here PL emphasizes the importance of developing a holistic relationship with PA (IPLA, 2017) and that its adoption within PE curricula can facilitate more inclusive and effective approaches to cultivating children's active lifestyles. In its 2015 QPE Guidelines for Policymakers, UNESCO emphasized PL's importance, stating that "participation in PE should support the development of PL," with the outcome of quality PE being "a physically literate young person, who has the skills, confidence, and understanding to continue participation in physical activity throughout their life-course" (UNESCO, 2015, p. 20). Furthermore, UNESCO highlighted that "promotion of PL should then remain a key feature of any PE curriculum throughout primary and secondary education" (UNESCO, 2015, p. 24). References to PL within these guidelines establish PL as a normative standard globally, underlining its critical role in shaping PE agendas internationally. In summary, PL's importance and influence within PE are evidenced by numerous studies (Keegan et al., 2019; Kern and Patton, 2024; Kirk, 2009; Sum et al., 2020) supporting its lifelong and life-wide benefits (Young et al., 2020) and its ability to support the delivery of High-Quality PE around the world (UNESCO, 2015).

1.1 Study location—why Cyprus?

Cyprus ranks among the most inactive countries in Europe, with cultural attitudes and socio-economic factors potentially influencing this trend. According to the World Health Organization (WHO), only 18.9% of Cypriot adults meet the recommended PA levels, highlighting the prevalence of inactivity in the country (WHO, 2021). Socio-cultural determinants, including cultural norms that prioritize academic success and socio-economic disparities, may potentially contribute to this inactivity (Jaeschke et al., 2017; Rio and Saligan, 2023). PA is often deprioritized within the Cypriot lifestyle, possibly due to a strong cultural emphasis on academic success and limited public awareness of the long-term benefits of physical engagement. Evidence indicates that positive experiences and favorable attitudes towards PA in youth are critical to fostering lifelong engagement in PA and general well-being (Bailey et al., 2009; Kirk, 2010). Consequently, PE plays a crucial role in shaping these foundational experiences and

promoting long-term PA benefits (Christodoulides et al., 2022). Despite this, the WHO Cyprus Country Physical Activity Factsheet for 2024 highlights that PA levels among Cypriot children and adolescents consistently fall short of the recommended guidelines across all age groups (WHO, 2024).

National policies and action plans promoting PA in Cyprus, largely center on the 'Sport for All' initiative established in 1985. This program, managed by the Cyprus Sports Organisation (CSO, 2024), provides accessible and affordable sports opportunities for all age groups, aiming to facilitate out-of-school PA. However, while the 'Sport for All' initiative successfully broadens access to PA opportunities, it primarily focuses on general sports participation rather than structured educational programs that align with contemporary frameworks, such as PL. This gap underscores the need for more targeted policies that integrate holistic approaches to PA within school curricula to foster lifelong engagement. Within the Cypriot education system, PE is a mandatory subject across primary and secondary levels, with a curriculum structured around six core objectives. These include developing kinaesthetic skills, applying sports science knowledge, achieving health-oriented fitness, fostering self-expression and social skills, promoting inclusivity, and demonstrating responsible athletic behavior (MOEC, 2024). The Greek analogical term for PE 'Φυσική Αγωγή' (Fysiki Agogi), which translates to the nurturing of an individual through physical education, aligns with the core objectives of physical literacy, focusing on the development of behaviors, ideals, and values (Christodoulides et al., 2022). However, the realisation of these objectives in everyday practice is often constrained by traditional pedagogical habits and systemic limitations (Christodoulides et al., 2022). In the Cypriot context, educational traditions, cultural norms, and systemic structures converge to shape how PE is delivered and perceived. PE has historically occupied a peripheral position in the curriculum (Constantinides and Silverman, 2018), often treated as a non-priority subject relative to academic disciplines.

While the Cyprus PE curriculum currently aims to holistically address the physical, cognitive, behavioral, and social dimensions, its implementation in practice has often fallen short and is still largely grounded in traditional didactic methods (Christodoulides et al., 2022). Traditional, competition-oriented sports dominate PE, leaving limited room for diverse, holistic activities that encourage lifelong engagement in PA (Cyprus Ministry of Education, Sport and Youth, n.d.). In addition, and despite existing legislation in Cyprus (Republic of Cyprus, 1995) requiring a bachelor's degree in PE for PE teaching, primary school PE is delivered by generalist teachers without a PE degree. However, in some cases, they hold postgraduate, coaching and other certificates (Tsangaridou, 2016). This practice raises concerns about the quality and effectiveness of PE instruction from a very early stage. The disconnect between policy and practice highlights the need to refocus PE and ensure that qualified PE specialists who are supposed to lead instruction, undertake continuous professional development, thereby enhancing pupils' physical literacy, motor skill development, and long-term engagement in PA.

Internationally, PL frameworks that emphasize holistic and meaningful engagement are gaining traction (Edwards et al., 2017; Sport for Life Society, 2022; UNESCO, 2023a, 2023b). However, PL is seldom integrated into PE curricula or policy documents in South and East European countries, including Cyprus (Carl et al., 2023). The Cypriot PE curriculum does not explicitly mention PL, which limits opportunities for implementing diverse approaches supporting long-term PA engagement. Despite the current lack of mention in the curriculum, European collaborative projects, such as the ePhyLi project, funded by the Erasmus+ programme (number: 101089928, https://www.ephyliproject.eu/), have prompted the MOESY PE Office to recognize PL's potential and provide support in terms of accessibility to PE teachers, collaboration in national conferences and project dissemination activities. With the strength of PL claims and evidence of impact from projects around the world, such as the 'Canadian Sport for Life' initiative, which integrates PL into educational and community settings (Sport for Life Society, 2022), UNESCO's advocacy for PL as a core component of QPE (UNESCO, 2023a, 2023b), the work of the IPLA in promoting a global understanding of PL across policy and practice (IPLA, 2024), and the Australian Physical Literacy Framework (Sport Australia, 2019) it is noteworthy that such a high-profile and international movement has not been comprehensively investigated and embedded in Cypriot schools.

Clearly, the reasons for this are invariably multifaceted, but one explanation is the potential reluctance for teachers to change, which can be attributed to many and varied factors such as teachers' lack of knowledge, insufficient resources (time and curricula materials), emotional burn out, an absence of high-level support, and ineffective professional development opportunities (Guthrie, 2011). Here, the term 'teacher change' refers to pedagogical change implemented by teachers (Guskey, 2002). Pedagogical change has been defined as alterations in "instructional resources, teaching approaches, and beliefs about pedagogy theory" (Fullan, 2007, p. 30).

In the PE teaching context, the reluctance to change is often recognized and explained by theories of socialization—that is, the processes through which individuals adopt the norms, customs, attitudes and behaviors valued by members within a social group and may be initiated from the pre-service stages (Constantinides and Antoniades, 2022; Hobson et al., 2024). It is commonly referred to as the process of recycling traditional practice (Flemons et al., 2024) or, in the US, described as the custodial approach evident in many schools (Kern et al., 2021). Here we can see that any change from the existing, accepted, and traditional norms in Cyprus may be a difficult step to take. This is most relevant to the teaching profession when considering the views, attitudes, or ideological commitments they bring with them when choosing to enter the PE teaching profession. An individual's subjective warrant—that is, their "perceptions of the requirements of a given profession along with a self-evaluation of their abilities to meet these requirements" (Richards et al., 2014, p. 116)—links directly to the new teacher's views about the way things should be in PE, highlighting their everyday taken-for-granted assumptions about the role, value, and potential scope of PE. Within the PE profession specifically, Lawson (1986, p. 107) defined and described the concept of occupational socialization as "all kinds of socialization that initially influence persons to enter the field of physical education and later are responsible for their perceptions and actions as teacher educators and teachers." Here the impact of the workplace, in this case the school and the systems the school operates within, has a significant influence on how teachers teach and their sense of agency to implement any desired change. The well-rooted norms in Cypriot PE make it challenging for educators to deviate from established routines, especially when such deviations risk conflict with colleagues who adhere to those. The Cypriot educational system is highly centralized, with MOECSY exerting considerable control over curriculum and

policy decisions (Hajisoteriou and Angelides, 2014). However, the school principals can make decisions concerning the school, although they lack full autonomy and face limitations in implementing innovative or progressing teaching methods (Hadjimatheou, 2017). Moreover, it can be challenging for new teachers entering the system with new beliefs, ideas and aspirations when these are incompatible with other members of the PE department. This can lead to teachers' beliefs being washed-out (Curtner-Smith, 2017), as the PE department forms a culture within the school context that helps shape their and others' actions and behaviors towards teaching and the methods and theories employed (Richards et al., 2014).

Cyprus, like many countries, has promoted rhetoric about its education system and the importance of pupils' health and well-being, but, in reality, there has been very little real change. This may be down to many factors but the willingness of PE teachers to affect the needed change to enable positive pupil outcomes is a useful starting point for consideration. This could be dependent on many components ranging from their satisfaction levels in schools, knowledge of alternative pedagogies, perceptions of autonomy, and ultimately their motivation to engage in change processes. It is worth mentioning that, until 2017, teacher appointments in Cyprus were determined by a centralised, seniority-based system, with candidates selected solely based on waiting time and a university degree, which often resulted in the hiring of older educators who had been on the list for many years (EEY, 2024a). This approach, facilitated by the lack of school autonomy, meant that new appointees sometimes had limited exposure to recent pedagogical developments and ongoing professional training. Recognising the need for a more dynamic and effective workforce, a reform was introduced in 2018, establishing a new 'list of appointables' alongside the original list (EEY, 2024b). This new system prioritises merit by requiring written exams and additional qualifications, allowing more recent graduates to enter the workforce with current educational perspectives and skills. It aims to ensure a smooth transition to merit-based appointments, selecting the most suitable educators for public schools while also ensuring social justice for those who have waited for years for their appointment.

As clear advocates of change and the importance of PL to future curriculum and health advances, we therefore sought to better understand PE teachers' perspectives to inform recommendations for future PE practice. The aims of this study therefore are, (1) To explore whether Cypriot PE teachers are willing and disposed to making changes to their practice? (2) To investigate teachers' perceived and self-reported actual K&U about PL, and (3) To determine the potential barriers and enablers of change so that we can provide situated recommendations on how PL can be embraced and embedded in Cypriot PE.

2 Materials and methods

An exploratory sequential study design was implemented to collect both quantitative and qualitative data about these phenomena (Creswell and Plano Clark, 2011). A mixed methods approach was selected for the purposes of developing and extending the breadth and range of inquiry (Greene et al., 1989, p. 259), with the methods intending to enhance the credibility and utility of the findings whilst also offering additional context to illustrate the bespoke challenges of the study's participants (Bryman, 2006). In practice, quantitative questionnaire data from both the Teacher Change Questionnaire-Physical Education (TCQ-PE) and the Perceived Physical Literacy Instrument (PPLI) were collected in person during a PE teacher professional development event. Following quantitative analysis of the data, semi-structured interviews were employed to develop deeper insights into the thoughts, feelings and ideas of a small sample (N = 6) who volunteered their time. These interviews took place remotely using video meeting software (Microsoft Teams) at a date and time convenient to the interviewee.

2.1 Instruments

The Teacher Change Questionnaire-Physical Education (TCQ-PE) is designed to assess teachers' dispositions toward change in (a) program satisfaction, (b) self-efficacy to change, and (c) willingness to change (Kern and Graber, 2017) grouping teachers into the three categories of being Change Disposed (CD), Neutral to Change, or Not Change Disposed (NCD). The TCQ-PE has also been successfully used for categorical comparison in subsequent research studies (Kern and Graber, 2018; Kern et al., 2019); thus, it was considered an appropriate instrument for determining teachers' change readiness in the current study. The TCQ-PE consists of 15 items grouped into three primary constructs: Program Satisfaction (PS), Self-Efficacy to Change (SetC), and Willingness to Change (WtC), each measured on a five-point Likert scale ranging from 1 (e.g., 'Not at all satisfied/confident') to 5 (e.g., 'Extremely satisfied/confident'). This scale facilitates the assessment of teachers' attitudes towards and capacities for implementing changes in their pedagogical practices. The questionnaire included specific items that probe teachers' satisfaction with various aspects of their physical education program—such as curriculum content, instructional strategies, class management, assessments, and the overall learning environment—as well as their confidence in and willingness to adopt innovative teaching methods. Cronbach's alpha for this scale, as documented by Kern and Graber (2017), was calculated to 0.70–0.82 for the three subscales. The scale's items were translated into teachers' native language (i.e., Greek) and crosschecked with an expert for face validity. Cronbach's alpha was calculated to 0.812 to 0.955 across the three sub-scales' items (Program Satisfaction, Self-Efficacy to Change, and Willingness to Change), thus possessing satisfactory internal item consistency. The Perceived Physical Literacy Instrument (PPLI) was utilized to collect data on the PE teachers' knowledge and understanding of PL (Sum et al., 2016). The PPLI comprises nine 5-point Likert-scale items (1 strongly disagree to 5 strongly agree). The nine items of the PPLI are equally distributed across three subscales: knowledge and comprehension (3 items), self-expression and communication with others (3 items), and sense of self and self-confidence (3 items). Sum et al. (2016) report satisfactory composite reliability for the three factors of this scale (ranging from 0.73 to 0.76). For the translated items used in this study, Cronbach's alpha was calculated to 0.971 (knowledge), 0.931 (confidence), 0.919 (expression), again possessing satisfactory internal item consistency. In recent years many different tools have been developed to measure PL in different age groups and populations (see reviews such as, Barnett et al., 2023; Jean de Dieu and Zhou, 2021; Essiet et al., 2021; Shearer et al., 2021; Young et al., 2023a, 2023b). In light of the vast array of methods and tools available to explore PL's knowledge domain we chose the Perceived Physical Literacy

Instrument (PPLI). We appreciate that his tool is designed to measure an individual's self-perception of their physical literacy rather than their actual knowledge. It assumes to assess a person's knowledge of physical literacy by evaluating their self-perceived understanding of the concepts, benefits, and strategies related to physical literacy (Sum et al., 2018). We note here the issues around the inherent bias evident in self-report data especially when based on one's self-perception. As a counter point, we consider this area of exploration as valuable, citing supporting studies where perceived knowledge drives positive behavior (Babic et al., 2014; Rhodes et al., 1999; Sum et al., 2016). Indeed, a PE teacher who perceives they understand PL may be more likely to encourage others to engage in physical activities and also take on a leadership role in promoting PA in their school. In fact, in the context of this mixed method study the PPLI data and follow-up interviews may demonstrate discrepancies between perceived and actual knowledge, thus highlighting areas where education or training may be needed.

We are also aware of additional PPLI criticisms being that it does not reflect the more contemporary conceptualizations of PL which now encompass notions regarding physical, psychological, cognitive, and social learning (Barnett et al., 2023; Martins et al., 2021). Naylor et al. (2024) highlight that the PPLI's 3 factor model does not therefore address all core domains of current PL definitions, nor does it provide a holistic measure of PL. Despite being cognizant of these issues the PPLI was selected with its PL definition as "a specific intelligence that includes the motivation, confidence, physical competence, knowledge and understanding to value and take responsibility for maintaining purposeful physical pursuits and activities throughout the course of one's life" (Sum et al., 2018, p. 27). With the absence of a Cyprus specific framework, definition, or consensus statement available to lead our research, such as in other countries (Sport Australia, 2019; Sport England, 2023; Sport New Zealand, 2019), we considered this an appropriately neutral starting point for our investigations and a useful prompt for the follow-up interviews. Despite its focus on the perceived PL of the individual completing it, the instrument's three items on Knowledge and Understanding enabled us to link responses to teachers' potential to promote these areas and therefore teach a form of PL, albeit potentially a pragmatic sport performance or health-based version in this case. This concern reinforced the study design selection of mixed methods with the PPLI data providing a valuable starting point to the qualitative interviews. Our PPLI selection was therefore based upon its good validity and reliability, but also as it has been used in various global contexts to assess perceived PL across different demographics (Liu et al., 2022; Ma et al., 2020; Mendoza-Muñoz et al., 2023; Sum et al., 2018). It had also been designed with the specific Physical Education teacher population in mind, and was a time efficient instrument to administer in addition to the TCQ-PE.

Semi-structured interviews consisted of 5 open-ended questions, with associated probes used to dig deeper into teachers' PE and PL views and behaviors (Interview Schedule available on request). It then took an epistemic interviewing approach underpinned by a critical realist position. Examples included questions such as 'How happy are you with your role in PE?' and 'What and how would you like to make changes in PE?' It is here that an epistemological lens was also applied to the research to delve into teachers' deep-rooted values and beliefs about knowledge and learning and the influence these have on behavior judgements. Personal epistemology research has long established the links between teaching beliefs and the pedagogy applied (Hofer and Pintrich, 1997). Research also suggests that epistemic judgements made about PE's purpose can directly inform the environment in which it operates and decisions about appropriate behavior (Chinn et al., 2014). This theory integration was instrumental in gaining insight into the specific beliefs and norms that hinder or facilitate positive attitudes towards teachers' PL adoption and promotion. This approach, underpinned by a critical realist approach, sought to dig down and uncover 'hidden' worlds and influencers in order to gain a fuller appreciation of Cypriot PE teachers' practice and environment.

2.2 Participants

157 Cypriot PE teachers (secondary-school level) attended a national Continuous Professional Development (CPD) event. 134 Cypriot PE teachers (40.3% females, 59.7% males) completed the TCQ-PE and PPLI questionnaire, which was administered online using Google Forms, allowing for the efficient collection and management of responses. Most of the sample (47.8%) had a teaching experience of >16 years, while 20.1% had 11–15 years, 25.4% had 0–5 years, and 6.7% had 6–10 years of teaching experience. Six teachers volunteered for the follow-up online interviews (5 male and 1 female), and all were from the Change Disposed (CD) group. This convenience sample for the initial exploration stage seemed appropriate as CD practitioners were expected to be more open to the invite, more motivated and more aware of potential change. Interviews lasting 45–70 min (M = 55) were recorded on Microsoft Teams, transcribed verbatim, translated into English and re-checked for accuracy.

2.3 Data analysis

Quantitative data from the TCQ-PE and the PPLI questionnaires were analyzed using the SPSS software, version 29.0. Descriptive statistics were used to summarize the demographic data and basic responses from the questionnaires. A Kruskal-Wallis test was conducted to examine differences among the three change disposition groups (Change Disposed, Neutral, Not Change Disposed) concerning their understanding and self-perception of physical literacy as measured by the PPLI scores.

Interview data were thematically analyzed using reflexive thematic analysis (RTA) (Braun and Clarke, 2022), which offered a flexible and accessible method for exploring and interpreting the data. In RTA the researchers' subjectivities are consciously and actively utilized as a valuable resource to be drawn upon, rather than it being removed, reduced or avoided (Braun and Clarke, 2019, 2022). In the present study, all authors are ex-PE teachers themselves. The first author is a highly experienced PL practitioner and the national representative of the IPLA, whilst the second author is an experienced qualitative methods researcher and long-time proponent of holistic approaches to PE. Braun and Clarke's (2022) six phases of RTA were followed by the authors with the second author leading the process of data re-familiarization, the generation and combining of codes, and the final theme construction. Trustworthiness measures reflected qualitative guidelines, with co-authors acting as critical friends enabling further reflection on the themes constructed (see Table 1). The findings were also shared with the six participants to gain further

member reflections, and rich raw data quotes presented to make thematic connections of the dataset explicit (Smith and McGannon, 2018).

3 Results

3.1 Aim 1: to explore whether Cypriot PE teachers are willing and disposed to making changes to their practice?

3.1.1 Survey data

The TCQ-PE was administered to a sample of 134 PE teachers, measuring constructs of Program Satisfaction (PS), Self-efficacy to Change (SetC), and Willingness to Change (WtC) on a five-point Likert scale. Descriptive statistics (Table 2) revealed that the mean scores for PS, SetC, and WtC were 3.89 (SD = 0.54), 4.18 (SD = 0.59), and 4.13 (SD = 0.52), respectively. The range of scores for PS was 1.83 to 5.00, for SetC was 1.00 to 5.00, and for WtC was 1.00 to 5.00. Skewness values indicated a leftward distribution with PS at −0.445, SetC at −1.244, and WtC at −1.005, while kurtosis values indicated leptokurtic distributions for these constructs, with PS at 0.812, SetC at 3.485, and WtC at 4.115. Correlation analysis among the constructs indicated significant relationships at the $p < 0.01$ level. The correlation between PS and SetC was 0.273, between PS and WtC was 0.306, and between SetC and WtC was 0.444. These results suggest a positive association between these constructs, indicating that higher levels of program satisfaction are linked to greater self-efficacy and willingness to change. Moreover, the strong correlation between self-efficacy to change and willingness to change highlights a significant interdependence between these factors in influencing teachers' readiness to adopt new practices in PE.

Participants were further categorized into three change disposition groups based on their responses to the Teacher Change Questionnaire-Physical Education (TCQ-PE), which measures Program Satisfaction (PS), Self-efficacy to Change (SetC), and Willingness to Change (WtC) on a 1 to 5 scale, with higher scores indicating stronger dispositions. Following the methodology outlined by Kern and Graber (2017), we first calculated the mean scores for each PS, SetC, and WtC item for every respondent. These individual means were then aggregated to establish sample means for each construct. Participants were assigned to groups based on their scores relative to these sample means: (1) Not Change Disposed (NCD): Participants whose PS scores were above the sample mean, with either SetC or WtC scores below the sample mean. (2) Change Disposed (CD): Participants with PS scores below the sample mean, and either SetC or WtC scores above the sample mean. (3) Neutral: Participants who did not meet the criteria for the other two groups, indicating a disposition neither distinctly inclined towards change nor against it. The distribution of participants among these groups is given in Table 3.

TABLE 1 Cypriot PE teacher PL themes constructed through reflective thematic analysis.

Storybook theme	Major theme	Sub-themes
Helping Hands	Enablers and Required Support	Awareness of New Ideas
		Stakeholder Buy-in
		Government Directives
	Making Ideas Stick	Evidence Base
		High Level Profile
		Flexibility and Space
	Personal Investment	Recognition of Need
		Thirst for Knowledge
		Resource Value Judgement
Blockers and Oil Tankers	Pedagogical Constraints	Culture of Inactivity
		Lack of Resources for PE
		Subject Status
	Do not Stand Out	Peer Attitudes
		Pressure to Conform
		Playing the 'Game'
	Teachers' Career Aspirations	Time Served Attitude
		Limited Personal Drive
		Inadequate Training Provision
		Systems Driving Behavior

3.2 Aim 2: to investigate the teachers' perceived and self-reported actual K&U about PL

3.2.1 Survey data

Table 4 presents the descriptive statistics and correlation matrix for the constructs of the Perceived Physical Literacy Instrument (PPLI), encompassing Knowledge, Confidence, and Expression. This instrument was utilized to assess aspects of PL among 134

TABLE 2 Descriptive statistics and construct correlation matrix of the Teacher Change Questionnaire—Physical Education (TCQ-PE).

Measures	Constructs	PS	SetC	WtC
TCQ-PEconstructs	Program satisfaction (PS)	1.00	0.273**	0.306**
	Self-efficacy to change (SetC)	0.273**	1.00	0.44**
	Willingness to change (WtC)	0.306**	0.444**	1.00
Mean		3.89	4.18	4.13
Standard Deviation		0.54	0.59	0.52
Skewness		−0.445	−1.244	−1.005
Kurtosis		0.812	3.485	4.115
Minimum		1.83	1.00	1.00
Maximum		5.00	5.00	5.00

$N = 134$; All constructs were measured with a five-point Likert-type scale; Correlations coefficients calculated as 2-tailed Spearman's ρ; $^{**}p < 0.01$. The values under diagonal are correlation coefficients, diagonal values represent the construct variances, and the values over the diagonal are correlations squared.

TABLE 3 Distribution of participants by change disposition.

Change disposition	Number of teachers	Percentage
Change Disposed (CD)	31	23.1%
Neutral	55	41.0%
Not Change Disposed (NCD)	48	35.8%
Total	134	100%

respondents, measured on a five-point Likert scale. The Knowledge construct exhibited a mean score of 4.59 with a standard deviation of 0.08 and displayed a significant negative skewness of −3.090 and a kurtosis value of 8.965, indicating a highly peaked distribution with most responses clustering at the higher end of the scale. Confidence showed a mean of 4.25 and a standard deviation of 0.81. It presented a negative skewness of −2.414 and a kurtosis of 6.087, suggesting a leptokurtic distribution similar to Knowledge but with slightly less pronounced peaking and tailing. The Expression construct had a mean score of 4.32, a standard deviation of 0.78. It also demonstrated a negative skewness of −2.451 and a kurtosis of 6.384, following the pattern of leptokurtic distributions observed in the other constructs. Correlation analysis among the PPLI constructs revealed significant positive relationships. Knowledge was moderately correlated with Confidence ($r = 0.587^{**}$) and Expression ($r = 0.446^{**}$), indicating a meaningful association between understanding PL concepts and confidence or ability to express them. The strongest correlation was observed between Confidence and Expression ($r = 0.645^{**}$), emphasizing a robust link between these aspects of PL. These findings highlight the interrelated nature of knowledge, confidence, and expression in the context of PL, with each component significantly influencing the others. The high kurtosis and negative skewness across the constructs suggest that participants are generally well-versed in PL, exhibiting high confidence and capability in its expression.

The analysis further aimed to investigate potential statistically significant differences among the three change disposition groups and their PPLI scores. Given the significant deviations from normality in the distributions of the PPLI scores, as evidenced by the skewness and leptokurtosis values (see Table 4), we opted for the Kruskal-Wallis test to assess statistically significant differences among the three change disposition groups—change disposed (CD), neutral, and not change disposed (NCD)—thereby ensuring the robustness of our findings in the absence of normality criteria being met. The results indicated no statistically significant differences across the categories for any of the tested constructs. Specifically, for Physical Literacy Knowledge, the test yielded a $\chi^2(2, N = 134) = 1.771$, $p = 0.412$, suggesting no significant variation in knowledge related to PL among the different change disposition categories. Similarly, no significant differences were found for Physical Literacy Confidence, $\chi^2(2, N = 134) = 0.474$, $p = 0.789$, or for Physical Literacy Expression, $\chi^2(2, N = 134) = 0.361$, $p = 0.835$. The overall PPLI total score also did not vary significantly across the groups, with a Kruskal-Wallis test resulting in $\chi^2(2, N = 134) = 0.897$, $p = 0.639$. These findings suggest that perceptions of knowledge, confidence, and expression of PL do not differ significantly among teachers categorized by their disposition towards change as measured by the TCQ-PE.

3.2.2 Interview data

Follow-up semi-structured interviews took place with participants from a Change Disposed standpoint (n = 6) and explored the teachers' views and behaviors relating to PE and PL. All interviewees expressed their passion for PE and identified a series of challenges and facilitators that they considered important if widespread change in PE practice was to be achieved and concepts such as PL were to be embedded within high quality PE lessons in Cypriot schools. Two Storybook themes of Helping Hands, and Obstacles and Oil Tankers, were created from the six Major themes: Enablers and Required Support, Making Ideas Stick, Personal Investment, Pedagogical Constraints, Do not Stand Out, and Teachers' Career Aspirations.

Despite survey data showing teachers had high perceived PL K&U, when interviewed teacher's responses revealed misconceptions and lack of K about PL. Within the sub-theme of Awareness of New Ideas, that being PL itself, respondents provided varied descriptions and perceptions of PL, most of which just referenced the physical domain. For example, C6 described PL as "how we can cope physically in our daily lives," whilst C5 explained PL as "how a child perceives how well he can walk, …then leaps, …this is part of the physical literacy of the human body, how a human body can move better." Some teachers did provide a more holistic view of PL closer the international definition (IPLA, 2017) with C3 describing a physically literate student as,

> One who knows how to handle the ball but also how to behave properly, who knows how to follow the rules, who knows how to cooperate and how to help. It's the package. Physical literacy in addition to physical skills, also includes abilities that have more social-psychological basis, such as encouragement/motivation, self-confidence and of course knowledge.

Some teachers provided a very honest self-appraisal that they had just stumbled across the term but had not been able to fully appreciate its form within their practice. C6 noted that "I did not see this mentioned anywhere." However, C2 explained that he had not even come across any version of the term stating, "I had nothing. I mean, I have not studied anything about physical literacy. I do not know anyone (who knows what PL is). I did not talk with anyone about physical literacy." Conversely, some teachers did promote how important knowing about PL was with C1 recognizing that PE, "is constantly being upgraded, new things are coming in, and we must be involved to know things. Because if we sit in a chair and are not informed, surely, at some point, we will enter the class in class, and the students will know more than us."

3.3 Aim 3: To determine the potential barriers and enablers of change so that we can provide situated recommendations on how PL can be Embraced and embedded in Cypriot PE

3.3.1 Interview data

The themes generated from RTA offered 2 storybook themes directly relating to the potential barriers and enablers of change, Helping Hands, and Blockers and Oil Tankers Helping Hands. This Storybook theme provided insight into what the interviewees thought had, or would have, a positive impact on themselves and their peers

TABLE 4 Descriptive statistics of the perceived physical literacy instrument (PPLI).

Measures	Constructs	Knowledge	Confidence	Expression
PPLI constructs	Knowledge	1.00	0.587**	0.446**
	Confidence	587**	1.00	0.645**
	Expression	587**	0.645**	1.00
Mean		4.59	4.25	4.32
Standard Deviation		0.08	0.81	0.78
Skewness		−3.090	−2.414	−2.451
Kurtosis		8.965	6.087	6.384

N = 134; All constructs were measured with a five-point Likert-type scale.

(regardless of disposition) to embed PL-aligned practice within their PE teaching. This theme was constructed from Enablers and Required Support, Making Ideas Stick, and Personal Investment.

3.3.1.1 Enablers and required support

Within this theme the Awareness of New Ideas, that being PL itself, was very important to teachers despite as noted above many not having directly heard of the term.

3.3.1.2 Personal investment

Here, interviewees provided more positive pictures of teachers who had the drive and passion to learn and develop their practice, with C6 expressing his personal goal being "to make children love physical education so that they can use it for life, that is, to make it a necessity for them" (C6). Teacher C1 described how the pandemic had actually helped the profession look for ways to improve PE, "I think we are eager to learn. After Covid we are using digital technology differently. It helps us see new ways." Although a very positive sentiment and evidence of teachers' passion to develop teachers did highlight the need for more time and support for such teachers to experiment with PL, learn more about PL and review their lesson's PL outcomes. As C2 stated, "We need more time and space to try things."

3.3.1.3 Making ideas stick

Here teachers identified the importance of support beyond their own lessons, level of teacher, or school in order to raise the profile of PL and develop its evidence base. For example, teacher C6 noted, "We have to go with some research, with some results, of a survey, … we could give some suggestions first to the Ministry of Education, so that it can transfer them to the state for the physical education lesson. That's how I see this piece, at an individual basis no one will hear us" (C6) Indeed within the interviews, Stakeholder support was widely discussed by the teachers. They described a range of stakeholders who they valued and those whom they were targeting to gain buy in for their teaching. Teachers identified their peers, the students themselves and the parent body as key targets and the importance of communicating with them what they wanted to do in PE and why. C4 thought this was already happening in his school. He stated, "I see a lot of communication between colleagues. I see a lot of communication between colleagues and parents, and I see a lot of communication between coaches and teachers…It's (getting buy-in) about educating the stakeholders." (C4). C3 explained just how important it was to work with stakeholders to help students make the educational gains he hoped for, "For the students, it is about cooperation with parents, cooperation with other teachers. It is multi-layered." He then moved his attention upwards to management level and stated, "We have an excellent Headmistress, …. we have incredible support from the management and this thing makes us work better at school. Whatever we need… is next to us, by the management." Teacher C4 however thought support needed to be lobbied even higher with the health benefits of PE and PL better promoted "The state, the state, should emphasize physical education lessons…It reduces costs in each state for medical and other purposes" (C4). Yet ultimately, even with wider ranging support C2 felt the success of new teaching ideas came down to each individual's responsibility and motivation. He suggested, "The physical education teacher need to know how to get his message across, how to, "sell his product," how to represent it, and the rest is the partners, is the director, the management team, the rest of the physical education teachers, whether they are open to accept to try new things. But I think there will always be two, three people in the school environment who have this appetite to do something more, the extra mile to give something more to students beyond knowledge" (C2).

3.3.1.4 Blockers and oil tankers

The second Storybook theme of Blockers and Oil Tankers described many of the challenges and barriers to teacher change, specifically when trying to adopt and promote PL. This was developed from the Major themes of Pedagogical Constraints, Do not Stand Out, and Teachers' Career Aspirations.

3.3.1.5 Pedagogical constraints

Here the Sub-themes identified the lack of resources and the low subject status of PE within the Cypriot education system. This marginalization of PE inherently results in a lack of focus on PL with teachers' responses describing many barriers to change which directly impacted on their potential to embrace PL aligned practices. The interview data, however, provided an additional concept, that of the Culture of Inactivity in Cyprus. This inactivity did not just refer to students' PA levels outside of school based on environmental factors but a situation in the schools themselves where "You will find them (PE teachers and students) in the stadium stands playing with their mobile phones. I loved the physical education class, but I watched the teachers sit and tell us okay, grab a ball, go play. If I told them I was not in the mood, there was an indifference. Never mind it's ok. they said, Sit down" (C6). Teacher C3 put some of this attitude down to Cypriot society's valuation of PE and parents' key role in reinforcing such value judgments. He explained, "parents prefer their child to

speak 3 languages rather than be able to do 3 sports with all that entails, without talking only about physical abilities, this is what parents cannot understand…We want our child to read from 5 years old, but it does not matter if he cannot participate in a game with 5 other children." The need and difficulty in changing these attitudes from parents and teachers themselves in order to understand, accept and promote PL was described throughout this major theme in many varied forms.

3.3.1.6 Do not stand out

In line with this sentiment and the difficulty of enacting change, this sub theme refers directly to the teachers' interaction with their peers when attempting to make changes or innovate within their practice. C1 described what happened when he first started teaching and delivered lessons using his own agenda. He explained "I did not change at first, but then pressure came in; they called. As a new appointee at the end of the day, because I did not know many things, the older ones told me, change it, do it, because they will 'eat' you" (C1). Teacher C2 described an even worse experience when he encountered the same peer attitudes but refused to change his practice. He stated, "I have been finger-pointed by old fellow teachers that I work, that I spoiled the field, that I do not do what they do, and I should stop." He went on to describe how the situation escalated dramatically with his peers eventually driving him from the school. "I had a personal experience…I had to change schools after that happened." C5 reinforces this point adding that his colleagues were very, "negative colleagues who do not apply any pedagogical method, do not utilize anything. and that is why the older ones spoil our name, all these obstacles are caused by the older teachers with the stereotypes and opinions they have." One explanation for such attitudes and behaviors is that the teachers referred to above were simply playing the 'Game', the game of life, of acceptance, with the neo-liberal aim of economic security and career progression. Teacher C3 seemed to allude to this when he described the focus for his teaching, "In secondary education, the main thing to have a promotion is the years of service" (C3). Without a shared motivation and philosophy to learn contemporary concepts and pedagogy in schools it is perhaps unsurprising that PL is poorly understood and promoted with teachers simply conforming to the expected norms. Teacher C5 described more about the systems and culture driving teachers' behavior expectations in PE explaining,

> If I do not give a 20 to the son or daughter of a teacher or the son of someone who is in the parents' association, those parents will come and complain. In order for the Principal to satisfy the particularities of each parent, you are forced to succumb to the appetites of the parents… I did not change at first, then pressure came in, they called from the ministry that I had to change the grade.

This systems approach was challenged by C6 though. He put all issues surrounding PE practice firmly down to the individual when he said, "It's a mentality. It's not the system as it stands. Because in order to change the system, you need firstly to change your mentality" (C6).

3.3.1.7 Teachers' career aspirations

Finally, within this Storybook theme teachers described how the career progression and professional development systems demotivated many of their colleagues. In particular, Inadequate Training Provision was discussed as a major obstacle and limiter to them changing their practice. C4 described the current offer to him and his PE colleagues.

> There is a pedagogical seminar that takes place every 2 years… a refresher on the pedagogical approach you must have in your lesson. The education inspectors deliver basically organize how you set up your course, your lesson plans with your assessments, how you are going to teach a course, how it starts, how it ends. It's nothing new.

In addition, C2 highlighted school management's lack of support to progress his learning. He explained, "A line manager will not come to me and tell me it would be good to go to this seminar, follow it, try to improve or change a situation. This cannot be done." Such management behavior challenges teachers' ability to learn about PL directly with the absence of training resources compounding this situation. Returning to the data on teacher attitudes, however, C3 does not criticize the system or the quality of professional development on offer. He simply states, "I think the biggest barrier is ourselves. It's the PE teachers. I'm not sure if [we] are eager to learn" (C3).

4 Discussion

The study results provide valuable insights into the change disposition among and current state of Cypriot PE teachers' perceived and reported PL understanding. These are now discussed in respect to the study's three aims.

4.1 Aim 1: to explore whether Cypriot PE teachers are willing and disposed to making changes to their practice?

Regarding the PE teachers' dispositions to their PE program and satisfaction with their work environment and practice only one quarter met the CD classification of a group presenting a willingness and efficacy to seek improvements to practice. With mean scores of 3.89 for PS, 4.18 for SetC, and 4.13 for WtC, there is a generally positive disposition towards change. However, the willingness to actively pursue improvements remains limited. The correlation analysis revealed significant relationships between these constructs, suggesting that higher program satisfaction is linked to greater self-efficacy and willingness to change. This underscores the importance of promoting supportive environments that enhance teachers' satisfaction and efficacy, which can encourage meaningful change. The occupational socialization within PE departments further compounds teachers' reluctance to embrace change. Many teachers reported that their desire to experiment with new practices, including PL, was often discouraged by more experienced peers who prioritized curriculum maintenance and traditional approaches. This social pressure emanating from organizational socialization can 'wash out' new ideas and inhibit teachers from actively seeking innovation. Overall, the data highlighted the majority of teachers are either neutral or opposed to changing the status quo, indicating a need for targeted interventions to shift these dispositions towards a more proactive stance on educational change. This finding, though both worrying and

disappointing for the future of PE in Cyprus, is common within both the subject and the wider profession, where teachers lack the agency to make changes within schools (Kennedy, 2005; Maskit, 2013), an issue compounded by the subject's low status in the educational system (Richards et al., 2018). Additionally, the absence of effective training and support for new ideas, or its ease of access, can further inhibit these perceived or real barriers to change (Kennedy, 2016; Kern et al., 2019). Finally, and most apparent in research studies is the issue of teachers' occupational socialization that sees PE teachers needing to be 'oriented toward curriculum maintenance' and 'reproduction' (Lawson, 1988, p. 273), in order for them to be accepted in the profession with any new ideas 'washed out' by the persistent negative reception they receive from more experienced peers (Curtner-Smith, 2001). Here study data are supported by studies highlighting the micro-politics within PE teams where power is exerted with, through and over members depending on the expected norms already established (Curtner-Smith, 2017; Thomson and Sparkes, 2019). All these concepts were clearly evident in participants' qualitative responses. In-depth probing through qualitative interviews helped make meaning from the questionnaire data, yielding greater insight into both teachers' PL conceptualizations and their perceptions of the key enablers and barriers to change. Interestingly, despite all interviewees having a CD outlook many still linked PE and PL to pupils' fitness levels or ability at sport, and promoted a traditional custodial approach, no doubt emanating from their own sport performance-based journeys (Kirk, 2010; Lawson, 1988). None could clearly articulate what PL was or looked like within their or others' PE teaching practice. Although concerning this was mitigated by each person's desire to learn more about PL despite them bemoaning the lack of meaningful CPD available to them on the island.

When asked to explain their disposition, all interviewees stated they wanted to change their profession due to their philosophical stance and wish to promote more holistic and humanistic approaches within the subject that contrasted to the neo-liberal systems in place (Evans and Davies, 2014; McEvoy et al., 2017). This cognitive dissonance with their own beliefs about the aims and role of PE not matching the required school practice and curricula promoted (Festinger, 1957), is compounded by the actions and attitudes of their peers in the form of the organizational socialization they experienced (Lawson, 1986). When challenged about the barriers they noted in their peers' behavior, they identified that others saw the profession as just a job and a "game to play" to achieve their desired or deserved quality of life. This supports a well-recognized culture and practice within the sector (Evans and Davies, 2014).

4.2 Aim 2: to investigate teachers' perceived and self-reported actual K&U about PL

Quantitative data revealed high levels of perceived PL understanding across the dimensions of Knowledge, Confidence, and Expression. Specifically, the PPLI results demonstrated mean scores of 4.59 for Knowledge, 4.25 for Confidence, and 4.32 for Expression, indicating a strong foundational perceived understanding among teachers. However, these results should be interpreted with caution. As noted previously the PPLI has limitations based on presenting data on perceived rather than actual knowledge of PL. Nevertheless, this data does provide a valuable starting point to interview teachers to explore their perceived PL knowledge and understanding in more detail. We also need to consider the context of PL's place in the Cypriot educational system, where there is no direct translation or integration of PL within current policies or curricula. The closest equivalent is the Greek term 'Φυσική Αγωγή' (Fysiki Agogi), which translates to the nurturing or upbringing related to PE and resonates with broader aims of PL but lacks specificity. Therefore, despite the participants' clear interest, there is a notable discrepancy between the theoretical underpinnings of PL and its practical application within the Cypriot education system. In particular, the low status of PE as a subject within Cypriot schools and the traditional emphasis on competitive sports limit the perceived importance of PL. This makes it very difficult for teachers to enact change and promote PL in a culture that favors established practices over innovation.

Indeed, the interview data demonstrated a worrying lack of knowledge and presented misconceptions about this 'new idea' of PL. In some respects, this is unsurprising given the contested nature of the term itself and the pluralism of views about its role and focus (Young et al., 2020). Teachers' conceptualizations of PL often aligned it with physical performance or skill, suggesting a narrow view of its purpose that may stem from limited exposure to the broader, holistic aspects of PL in Cypriot PE. The continued absence of explicit references to PL in the latest policies and the national PE curriculum do however indicate a need for greater alignment and integration of PL within policy frameworks and educational practices (Christodoulides et al., 2022). At this point we must also consider that the definitional ambiguity of PL might have influenced our own data interpretations here. Despite our reflexivity within the data analysis process (clarifying our own position as midway between idealistic and pragmatic PL conceptualisations) this undoubtedly shaped how we assigned meaning to the interview responses.

Furthermore, the processes of occupational socialization occurring within PE departments continues to influence teachers to adhere to established norms and practices. This potentially can discourage engagement with PL's broader goals, which include socio-cultural and lifelong engagement dimensions. This can create tension between teachers' individual values and the traditional curriculum demands and also results in cognitive dissonance, where teachers' professional beliefs do not align with the existing structural requirements. Indeed, the situation in Cyprus is not unique as PL is not yet fully understood or embraced in many countries worldwide (Carl et al., 2023; Spengler, 2015). One must also consider that even when PL information is more widely available any translation from its research and knowledge to the influencing of teachers' behaviors and practices may take a very long time (Coburn and Penuel, 2016). Even then the most motivated and change disposed teachers will still need to navigate the micropolitical realities of PE life.

4.3 Aim 3: to determine the potential barriers and enablers of change so that we can provide situated recommendations on how PL can be Embraced and embedded in Cypriot PE

Much data regarding pedagogical and structural barriers and enablers of change would have been expected and mirrors many study findings that highlight the important role of factors such as stakeholder support, physical resources, the current teacher knowledge base, PE's subject status and the cultural, often custodial approach promoted in

many schools (George and Curtner-Smith, 2017; Laureano et al., 2014; Richards et al., 2018; Ward and Ayvazo, 2016; Whipp et al., 2007). In our study the apparent mismatch between PE's performance pedagogy informed curricular goals and PL's philosophical aspirations needs to be resolved. The nascent acknowledgment of PL in policy and lack of specific Cypriot cultural references of PL must also be addressed. This needs to be informed by educational policy data or studies conducted in the field. This will not be a quick process given that PL itself is contextually dependent. It requires much more locally based research to inform the nature of PL in Cyprus (Armour et al., 2017). This is especially warranted given the country's culture of inactivity, parental reductionist attitudes to education, and PE's role as cited in the interviews.

Cypriot PE teachers need empowerment to develop their autonomy (Kennedy, 2016), to build the confidence to exert their agency. Effective training and support needs to merge both bottom-up and top-down school and Ministry approaches (Fullan, 2007), with interviewees also noting the potential of new enabling technologies. Examples abound of how PE teachers can establish their own communities of practice, engage in professional learning communities, and utilize learning facilitators to enhance their learning (Goodyear and Casey, 2015; Gonçalves et al., 2022; Parker et al., 2012). Cyprus could develop similar mechanisms utilizing teacher and university networks to communicate and assist such activities.

Asked about what was needed to reverse such opinions and behaviors, all interviewees highlighted the various support mechanisms and stakeholders needed, or the support they themselves had received from key agents such as managers, headteachers, parents and their pupils. This corroborates research highlighting the importance of all those stakeholders, especially school leaders (Alfrey and O'Connor, 2024) within the school environment when implementing change (Forman et al., 2013). It also supports research promoting the importance of bio-ecological (Bronfenbrenner, 1994) and socio-ecological models of change (Bauman et al., 2012) to help teachers understand the various factors that bear influence upon the teaching act in schools. As academics we strive for genuine impact in our research and note that there seems to be a disconnect between high level empirical research and its translation to teacher practice. We are contributing by helping teachers appreciate the environmental pressures within which they exist and bear pressure on their decision-making processes. Currently we are attempting to do this by making the environmental influences explicit within professional development seminars and workshops, and by embedding this approach within the resources we create and our interactions with pre-service teachers as we explore PL in more detail (Christodoulides et al., 2022; Grecic and Palmer, 2021; Grecic et al., 2024).

Kruskal-Wallis test results provide additional insight, showing no statistically significant differences in perceived knowledge, confidence, and expression of PL across the change disposition groups. This lack of variation suggests that, regardless of their disposition towards change, teachers generally possess similar levels of perceived understanding and confidence in PL. However, their actual knowledge and PL application in practice remains limited, reinforcing the need for systemic changes to align teachers' knowledge with practical implementation and to address the entrenched barriers to change within the educational framework. One must also consider that even here with such top-down influence, the teachers themselves will still need to navigate the micropolitics of their own school and PE department.

4.4 Specific implications for Cypriot context

PE teachers' limited change disposition, particularly relating to PL, has considerable implications for educational policy and practice. Future policy relating to PL advocacy could be met with resistance to their effective implementation—that is, the rhetoric of policy may not be reflected in reality due to teachers' lack of change disposition. Moreover, the lack of significant differences in perceived PL knowledge, confidence, and expression across change disposition groups suggests a uniformity in perceived PL understanding but highlights persistent barriers to applying this knowledge in practice. Additionally, PL is not currently outlined in Cypriot PE policy which underscores an opportunity for systemic-level change followed by localized support to effect meaningful transformation, supporting previous research on change catalysts (Maclean et al., 2015; MacPhail and Lawson, 2020).

Key areas of need, in common with Alfrey and O'Connor's (2024) study of how to enact change in PE, identified the importance of a holistic support focus with resources available to enable: adjustments in the range of activities offered, adoption of new assessment methods and pedagogical models, enhanced staff development, and targeted training initiatives. More structured support from government and school leaders is essential to ensure these changes are not just introduced but sustainably integrated into PE practice. This may require policy-level commitment to reform the PE curriculum, explicitly embedding PL principles and establishing clear pathways for teachers to implement these changes. When asked 'Why does this not already happen?', several factors were cited. These included teacher and government apathy and the lack of linkage to reward structures, poor access to information, stakeholder attitudes, lack of training opportunities, curriculum obligations to other subjects, and the subject's weak position in society regarding Cyprus' sporting and PA culture. These barriers indicate a need for stronger structural incentives and support mechanisms, such as recognition and progression pathways that reward engagement with PL-oriented practices. Creating links between PL-based innovations and career advancement could motivate teachers to adopt new practices actively. All interviewees noted that Ministerial-level is critical to drive through change at the macro level, whilst local educational leaders (cultural architects) are needed to strengthen PL's importance at school level. Scaffolding in PE teacher training and CPD to modify existing practice is also needed as is the creation of accessible and quality resources. The critical factor throughout was for PE to gain the highest level of support as C2 so eloquently described: "It's all politics, after all. So, oh yes, we have the associations of physical education. We know them (the politicians). We're part of these organizations and these associations. They try to make changes, but if the political system of the government does not take drastic measures, nothing will happen." This underscores the need for targeted interventions to empower teachers, boost their motivation and willingness to embrace change.

For the effective and contextually appropriate adoption of PL in Cyprus, we would advocate for revised curriculum aims including a PL dimension, leading to teachers' increased knowledge and confidence regarding PL. This must be supplemented with aligned training, qualifications, resources, recognition and progression. For these curriculum changes to take root, Ministry-level engagement is necessary to establish PL as an integral part of the PE curriculum. For

instance, the absence of trained PE specialists in early childhood education could be addressed through dedicated training programmes or policy adjustments that prioritize PE specialization at the early education level. Further, localized professional development should focus on connecting PL to teachers' existing practice, providing practical strategies for PL integration within the constraints of their roles. It is also imperative that the value of PE be more effectively promoted so as to (re)socialize pupils and parents on the educational outcomes of the subject, as well as increased collaboration to develop a contextual evidence base for the profession. In practice, this could involve community-based campaigns or school-based initiatives that actively involve parents and local stakeholders, reinforcing the broader social value of PE and its role in lifelong health. The development of a research base could be supported by partnerships with universities and external organizations, providing robust evidence to guide PE practice and validate its impact. Future training must be provided that recognizes teacher dispositions and establishes behavior change protocols for PL to be accepted and adopted. Both top-down and bottom-up strategies are required to overcome teachers' reluctance to change (Hargreaves and Fullan, 2012) and for PL to be fully embedded supporting QPE in Cyprus and contributing to children's positive life outcomes (UNESCO, 2015). PL must also gain high level support to ensure practice change and that PL is not 'washed out' by organizational socialization in the Island's schools. Indeed, teacher focused professional development and interventions are required that develop the teachers' own confidence, competence and motivation, their own PL, and offer them a sense of agency, responsibility and capability for change (Kern and Patton, 2024).

5 Conclusion

This study highlights the readiness and willingness of Cypriot PE teachers to adapt their practices, particularly in relation to the concept of PL. While survey data suggested that teachers possess high perceived knowledge and understanding of PL, qualitative findings revealed gaps in their reported knowledge, which underscores the need for targeted professional development. By exploring the barriers and enablers to PL implementation, this study provides actionable recommendations tailored to the Cypriot PE context.

A major strength of this study is its originality. This is the first time that the TCQ-PE has been used in Europe, and combined with the PL concept, the PPLI and occupational socialization. The sample size and scope of the questionnaire is also impressive, this equating to a third of all Cypriot PE teachers. It is however important to recognize the implicit meaning of the terminology used in this study, in particular the concept of teacher change. For the purposes of the metric and instrument used (TCQ-PE) teacher change is used to describe the process of pedagogical change across a variety of contexts (Guskey, 2014). However, we appreciate the loaded nature of the word 'change'. i.e., top-down "you must change" sentiment. All authors align to a softer co-development approach within our work. As such we would have preferred to contextualize this study in terms of supporting and informing "teacher recalibration" or "practice modification" rather than the seemingly harsh term of teacher change.

While the PPLI successfully measured perceived knowledge, confidence, and expression of PL, statistical analysis indicated no statistically significant differences in perceived PL knowledge, confidence, and expression across the change disposition groups, suggesting a uniformity that limits our understanding of nuanced differences within the population.

The mixed-methods approach to gain qualitative data to explore PL in more detail is again a first in Europe as is the interview approach embedding epistemological and critical realist groundings enabling the hidden influences of teaching and learning judgements to become a focus of attention. However the study had a number of limitations. With PL being a very new concept in Cyprus this limited teachers' ability to relate it to existing and previous teaching practices and provide extended reflections. The interview sample was also very small and based on a CD group convenience sample of volunteers. This therefore reduced the range of data that was analyzed which also needed to be framed by teachers' individual position for each of the TCQ-PE categories in order to situate more fully their perceptions of the challenges and enablers within their practice.

The study findings demonstrate that higher levels of program satisfaction are closely tied with greater self-efficacy and willingness to change, highlighting an interdependence between these factors in influencing teachers' readiness to adopt new practices in PE. However, the teacher change disposition data indicate that, despite having a good perceived understanding of the PL concept, most teachers are either neutral or resistant to a deviation from the status quo, underlining the need for targeted interventions that specifically address motivational and structural barriers within the Cypriot educational context. Furthermore, perceptions of knowledge, confidence, and expression of physical literacy do not differ significantly among teachers categorized by their disposition towards change. Themes generated from interview data support links to socialization processes, occupational socialization, and the importance of internal support and previous training and development. The study's findings suggest that PE teachers' limited desire for change in relation to PL is a significant barrier that needs to be addressed through specific changes in educational practice and policy. Specifically within the interviews, however, teachers revealed a number of main factors the exacerbated this issue. These included (1) that PL is a contested term with no curriculum directive, (2) that there is a lack of training in Cyprus relating to PL, resulting in a lack of contextual consensus development, and (3) the influence of organizational socialization. Respondents also noted the lack of PE specialists in early years and the negative impact this was having on children and their practice. All interviewees agreed that a more knowledgeable and better qualified profession is needed in Cyprus. Our next steps therefore are to report the study findings to the MOECSY who have already promised their support to enable co-developed interventions, and more data collection to gain a more comprehensive picture of the issues and needs. This will entail the existing study being applied to a larger data set of all 450 secondary PE teachers, all generalists in elementary school who deliver PE, as well as purposefully sampling to collect interview data from all three change dispositions. We also aim to dig deeper into Cyprus' cultural context and gain more stakeholder engagement to determine the actual form of PL that is desired, as well as how and in what form PL can be embraced in PE. To achieve this the interactions of all the social actors need exploring to identify their wants and needs. Of particular interest would also be to investigate the micropolitics of the school and PE

departments to illicit knowledge on how power with, through and over teachers can be used to support change. The purpose once again being to uncover barriers and enablers and create bespoke strategies for each group, increasing the evidence base, and agreeing dissemination and influence strategy for all stakeholders (Fletcher et al., 2020).

The study set out to explore whether Cypriot Physical Education (PE) teachers can fully embrace Physical Literacy (PL) and to determine the contributory factors. Ultimately, it has investigated PE teacher dispositions to change in respect to PL integration within their subject and therefore has the potential to make a significant contribution to knowledge in the Cypriot context. It has uncovered barriers and enablers and has made recommendations on how this data can be used to enhance PL adoption in PE. By enhancing the evidence base, this study aspires to support a meaningful shift toward embedding PL within Cyprus' educational framework and ultimately facilitating collaborative redesign of Cyprus' PE curriculum and teacher education.

Data availability statement

The datasets presented in this study can be found in online repositories. The names of the repository/repositories and accession number(s) can be found at: UCLan's Data Management Portal.

Ethics statement

The studies involving humans were approved by University of Central Lancashire, Preston, UK. The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study. Written informed consent was obtained from the individual(s) for the publication of any potentially identifiable images or data included in this article.

Author contributions

EC: Writing – original draft, Methodology, Writing – review & editing, Conceptualization, Investigation. DG: Writing – review & editing, Writing – original draft, Conceptualization, Methodology, Investigation. OT: Methodology, Conceptualization, Writing – review & editing, Writing – original draft, Formal analysis. AS: Writing – review & editing.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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The author(s) declare that no Gen AI was used in the creation of this manuscript.

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