



Co-funded by
the European Union

**D2.1 Consolidated report of the
Teaching and Learning pedagogical
framework for Physical Literacy**

Prepared by EUPEA

Table of Contents

Introduction.....	3
Theoretical Background	3
Physical Literacy.....	3
Physical Education (PE)	7
Physical Education and Physical Literacy	8
Assessment.....	10
Gamification	12
Other Considerations	14
Moving forward and making a difference	15
Final Considerations.....	19
National Reports.....	21
Field research	26
Survey findings (online questionnaire)	26
Participants	26
Main results from the online survey	26
Conclusion.....	27
Focus group findings	27
In-service teachers (PE teachers)	27
Summary from in-service PE teachers focus groups.....	38
Pre-service teachers (university students).....	39
Summary from pre-service PE teachers (students) focus groups.....	49
Proposed teaching and learning pedagogical framework for Physical Literacy	50
ePhyLi Physical Literacy Modules	50
References	62



Introduction

This deliverable presents the consolidated report of the Teaching and Learning pedagogical framework for Physical Literacy. First, the findings of the desk research conducted on physical literacy (PL) and its connections to Physical Education (PE), PE learning context and teaching approaches and gamification elements at the EU and international levels are presented. The report provides an overview of the current state-of-art in this field, highlighting educational priorities on a national, EU, and international scale, as well as the most innovative approaches from published materials. Second, the key findings from the field research are provided. Focus groups were conducted with university PE students and in-service PE/non-PE teachers in the participating countries to explore their understanding of PL and its impact sport and physical activity (PA) engagement. Online surveys were also administered during these discussions, and the results are included in the report. Based on the findings, a teaching and learning pedagogical framework for PL was identified, along with corresponding learning outcomes. This framework guided the design of the learning material, resulting in the creation of an e-book module comprising eight units covering topics such as PL and inclusion in education, PL in primary and secondary education. The complete learning material outline is presented in the report.

Further on, we will use mentioned abbreviations.

Theoretical Background

Central to Sustainable Development Goals, the World Health Organisation (2018, p.36), in its Action 3.1 of the Global Action Plan for Physical Activity, calls on all nations to:

Strengthen provision of good-quality PE and more positive experiences and opportunities for active recreation, sports and play for girls and boys, applying the principles of the whole-of-school approach in all pre-primary, primary, secondary, and tertiary educational institutions, to establish and reinforce lifelong health and PL, and promote the enjoyment of, and participation in, PA, according to capacity and ability.

More recently, Sport Australia has shifted its priorities and has moved away from a focus on elite sport to incorporating a population-based holistic and lifespan approach to sport and PA. Its focus has moved towards improving physical health, mental health, and personal development, whilst strengthening communities, and growing the economy (Department of Health, 2018). Physical literacy, it can be argued, may present a more nuanced, reflexive, and holistic way to encourage PA throughout the lifecourse, which could impact positively on the overall health and wellbeing of nations.

This section aims to share an understanding of the relatively new concept of PL and consider how the concept underpins PE. It will then suggest how a focus on PL may allow practitioners to improve the experiences of children within PE and the wider community and how policy makers can support a more life focused approach towards PA.

Physical Literacy

The term physical literacy has been used in several different ways and one of the earliest uses of the term dates back to 1884, where an American Army Captain used the term to describe the physicality or movement quality of an indigenous culture, involving dance and other movements. It was also used in the 1920s, by American educators, in response to a lifestyle

threat arising from the era of modernization through mechanization and the need to prepare army recruits, suggesting that: “We must prepare for physical literacy as well as for mental literacy” (Pennsylvania State Education Association, 1930, p. 12). The term was further referred to in relation to ‘a disciplined command over the body, and ‘a lifelong journey’, including both childhood and adult activities. Historically then, PL has been viewed as a means to combat the ills of modernization and secure better health and broad participation in life. Margaret Whitehead (2010) has argued against using PL in this way, suggesting that PL is what it is to be human, not as a tool for achieving other ends. She also suggested that it provides an alternative approach where the goal is to establish an active lifestyle for all, whatever their endowment.

Whitehead is seen as the scholar who brought PL on the agenda. She initially shared her work in 1993 and expressed concerns that included: (a) a lack of respect that was given to the human embodied dimension, (b) the importance of movement development in early childhood education that was not getting the attention it deserved, (c) school-based physical education that was moving towards high-level performance and elitism and (d) the low levels of physical activity around the globe that were exacerbating the growing rates of poor physical and mental health (Young et al., 2019). Whitehead went on to suggest that our embodied engagement with physical activity allows us to develop and potentially flourish as humans. This contemporary perspective of the construct has allowed many sectors, including education, sport, public health, and environmental planning to embrace the concept and draw on its philosophical roots to provide a new way of looking at our relationship with physical activity. As suggested by Keegan et. al (2013), the speed and level of the adoption of PL make the concept especially interesting, with its potential role in encouraging a movement-suppressed culture to transition towards a movement-rich one.

The term physical literacy, as suggested by Bailey (2020), has entered both policy and practice discourses, and in a variety of different countries (Spengler & Cohen, 2015), and many national and international organisations have embraced the term (e.g., International Council of Sport Science and Physical Education, 2011; Keegan et al., 2017; SHAPE America, 2013b). It has “become a major focus of physical education, physical activity and sports promotion world-wide” (Giblin et al., 2014, p. 1177), and has been suggested that it has “the potential to enhance and enrich the quality of lives” (Almond, 2013a, p. 34) by enabling people to maintain active, varied and rewarding lifestyles, developing self-esteem and improving well-being, as well as contributing to the battle against non-communicable diseases (Castelli et al., 2014).

The formal definition from the International Physical Literacy Association (IPLA) is ‘Physical literacy can be described as the motivation, confidence, physical competence, knowledge and understanding to value and take responsibility for engagement in physical activities for life’ (IPLA, 2017). PL is a growing global concept that places individuals at the heart of a personal relationship with physical activity. It is our relationship with movement and physical activity throughout life. PL includes everyone regardless of capability and age. It recognises that individuals have their own needs and past experiences of movement and physical activity and therefore everyone’s journey is unique, but importantly, it also changes throughout our lifetime. It is suggested that if we have a positive relationship with movement and physical activity, we are more likely to be physically active throughout life, which improves health, well-being, and the quality of our life. How we think, feel, move, and connect with others during movement and physical activity shapes our PL. Nurturing these influences helps us to develop a positive relationship with physical activity, building the foundations for an active life. The people, culture, places, and spaces around us influence our relationship with movement and physical activity. Positive experiences of movement and physical activity that meet our needs encourage us to value, enjoy, and engage in physical activity for life. Physical literacy is our

commitment to value and engage in physical activity for life, sometimes described as a disposition. The root to developing our commitment lies in our motivation, confidence, physical competence, knowledge and understanding.

There are other definitions in different countries and cultures, but the IPLA definition is recognised by many countries and organisation such as Canada's consensus statement (Kawartha Lake Sport and Recreation Council, 2015) and the recent All Ireland Consensus Statement (Harmon, 2022). Other countries have similar definitions, such as United States of America where the Society of Health and Physical Education suggest PL is 'the ability to move with competence and confidence in a wide variety of physical activities in multiple environments that benefit the healthy development of the whole person' (SHAPE America, 2013b), and The Aspen Institute, who suggest that PL is 'the ability, confidence, and desire to be physically active for life'. In Australia, a number of versions have been provided that add in a social aspect to the definition and in a Physical Literacy for Life Erasmus project, a European definition was developed that suggested PL is the skills and attributes individuals demonstrate through physical activity and movement across their life course. It can be understood as a process and as an outcome that individuals pursue through an interaction of their physical, emotional, social, and cognitive learning. These are the 4 interrelated domains that support the holistic development of PL to help all generations to lead active, healthy, and fulfilling lifestyles' (ISCA, 2020).

Dudley (2018) argued that nearly all definitions of PL include movement competencies, motivation, and knowledge of movement as an essential condition of the human experience. These elements or domains are considered to be a part of the holistic concept and are interconnected (Dudley, 2018; Edwards et al., 2017; Jurbala, 2015).

The Whitehead (2010) and IPLA (2017) definition focuses on the motivation, confidence, physical competence, knowledge and understanding, and how this leads to individuals valuing and taking responsibility for engagement in physical activity throughout their lives. They go on to suggest that individuals who are making progress on their unique PL journey will demonstrate the following attributes:

- Motivation to be proactive in taking part in physical activity, applying self to physical activity tasks with interest and enthusiasm and persevering through challenging situations in physical activity environments.
- Confidence in relation to the ability to make progress in learning new tasks and activities and assurance that these experiences will be rewarding.
- Movement with poise, economy, and effectiveness in a wide variety of challenging situations.
- Thoughtful and sensitive perception in appreciating all aspects of the physical environment, responding as appropriate with imagination and creativity.
- The ability to work independently and with others, in physical activities in both co-operative and competitive situations.
- The ability to identify and articulate the essential qualities that influence the effectiveness of movement performance.
- An understanding of the principles of holistic embodied health, in respect of a rich and balanced lifestyle.
- The self-assurance and self-esteem to take responsibility for choosing physical activity for life.

Whitehead (2010) found that human physicality is a key capability that contributes to most aspects of human life. Indeed, it is now proposed, backed by work in neuroscience, that far from our physicality being a servant of the mind, our cognitive capabilities depend on human

physicality for their development. For example, Gibbs (2006) suggested that human cognition is fundamentally shaped by embodied experience. Many scholars also see individuals as a whole, inseparable, interconnected and intertwined and this is supported by monism. Monism is the belief that a person is an indivisible whole, with the mind and body working together in unison. For example, thinking, feeling, moving, and talking are all interwoven and deemed embodied, which is in opposition to the traditional dualistic view of mind and body as separate entities. An analogy to explain this is when we decide to bake a cake for a visitor. Our affective, physical, and cognitive abilities are simultaneously called upon. We are motivated to make a cake as we are due to have visitors. We use our cognitive abilities to read the recipe and throughout all of this we are using our physical potential to gather ingredients and follow the recipe and create the cake. Similarly, if we choose to go on a walk, we are motivated to do so, we utilise our cognitive abilities to prepare and navigate our route and our physical capabilities to complete the walk.

There is a clear philosophical proposal underwriting the view that it is through our interaction with the world, we create ourselves – we become who we are, as a result of our interaction with the world. This philosophy is known as existentialism. Human embodiment is a key human aspect in relation to interaction, and thus has much to offer in activating and developing many of our human capabilities and enriching life. It is suggested that every interaction we have with the world leaves us a different person. In any interaction we become more aware of our abilities and add to our knowledge of the world. For example, in climbing a mountain, we enhance our appreciation of our embodied potential and our physical competence. In addition, we come to know and recognise characteristics of mountains of which, maybe, we were previously unaware. To some extent we are a changed person after the climb. The notion of 'literacy' within the concept of 'physical literacy' arises from the importance of our 'embodied interaction' as described by existentialists. This interaction is, principally, that which takes place in participation in physical activity. Therefore, existentialism can be used to justify why it is so important that positive experiences of physical activity are promoted within physical education, and other physical activity experiences, so that individuals have a positive relationship with physical activity. Existentialism is also important in justifying why physical activity should be experienced in a wide variety of environments so that individuals have a range of experiences that they can draw upon to be physically active throughout different stages of their life. The richer our interactions throughout life, the more fulfilled we will be.

Whitehead (2010) went on to suggest that we see or sense the world from the lens of previous experience. Phenomenology builds on from existentialism in that it argues that we are all a product of our experiences, but it also suggests that as a result of our experiences we will all have a unique perspective on how we view the world. Each person accrues a specific set of experiences that colour their perception of, and response to, the situations in which they are involved. Phenomenology helps to justify why PL must be an inclusive and personalised concept, and how PL must support young people in making informed choices about physical activity throughout their life. We are all different, have different capabilities and different experiences, as such, we are unique. Our relationship with physical activity throughout life is unique to us and our journeys are all different. Comparison with others is not relevant as everyone brings a unique set of previous experiences to an activity setting. Imprints of our experiences will affect how we view the challenges in the future. Therefore, it is important that everyone has positive, varied, relevant and engaging physical activity experiences throughout their life so that they become confident, physically competent, have a knowledge and understanding of, and a motivation to, be physically active for life.

Committed to the value that phenomenology, existentialism and monism bring to PL, Whitehead (2010: 5) suggested that PL can:

- identify the intrinsic value of physical activity;
- overcome the need to justify physical activity as a means to other ends;
- provide a clear goal to be worked towards in all forms of physical activity;
- underwrite the importance and value of physical activity in the school curriculum;
- refute the notion that physical activity is an optional extra of only recreational value;
- justify the importance of physical activity for all, not just the most able in this field;
- spell out a case for lifelong participation in physical activity;
- identify the range of significant others who have a part to play in promoting physical activity.

Physical literacy is an evolving and young concept that is open to interpretation. The roots of the definition are based on philosophical concepts, but as suggested by Young et. al (2019) with the concept evolving in different countries, cultures, individuals and organisations are putting their own spin on the concept, for different purposes. Although the concept has its root definition at its core, it is often the easier superficial understanding that is used rather than the in-depth philosophical appreciation, and as such the meaning of the concept has evolved in different ways. Young et.al (2022) went on to suggest that, over time, PL has developed three different interpretations or ‘cosmoses’, that can exist alongside one another at the same time. These are PL as health-promoting physical activity, as motor competence, and as phenomenological embodiment. Each of these cosmoses is trying to solve a particular problem, but the different versions could be seen as confusing and create uncertainty about the concept. However, Young (2022) argued that rather than creating an all-encompassing understanding, PL could be regarded as multiple ontologies.

Belton et. al (2022) however, believed that it was important to establish a common understanding of the concept with its potential impact on education, health, recreation, and sport. They saw PL having the potential to be a unifying concept that could enable stakeholders from health, sport, and education to strategically come together. Lundvall (2015) suggested that PL has been a “longed-for” concept, that can represent what should be encompassed in PE, and to some extent by sports communities. With a scientific framework and a philosophical underpinning, the concept can support and complement society’s understanding of the value of PE and PA through a PL lens.

Physical Education (PE)

Gray (2022) suggested that teachers and researchers of PE have considered the potential it has to impact on learning and development related to the physical, affective, cognitive, and social domains. She goes on to suggest that there has also been an increasing focus on health and wellbeing (UNESCO, 2017). As governments around the world are becoming increasingly concerned with obesity and the risks associated with sedentary behaviour, opportunities to provide solutions to these issues have seen the PE profession embrace the health and wellbeing agenda.

What we teach in PE is influenced by government policy, which is influenced by society’s current requirements. These have varied over the last century to include: fitness and discipline to fight in wars; PE for holistic growth and development; sport and competition for performance and excellence; health education; personal development; citizenship; scientific and cultural purposes, to name a few.

Arnold’s suggestion was that PE was education ‘in, through and about’ movement (Arnold, 1979). The rationale for this suggestion is that movement is central to PE and is both the content and a medium for learning. Movement competence should be acquired across a range of physical activities and forms of movement, which will have value from a personal

development point of view but also in relation to holistic health and wellbeing. Education 'in' movement is concerned with the view that movement activities are in and of themselves worthwhile (Arnold, 1979). The importance of this domain to physical education is that it allows the individual to self-actualise through engagement. Education 'about' movement looks at the theoretical body of knowledge related to movement. Content knowledge from different sub-disciplines, such as anatomy, physiology, biomechanics, sociology, and philosophy are the focus. Education 'through' movement is, part of the educational process that develops the domains such as physical, emotional, intellectual, and social, an individual participates in physical activities. This is likely to lead to improved physical competency and confidence and if appropriate participation levels are reached improved fitness.

The knowledge, skills and dispositions, attitudes or values students develop while engaging in PE will hopefully encourage them to become lifelong participants in a range of physical activities. PE can promote an appreciation of the importance of movement in daily life, provide opportunities for social interaction, and the sharing of cultural activities. Movement experiences and environments also provide challenges and opportunities for children to enhance a range of personal and social skills and behaviours that contribute to health and wellbeing. Doherty and Brennan (2008 p.6) suggest that PE 'as part of the whole education process is a field of endeavour that is concerned with lifelong physical, intellectual, social and emotional learning that accrues through experiencing physical activities in a variety of contexts'.

Physical Education and Physical Literacy

The goal of PE, as has been suggested by the SHAPE America (2013a), is to develop physically literate individuals who have the knowledge, skills, and confidence to enjoy a lifetime of healthful physical activity. Ydo (2020, p.2) stated that physical literacy is also 'the foundation of physical education, sport, and public health agendas. It is not a program, but the process considerations and aspirational outcomes of structured physical education provision'. Ydo (2020, p.2) went on to suggest that 'quality physical education driven by physical literacy should expose and teach children and young people a wide variety of meaningful and inclusive movement experiences from the early years through their entire school journey to secondary-school education'. As physical literacy is important for holistic human development, policy makers and practitioners must ensure that opportunities and provision meet the needs of all individuals.

A quality PE provision, by highly qualified PE teachers will result in the refinement of motor skills, an awareness and understanding of the benefits of physical activity, regular participation in physical activity, development of physical fitness, and a disposition where individuals value the importance of a physically active lifestyle. As Castelli et al. (2015) suggest, there should however be no set standard for all as each individual has their own capabilities and potential and as such the focus should be on each individual maximising their potential. Many countries have an education system that is 'standards-based', where achievement is considered based on what is considered to be developmentally appropriate criteria as a specified grade level. This lacks alignment with physical literacy, which suggests that more appropriately, progress should be considered from an ipsative point of view, that is measuring each individual's progress against their previously obtained results as opposed to their peers' achievements or expected age performance levels. Children are individuals who develop at different rates and therefore requiring all children to meet a given benchmark on a designated date fails to reflect individual student needs.

Physical literacy is a disposition that is based on our embodied capability and influenced by our motivation, confidence, physical competence, knowledge, and understanding. These elements are intertwined and interactive, and as such we must consider how the environments and experiences we create, within physical education and physical activity, can enhance our embodied capability and influence how we value and engage in physical activity throughout life.

Our physical literacy journey begins in the home, where parents and care providers offer experiences and challenges that allow children to learn through their embodied physical interactions. The different stages of formal education and community provision then provide further opportunities where teachers, coaches, peers and others facilitate physical activity experiences that impact on each individual's physical literacy development. As we move into early adulthood, adulthood, and older adulthood, we are able to make informed decisions concerning our interactions with physical activity that impact our unique physical literacy journey throughout life.

As Castelli et al. (2015) suggest, if physical literacy is the goal of PE, then relationships between student and teacher, peers; the content and activities that are used; and pedagogical approaches; will all influence the experiences of children. The focus on developing activity specific skills, knowledge about activities, problem solving, and communication skills and self-confidence will also impact on children's learning. Connections and opportunities outside of school, appropriate support and challenge, and success are all critical to the advancement of physical literacy, as children need to feel safe, accepted and engaged. Therefore, if appropriate environments are created then children can build on their experiences and develop their physical literacy throughout their physical education.

Physical, cognitive, and affective domains operate in concert with one another, and PE lessons have the capability of providing opportunities for children to improve and develop their capacity through appropriate experiences. Each individual is different and has strengths and interests, and as such learning needs to be tailored to the unique needs of the individual within the PE lesson. To ensure learning allows progress on a physical literacy journey, provision needs to be linked to the three broad learning domains: knowledge, skills, and values (cognitive, physical, and affective). Knowledge refers to content knowledge, or to propositional, or declarative knowledge, including, both theoretical and empirical knowledge. Skills refer to procedural knowledge and includes cognitive and non-cognitive skills, 'hard' and 'soft' skills, and practical skills. Values refer to dispositional knowledge, and includes, for example, attitudes, moral dispositions, motivation, will and commitment (Stabback, 2016). Promoting positive attitudes towards lifelong participation in physical activity will be enhanced by a focus on skills, knowledge, and values. As suggested by the Ministry of Education in Ontario (2015, p.3), at the core of Physical Education, is the acquisition of movement skills and concepts which enable students to participate in a range of physical activities as confident, competent, and creative individuals. This will be achieved through physical education that,

- develops resilience and a secure identity and sense of self, learning management and coping skills, communication skills, and how to build relationships and interact positively with others, along with critical and creative thinking processes, are essential learning foci;
- develops the skills and knowledge that will enable individuals to enjoy being active and healthy throughout their lives, through opportunities to participate regularly and safely in physical activity and to learn how to develop and improve their own personal fitness;

- develops movement competence required to participate in a range of physical activities, through opportunities to develop movement skills and to apply movement concepts and strategies in games, sports, dance, and various other physical activities;
- develops an understanding of the factors that contribute to healthy development, a sense of personal responsibility for lifelong health, and an understanding of how living healthy, active lives is connected with the world around them and the health of others.

Whitehead (2010) goes on to suggest that educators need to create positive learning environments that enable all individuals to engage in and learn from a variety of experiences. These experiences should be in a range of different environments that challenge individuals at the appropriate level and allow them to develop resilience, confidence, competence, self-awareness, and self-esteem. As they develop these attributes, along with competence, knowledge and understanding within each environment, they become more motivated to engage and be physically active more regularly throughout their lives.

The PE practitioner then has the responsibility to determine the activities and experiences that their students will engage in. They will be responsible for creating the positive, holistic learning environments that challenge and support young people, and allow them to develop and flourish from a physical, affective, and cognitive point of view on their physical literacy journey.

Assessment

Effective assessment of physical literacy in PE will enable funders, policymakers, researchers, and educators to understand what teaching, learning and curriculum strategies are most effective in helping support the development of physical literacy (Tremblay & Lloyd, 2010). Teachers report that assessment in PE provides a structure and focus to planning, teaching and learning, which positively impacts on both the teacher and child (Ní Chróinín & Cosgrave, 2012). Therefore, strategies that allow an effective reflection, monitoring, and charting of progress in physical education, based on physical literacy, should highlight to practitioners the areas of development that physical education teachers should be targeting for each individual child.

Whitehead (2010, 2019) makes it clear that 'charting' an individuals' physical literacy journey rather than assessment of their progress, is more important as physical literacy is not a state to be 'attained and then maintained', and it is thus inappropriate to assess if an individual is 'physically literate'. IPLA, aligning with phenomenological roots, suggest that when considering assessment strategies, 'all changes identified in respect of an individual should be judged against the previous behaviours of that person. Comparison with others is not relevant' (Whitehead, 2019, p. 75).

From the idealist perspective, physical literacy, being a holistic concept, should ideally be considered from a holistic point of view. However, with the concept being understood in relation to the interconnecting domains, it is sensible to consider progress in relation to the physical, affective, and cognitive domains. However, physical educators often struggle to meet the demands for a reliable and valid assessment and grading system (Annerstedt & Larsson, 2010; Dinan-Thompson & Penney, 2015). With the ever-increasing emphasis on assessment, accountability and standardisation within education, a lack of alignment between the aims of physical education and assessment practices could allow confusion in relation to strategy and practice (Hursh, 2005; Roberts-Holmes & Bradbury, 2016). It is therefore important to clearly articulate the aims of physical education and how these link to the development of physical literacy, and then create an assessment process that measures or charts progress to support learning.

Many forms of assessment that have been used in physical education and to chart progress from a physical literacy point of view have lacked meaningfulness as they are lacking authenticity (López-Pastor et al., 2013). Assessment should be a natural process that is integrated with learning and is based on intended learning outcomes. Learning outcomes, derived from curriculum goals, related to physical, affective, and cognitive domains provide a holistic focus for physical education, based on the cultural and regional context. As AISEP (2020 p.7) suggested, 'meaningful learning is achieved through teaching that reflects an alignment between intended learning outcomes, assessments that provide evidence of students' progression toward those outcomes, and the instructional practices employed to facilitate students achieving success. In other words, effective teaching should demonstrate a match between what students are intended to know and be able to do, the opportunities they receive to practise and learn, and how we assess their learning progress'. If we do not have constructive alignment in relation to the aims of PE and assessment strategies used, then teachers and students will be confused about the goals of PE.

All students should feel valued, challenged, and supported in their learning within PE, no matter what their ability, disability, or capability. Students should be able to demonstrate their knowledge, understanding, physical competence and confidence in different physical activity environments. Appropriate assessment strategies should be used to chart progress so that students are aware of their progress and future targets and teachers are aware of the impact of their teaching and what strategies and challenges to utilise next. According to Hattie and Timperley (2007), embedding assessment in the learning process should follow the principles of feed-up, feedback and feedforward. These principles relate to different methods of gathering evidence related to learning. Feed-up asks where the student is going, feedback considers where the student is currently, and feedforward suggests what the next steps should be. In an ideal situation, both teachers and students should be actively involved in the assessment process so that students ultimately become independent and self-regulating learners.

Edwards et al. (2018) suggest that with the idealist academic holistic perspective of physical literacy, qualitative approaches, including in-depth interviews and observations would have more potential to measure/assess the affective and cognitive domains rather than the physical domain of physical literacy. Pragmatic, practical approaches seek to generate measures that can be considered to be more reliable and valid. However, these often contradict the holistic nature of the concept. Barnett et al. (2022) describe how children's self-report, based on the constructs of physical literacy can provide an insight into children's perspectives of their own physical literacy, which can allow educators, coaches, and parents to understand where a child is on their physical literacy journey and what they need to further develop.

Progress needs to be considered against criteria and the Structure of Observed Learning Outcomes (SOLO) taxonomy, proposed by Biggs and Collis (1982), which its linked Threshold Stages, progressing through surface to deep learning and provides a practical example of how reflections can be based on what students think, do, and feel (Dudley, 2016). SOLO taxonomy (Biggs & Collis, 1982) describes five levels in the learner's development. These levels are:

1. Prestructural (Limited or no understanding)
2. Unistructural (Understanding of one element)
3. Multistructural (Understanding of a number of elements but not the pattern of relationships between them)
4. Relational (Understanding of the links between the elements and the ability to describe the elements as a whole—pattern recognition)

5. Extended Abstract (The ability to relate and apply the concept to other contexts and other concepts—critical evaluation).

SOLO taxonomy can chart the growth and progression of student learning, over time, from surface to deep understanding, by observing outcomes. The teacher and student can reflect on progress from a holistic point of view, based on the goals of PE in relation to any physical activity context. Reflections can be qualitative or quantitative but must relate to specific learning outcomes. Authentic core tasks can provide the mechanism by which teachers and students can reflect on their progress and consider their next steps in PE and physical literacy.

Gamification

Technology has been integrated in PE curriculum development, instructional design, and assessment of students' achievements over the past two decades, using a variety of tools. Active Video Games (AVGs) have been adopted by some physical educators as a part of their teaching practice (Sun, 2015). Among the varied technologies used in PE, AVGs or exergames have received significant attention from researchers and practitioners. AVGs are video games that require children to put in a high volume of body movement that is combined with cognitive functioning tasks while playing (Sun & Gao, 2016). With the focus of physical literacy and PE of becoming motivated, confident, physically competent along with being knowledgeable and having understanding, Sheehan and Katz (2010) suggested that AVGs could support the development of physical literacy by making connections to the three learning domains in PE: cognitive, psychomotor, and affective.

Sun and Gao (2017) have suggested that AVGs have shown a strong potential to motivate children to become active players of the AVGs. They have the potential to motivate children to engage in physical activity if they are interesting, enjoyable and activity orientated. Sun (2012, 2013) went on to highlight, from her research, that AVGs can provide more interesting and enjoyable experiences than activities in the traditional PE, due to the perceived situational interest of the students within a fitness unit of work. Sun (2015) also suggested that exergaming activities can provide a unique opportunity for novel and innovative experiences, which demand high attention throughout the game, challenge students both cognitively and physically, and can elicit a high level of enjoyment.

In PE, interest can be influenced by the physical environment, the environment the teacher creates fellow classmates and personal attitudes of the individual students. According to Sun (2015), Chan and Darst (2001) cognitive demand in a physical activity determines the level of situational interest. Tasks with low cognitive demand correlate to low situational interest and conversely, tasks with high cognitive demand correlate to high situational interest. Therefore, it is important to use appropriate learning task in PE to ensure high situational interest.

Additionally to interest and enjoyment, Sun (2015) found that AVGs fostered a higher level of self-efficacy than traditional physical activities. She also found that social interaction increased motivation and co-operation increased intrinsic motivation related to energy expenditure during a game. Co-operative AVGs could therefore be used by physical educators to promote group cohesion and increased motivation to be physically active. Sun (2015) also suggested that challenge and exploration were key aspects related to situational interest. Challenge is essential for learning to take place, but the challenge must be at the optimal point for the participant and accomplishment, frustration and demotivation all need to be considered.

Ennis (2013) suggested that AVGs could supplement activity options in PE, and they could also be used in health-oriented programmes within the community. With the mind and the body acting as a whole, an individual can choose to engage in physical activity to enhance

their physical literacy. AVGs have the potential to provide an alternative vehicle through which individuals can engage in physical activity.

Loneliness and social isolation can have severe effects on health and well-being. Social prescribing is a method that connects people with existing community groups for structured activities. An example of an intervention that combines gamification technology and behavioural psychology to engage communities is 'Beat the Street'. This study suggests that it is not one, but a combination of reasons people engage in interventions. This diversity needs to be acknowledged when promoting and communicating these interventions to potential participants to maximise engagement. Further, promoting an end reward, or health/fitness may not be the most effective way to promote interventions to a large proportion of people. Instead, interventions should be centred around what people value (i.e., being with their friends, doing what they enjoy and were good at).

Promoting an end reward or health/fitness may not be the most effective way to promote interventions to a large proportion of people. Instead, communications should be centred around what people value (i.e., being with their friends, doing what they enjoy and are good at).

Loneliness and social isolation have several adverse effects on health and wellbeing. They have been associated with poorer sleep quality, increased depression symptomology, impaired functioning, reduced quality of life, suicide, dementia, increased risk of coronary artery disease, and all-cause mortality.

This isolation from others can induce a behavioural response (such as drug or alcohol use, smoking, physical inactivity, and poorer dietary choices). Bosch and Bird argue that people have become disconnected from each other and their environment and as a result feel a lack of purpose. We need to find strategies and interventions to reconnect people to each other, their place, and provide a purpose to reduce the negative impact of social isolation and loneliness.

Social prescribing and social movements represent two approaches which aim to reduce chronic inflammation by connecting people to each other, giving people a common purpose, and delivering place-based care. Social prescribing typically uses a 'link worker' who connects people with existing community groups with structured activities (such as health walks, organised running events in parks, exercise classes, walking sports, horticultural activities, etc) in addition to providing support for other aspects of their lives (for instance, navigating benefits schemes, getting job training, assisting with the writing of a curriculum vitae, etc).

Social movements are not new and devolve delivery and control to the community. Instead of a link worker referring a patient to an organised activity, the social movement simply connects an individual to a self-created unstructured activity.

One example of an evidence-based intervention that uses the social movement model is 'Beat the Street', a mass participation intervention that aims to get people more active, increase social cohesion and connect people to their local neighbourhood. It combines gamification technology and behavioural psychology to engage communities. Harris et al. (2022) stated that, 'Beat the Street' was developed and is delivered by a UK based health-technology organisation, Intelligent Health Ltd. The game uses Radio Frequency Identification (RFID) scanners called 'Beat Boxes' which are situated at half-mile intervals throughout a community. Each time 2 boxes are touched with a RFID card or fob within 1 hour a player receives 10 points for themselves and a chosen team. The game incentivises participation by allowing teams to win prizes (such as vouchers for sports equipment in schools), for themselves, their schools, a charity, or communities. Players monitor their own, their teams and the whole

communities progress via an online portal and several leader boards. The challenge runs continuously for 6 weeks. It was noted that some people were motivated because their school had asked them to engage, or parents wanted to beat other schools. Others were motivated by the health and wellbeing benefits they could gain from taking part. Players felt there was a purpose for themselves, they had autonomy to engage, most could competently engage, and they could relate to the games itself. What was significantly different was that the game allowed for an intergenerational family activity. Families were also motivated to support their children and community. This 'health by stealth' approach, allowed people to achieve health benefits subconsciously through activities. The study found that there was a combination of reasons why individuals engaged in the intervention game. Linking school-based connections to family networks, enticing people into mass participation activity, and providing a rewards-based system, all contributed to the impact on health within the community. Strommer and colleagues (2022) found that interventions which are centred around what people value (i.e., being with their friends, doing what they enjoy and are good at) are more likely to be effective.

Other Considerations

Self-determination theory (SDT) provides a valuable framework for examining motivationally supportive physical education experiences through satisfaction of three basic psychological needs: autonomy, competence, and relatedness (Deci & Ryan, 2000). If young children are to develop intrinsic motivation towards engaging in physical activity, then supportive physical education experiences are essential. According to SDT, motivation is on a continuum based on an individual's behaviour. It ranges from complete absence of motivation (amotivation) to intrinsic motivation. Where students are intrinsically motivated in physical education, they perceive that they have freedom to choose or autonomy. When they experience success or mastery within an activity, they feel competence. When they feel a sense of belonging or connection to a class, teacher or activity, they feel relatedness. Deci and Ryan (2000) suggest that if pedagogical practices and classroom climates promote intrinsically motivated behaviour, students will produce greater effort, gain more enjoyment and be more resilient in their learning. Unfortunately, traditional teaching of PE tends to provide little autonomy or choice and pedagogical practices can often fail to embrace the needs of the students. Therefore, autonomy, competence and relatedness can be compromised (Tinning, 2006).

Constraints-led approach (CLA) is a contemporary non-linear pedagogy (NLP) approach that provides teachers of physical education with an opportunity to develop intelligent, intrinsically motivated students who actively engage in physical education (Renshaw et al., 2012). CLA focuses on the individual learner-environment relationship and proposes that our intentions are constrained by our cognitive, physical, social, and biological factors, which relates to the monist embodied nature of physical literacy. As a learner uniquely embraces constraints related to task and environment, so the interactive and cooperative problem-solving situations can create a learning environment where students feel connected and autonomous whilst developing competency within that specific environment. With this CLA, the teacher can create an environment in such a way that this guides and challenges learners towards desired outcomes. Discovering, exploring, and solving problems allow students to engage more holistically in the learning environment as they become more adaptable and creative in finding solutions. The importance here is that teachers must ensure that their pedagogical approaches allow for autonomy, competence, and relatedness to develop to ensure students are motivated to learn and engage in physical activity.

This process of devolving responsibility from the teacher to the student is one of the key principles of promoting physical literacy (Durden-Myers et al., 2018). Taking responsibility for participation is essential in building the appropriate behaviour required to establish habitual

engagement in physical activity. By devolving some of the responsibility, within the learning environment, teachers can impact on students' motivation. Sport education has been found to be a model that facilitates a more empowering motivational climate where students are given responsibility to take on roles such as captain, coach, fitness trainer, referee etc. and are empowered to negotiate with other teams about the organisation of matches. The model supports social relationship development, honesty, commitment, competence development, knowledge and understanding, and other personal and educational qualities that align with the domains of physical literacy and with the aims of physical education (Hastie & Wallhead, 2015).

Models Based Practice (MBP), which includes models such as Cooperative Learning, Sport Education and Teaching Games for Understanding, have been acknowledged as contributing to the physical, affective, and cognitive development of students (Casey, 2018). They provide a broader and deeper scope of learning and different pedagogical approaches to traditional methods (Lund & Tannehill, 2015). Learning in MBP is considered to be more authentic and meaningful and therefore the students see it as more worthwhile and relevant. The aims of both PE and physical literacy can be achieved through these varied pedagogical approaches.

It is important to remind ourselves, at this stage, that physical literacy is a lifecourse concept and although the early, school and university years are extremely important, an individual's physical literacy does change throughout life. Whilst most physical activity participation models are focused on elite sport pathways, a whole population strategy, with a holistic focus, would relate more closely to physical literacy promotion. Recently, Sport Australia has shifted its priorities and has moved away from a focus on elite sport to a population-based holistic and lifespan approach to sport and physical activity. Focusing on improving physical health, mental health, and personal development, strengthening communities, and growing the economy, have become important foci for this organisation (Department of Health, 2018).

Moving forward and making a difference

The early years are critical for physical literacy and physical activity, with educators playing a significant role in childhood development that may influence young children's physical literacy journey. The importance of quality physical activity experiences in early years cannot be overestimated, and as such, it is essential that practitioners understand the concept of physical literacy so that they can promote holistic health and wellbeing and provide practical experiences that will foster a positive disposition towards valuing and engaging in physical activity for life. Embedding physical activity within daily activities and an overarching educational framework will provide the structure required to promote physical literacy. However, it is important that training programmes for early childhood educators provide an understanding of the concept and share strategies for providing positive physical activity experience.

Despite interest in the concept around the globe, physical literacy has largely been misinterpreted by practitioners, including teachers (Edwards, Bryant, & Jones, 2015). Teacher education and continuing professional development (CPD) are essential for appropriate delivery of programmes designed to develop physical literacy in children (Delaney et al. 2008). CPD provides opportunities for teachers to develop and refine their practice and understanding in this ever-changing and multifaceted profession (Phillips, 2008). A more informed understanding of the concept, linked to a wider appreciation of pedagogical approaches and assessment strategies, which align theory to practice (Durden-Myers & Keegan, 2019), will allow practitioners to understand how to operationalize the concept in practice (Shearer et al., 2018).

Edwards et al. (2019, p.127) proposed nine key principles of effective professional development in PE and physical literacy. These included:

- (a) Begin with an in-depth needs assessment consultancy process to evaluate the individual needs of the school and the teachers (Hunzicker, 2011; O'Sullivan, 2002).
- (b) Consider the complex and nonlinear nature of the development of physical literacy (Edwards et al., 2018).
- (c) Create a supportive environment and tailor the professional development program to the needs of the teacher, school, and local authority goals (Hunzicker, 2011; O'Sullivan, 2002).
- (d) Embed the content of the professional development program alongside teachers' current job duties and responsibilities and encourage teachers to reflect continually on the learning process (Hunzicker, 2011).
- (e) Upskill teachers on content knowledge and pedagogical practice in PE to ensure the professional development program is instructional focused (Hunzicker, 2011).
- (f) Focus on teachers' "growth" and nurture them as learners and bridge the theory–practice gap (Armour et al., 2015).
- (g) Create a collaborative environment (Hunzicker, 2011).
- (h) Place an emphasis on sustainability and avoid one-off training opportunities such as workshops (Atencio et al., 2012; Hunzicker, 2011).
- (i) Do not rely solely on resource material as resource-driven professional development programs do not adequately provide teachers with an in-depth knowledge base and they are unlikely to be impactful at a national level (Atencio et al., 2012).

Any approaches that are focused on promoting an increased understanding of physical literacy and physical education, should consider these nine principles within planning and in action.

Teachers of PE, and any other subject, have a responsibility for continual critical self-assessment and reflection on their effectiveness (Kovac et al., 2008). PETE programmes should provide opportunities for professional development as should programmes of CPD for practicing teachers. Pill et al. (2012), suggested that lived experience of school PE is actually more influential than PETE preparation, in its impact on PE practice. However, as Kirk (2010) stressed, PETE has the potential to influence change and reform in practice. PE has traditionally been marginalised as sport teaching, and as a result the experiences of children have been quite narrow. It is important for the PE profession to clarify the purpose of PE and physical literacy provides a modern and appropriate focus for the subject. Developing confidence, physical competence, and knowledge and understanding, will at a level that is commensurate with the capabilities, needs and interests of the children, will ensure motivation and valuing of physical activity will result in lifelong participation.

If physical literacy underpins the educational value of physical education, then pedagogical models can positively influence the physical, cognitive, social, and affective learning of young people (Casey & Goodyear, 2015). The Physical Literacy Praxis (PLP) model shown below, proposed by Gleddie and Morgan (2021) provides a clear picture of student-centred physical education with a physical literacy focus. A broad and balanced curriculum, that is appropriate for the needs of all individuals, empowers them to engage in physical activity and provides them with meaningful experiences, will allow movement competence, knowledge and understanding, motivation and confidence to develop and this will impact on behaviour.

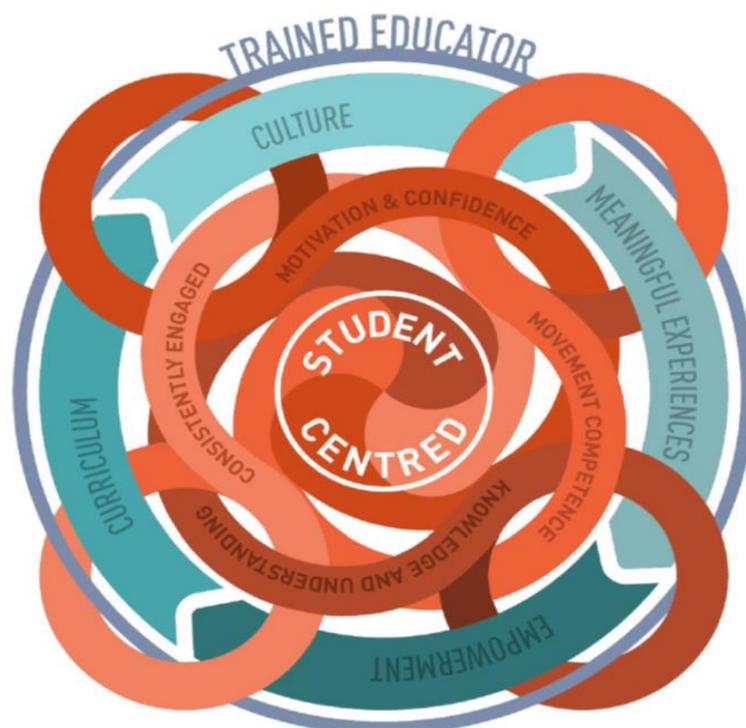
Training the educator appropriately, both prior to practice and in-service, ensures that quality programmes are provided that develop important skills which foster a healthy and active lifestyle, are inclusive and utilise a range of differentiated pedagogical strategies, at the right

level of challenge, that allow all students to make progress and supports an individual physical literacy journey. A planned and purposeful PE curriculum, Gleddie and Morgan (2021) reasoned, has the potential to develop life skills, holistic understanding of health and wellbeing, along with respect, tolerance, responsibility, and leadership, as well as physical literacy. A welcoming and safe PE classroom can provide a unique environment through which positive self-perception, self- esteem and belonging. As mentioned earlier, the link to relatedness, competence and autonomy influences students' psychological needs, and the culture or environment created by teachers is critical in developing belonging, independence, and connectedness. It is critical for teachers of PE to be 'autonomy-supportive' and build relationships with students and positive learning environments that motivate them to be physically active in lessons (Van den Berghe et al., 2014).

Beni et al. (2017) highlighted that there are five central influences on young people's meaningful experiences in physical education, these being social interaction, fun, challenge, motor competence, and personally relevant learning. To create these meaningful experiences in PE, appropriate pedagogies have to be utilised. Experiences that are challenging, social, and satisfying or fun, are more likely to influence individuals towards a more positive attitude in both PE and a physically active lifestyle. Activities that allow for teamwork and cooperation have been found to impact on learning outcomes associated with physical literacy (Casey & Goodyear, 2015) and active engagement.

Figure 1

Physical Literacy Praxis (p.35)



Empowering students through pedagogical strategies that promote personal and social responsibility, independence, and autonomy, it is suggested, by Gleddie and Morgan (2021), based on Hellinson's work (2003), to promote intrinsic motivation to participate in PE. Maintaining a caring and supportive environment that empowers young people also provides students with greater confidence and a connectedness to physical activity. Utilising the interconnected domains of physical literacy (physical, affective, and cognitive) provides a

focus for learning in PE which will impact on lifelong behaviour. Considering how each domain is being developed in each child, through PE is essential if teachers are to provide meaningful experiences that impact on an individual's lifelong journey. As Sport England found in their Active Lives Survey (2018), children with high perceived physical competence, confidence, motivation, knowledge and understanding, are more physically active. The more elements of physical literacy present, the higher the levels of happiness, resilience, and social trust.

Teachers then need to have a sound understanding of physical literacy aligned to an appreciation of the strategies they can employ that provide appropriate PE learning environments. Taking time to reflect on their own physical literacy journeys, Flemons et al. (2018) suggest, can be a useful tool that allow pre-service or/and practicing teachers to examine their beliefs and values and in turn, question their own experiences, to gain an understanding of how their personal philosophy aligns with that of physical literacy and physical education. This understanding will then allow teachers to consider and design the most environments and experiences for their students that promote physical literacy.

The approach of the teacher is also important in creating positive learning environments. Hattie (2009) argued that teachers can have a more significant effect on student learning when they are an 'activator' rather than a facilitator. In the activator role, the teacher is more active and uses a range of strategies including, reciprocal teaching, feedback, mastery learning, to activate new learning possibilities. They are constantly diagnosing, to determine content, responding to students' actions and behaviour and evaluating impact. In Sport Education and Cooperative Learning, the teacher can shift from director or transmitter to facilitator of learning activities. When facilitating, the teacher, Metzler (2011) suggests, determines the content selection, managerial control, task presentation, engagement patterns, instructional interaction, pacing and task progression. However, Mosston (1981) suggested that no one style is better than another and a range of teaching strategies should be used to promote learning in PE. Different teaching models and strategies can all play a part in creating a positive and engaging learning environment. The skill of the teacher is to choose the most appropriate strategy for the students at any one specific time, based on the desired learning outcomes.

Changing practice, which for PE teachers, according to Green (2002), is often based on their previous personal experiences of PE, their PETE and the occupational socialisation that has taken place, is challenging. However, physical literacy has recently provided a new focus for PE that recognises and focuses on the multi-dimensional nature of holistic education. The concept is lifecourse based but with physical education providing an ideal opportunity for children to develop appropriate values that influence engagement, it is important to capitalise on this valuable opportunity. Similarly, with education for many students in many countries moving increasingly into the higher education sphere it becomes increasingly important that opportunities are provided on university campuses and within the wider community, for the emerging adults to transition into adulthood with positive physical activity values and attitudes. As Harris (2020) suggests, when promoting physical activity in schools and colleges it is important to consider whole community approaches; maximising the use of a skilled workforce; ensuring student voice is considered; creating active environments; offering choice and variety; embedding physical activity into the curriculum; promoting active travel; and embedding monitoring and evaluation.

When considering how to promote physical literacy within PE, Durden-Myers et al. (2018) propose seven key principles for promoting physical literacy. These include the individual being at the heart of pedagogy; establishing positive learning environments; enabling confidence, physical competence, knowledge and understanding to be enhanced; devolving

responsibility so that individuals learn to value physical activity; and charting progress as a motivational tool. But, as Sparkes (1991) noted, it is the teachers who will ultimately decide their practices. As such, it is important that any initiatives that promote physical literacy and aim to improve the experiences of young people through physical education, encourage open reflection on impact.

AISEP (2020) suggest that within Physical Education Teacher Training (PETE), sufficient time should be allocated for teachers to gain a deep understanding of the role and function of assessment, and for them to learn how to design and implement appropriate, valid, reliable, and feasible assessments of student learning within PE practice. Assessment aligned to learning outcomes, which is meaningful, authentic, and provides support and guidance will enrich learning in PE. Digital technology can support assessment in PE, however, for successful use of technology, teachers need a thorough understanding of it, be able to effectively integrate it within their practice. Technology should be used at the right time and for the right reason. It should help measure what we value, instead of valuing what we can measure.

Final Considerations

Physical literacy highlights the importance of motivation, confidence, physical competence, knowledge and understanding, on how individuals value and engage in physical activity for life. It is an inclusive concept which acknowledges the importance of personal development through embodied experience in a variety of positive physical activity environments. By focusing on holistic development through immersion in physical activities, physical literacy aims to strengthen the development of general and specific capabilities and qualities that allow everyone to flourish throughout their lives. Student-centred pedagogy that promotes meaningful experiences in positive learning environments is key to influencing dispositions towards lifelong engagement in physical activity. Teachers are encouraged to invest in collaborative understanding of physical literacy principles, practice, and assessment so that schools and communities are enabled to better support the advancement of physical activity for all and for life.

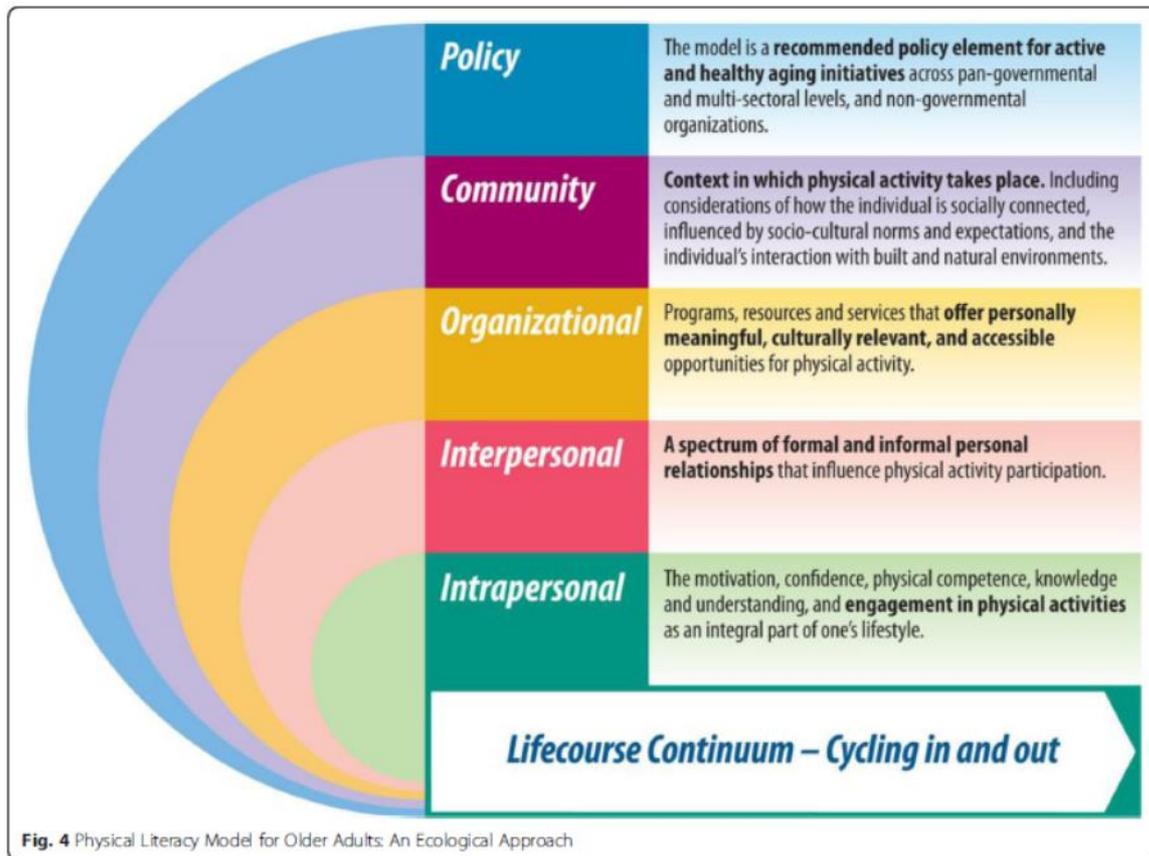
To support moving practice in PE forwards, providers should have a clear understanding of the concept of physical literacy, so that they can reflect on their practice through a 'physical literacy lens' and modify their practice to promote the holistic development and wellbeing of all young people. Curricular and extra-curricular provision should provide opportunities for young people to be physically active. Communities can complement this by providing rich and varied opportunities within their local areas for their children to be physical activity. Policy Makers should understand the importance of physical literacy and reflect on how their policies promote and encourage holistic development and individuals who value and engage in physical activity for life. Practitioners need support in sharing examples of best practice, disseminating research and providing opportunities to discuss strategies that promote the development of physical literacy in children and young people. Every school and community should maximise the use of its facilities to provide rich and accessible local physical activity environments that welcome and cater for everyone.

Based on the Ecological Model (Jones et al., 2018) seen below, linked to older adults, it is important to highlight that individuals can be influenced at any stage of life, through the ecological environment. As has just been mentioned, policy makers play an important role in developing strategies, providing funding, and facilitating lifelong physical activity adoption. Communities have their cultural and environmental difference therefore each area will have different needs, provision, and expectations. Organisations provide the services for

meaningful physical activity participation and families, friends and the broader social networks support engagement in physical activity. But everyone has their own personal disposition towards engaging in physical activity and this is influenced by their experiences. Schools and teachers, however, play a key role in this process.

Figure 2

Physical Literacy Model (Jones et al., 2018)



There is no single way for PE teachers to address the challenges that they will face in focusing on developing physical literacy through physical education. Based on the existing evidence in both the PE and public health literature, Castelli et al. (2015, p.5) suggest that there are five recommendations that have been prioritized: '(a) whole-of-school approach, (b) effective, differentiated pedagogy, (c) integration of technology for individualized tracking of progress, (d) supportive school climate, and (e) alignment of efforts with national initiatives'. The whole school approach provides opportunities for children to be physically active in PE lessons, during school in other subject lessons and break times, before and after school, with all staff being involved and with family and community engaged. Differentiated pedagogy, which has been mentioned previously and includes all strategies that are available to teachers, should be chosen relative to the learning outcomes at a specific time, based on learning needs. Pedagogy, devoted to creating an environment that builds confidence, enthusiasm, and a desire to learn facilitates the advancement of physical literacy. Various technologies can be used to engage students' and provide feedback on their progress. Electronic devices can also be utilised to facilitate recording and charting of progress. A supportive school environment, influenced by national initiatives, where senior leaders, teachers and parents all promote physical activity, will increase the potential for students to be active for life.

National Reports

Cyprus National Report: Physical Education and Physical Literacy

Physical Education in Cyprus

This national report provides an overview of the historical development, main trends, and current challenges in the field of PE in Cyprus. The report also encompasses relevant research conducted in Cyprus, focusing on the concept of PL and its implications for PE.

The paper of Christodoulides, Tsivitanidou, and Hadjimatheou (2022) provides an overview of the historical development, main trends, and current challenges in the field of PE in Cyprus (Christodoulides, et al., 2022). PE and Sport Didactics have evolved over time in Cyprus. The term 'γυμναστική' (gymnastiki) was traditionally used, encompassing various physical activities, exercises, and sports. However, with the introduction of different systems, the term PE gained prominence. The paper highlights that PE is a relatively new term for the local context, primarily endorsed in policy documents and curricula. The focus of this report is on PE, although alternative terms such as sport didactics and didactics of PEn exist. In Cyprus, there is an emphasis on 'lifelong exercise' or 'δια βίου άσκηση' as a core concept in PE. The Cyprus Ministry of Education, Sport and Youth has aimed to modernize and reform the education system, including the restructuring of curricula based on Success Indicators and Indicators of Adequacy. These innovations, implemented since 2015-2016, aim to promote healthy lifestyles and well-being through proper models and assessment processes in PE. Despite the efforts to reform the education system, PE often faces challenges and marginalization in schools. This trend is not unique to Cyprus but observed globally. Concerns about the decline of PE in schools have been raised since the 1970s (Doll-Tepper, 2005). In Cyprus, primary school PE is taught by generalist teachers with limited training sessions throughout the year (Hadjimatheou, 2017). Continuing Professional Development (CPD) for PE teachers is recognized but lacks evidence on meeting their specific learning and teaching needs. Even though the importance of CPD for teachers has been recognized and included in the Cypriot government agendas and relevant policy documents (MoEC, 2013), there is little existing evidence on the ways in which PE-CPD really meets teachers' learning and teaching needs (Hadjimatheou, 2017; Tsangaridou, 2017). Furthermore, inadequate resources, poor PE programs, and workshops contribute to feelings of inadequacy, low confidence, and lack of time and interest among PE teachers.

Recent Research and Physical Literacy

Recent research efforts in Cyprus have started to focus on the notion of PL. The theoretical paper by Christodoulides and Tsivitanidou (2021) explores the role of parents, teachers, PE teachers, and society at large in fostering children's PL. The analysis draws upon literature and relevant policies to provide suggestions for promoting PL in Cyprus. The article highlights the crucial early stages of an individual's life, where various factors significantly influence the development of PL. Understanding these factors is essential for creating effective strategies to enhance PL levels among children in Cyprus. Parents, teachers, and PE teachers play instrumental roles in facilitating the development of PL. The paper also emphasizes the need for their active involvement in promoting PA and providing a supportive environment for children. Incorporating PL-focused practices into educational settings might be essential for teachers to become capable of fostering students' overall well-being and encourage a lifelong commitment to PA. Drawing from the local context in Cyprus, the paper provides recommendations and guidelines for fostering PL. These suggestions aim to empower

parents, educators, and society to prioritize PL as an integral component of a child's development.

Also, the study of Christodoulides et al. (accepted) highlights the significant associations between PL, PA, and mental health among adolescents in Cyprus during the COVID-19 post-quarantine era. The study aimed to explore the relationships between self-perceived PL, self-reported PA, and mental health among adolescents in secondary education schools in Cyprus during the COVID-19 post-quarantine era. It also investigated potential gender differences and examines the mediating role of PA in the relationship between PL and mental health. A total of 285 students aged 13-18 from regular middle and high schools in Cyprus participated in the study. PL was assessed using the Perceived Physical Literacy Instrument (PPLI), while mental health status was measured using the Depression, Anxiety, and Stress Scale-21 (DASS-21). PA levels were determined using the Physical Activity Questionnaire for Adolescents (PAQ-A). Gender differences were analysed using independent sample t-tests, and bidirectional associations between the research variables were examined using the Pearson *r* correlation test. Structural equation modelling was employed to assess the structural associations between the variables. The findings of the study indicated statistically significant gender differences among boys and girls regarding depression, anxiety, and stress levels. Negative correlations were observed between PL and depression, anxiety, and stress levels, while a positive association was found between PL and PA. Although PL had only indirect effects on mental health, it exhibited substantial direct effects on PA levels. Furthermore, PA was found to significantly mediate the associations between PL and mental health. The findings emphasize the need for implementing strategies to enhance PL and increase PA among Cypriot adolescents with a potential impact on adolescents' mental health outcomes.

Moreover, the pilot study conducted by Parpa et al. (2023) focused on the investigation of the association between perceived PL, participation in organized sports, self-organized PA, and physical fitness among female youth athletes and non-athletes. The study included a convenient sample of 18 youth female soccer athletes (average age: 14.56 ± 1.42 years) and 18 non-athletes (average age: 14.22 ± 1.22 years). Anthropometric measurements were taken, and participants completed PL and PA questionnaires. Athletes also underwent physical fitness tests, including cardiopulmonary, isokinetic, handgrip, and jump tests. The results indicated that female athletes had significantly higher scores in perceived PL and self-organized PA compared to non-athletes. Two components of PL, namely 'sense of self and self-confidence' and 'knowledge and understanding' were significantly associated with both self-organized PA and participation in organized sports among athletes and non-athletes. In athletes, the total PL score was positively associated with physical fitness measures such as squat jump ($r=0.50$), flexibility ($r=0.59$), and left hamstring ($r=0.51$) physical tests. The study's findings suggest a positive association between self-perceived PL and the involvement of female youth in both organized sports and self-organized PA. This association may contribute to the fulfilment of their potential and foster a sense of responsibility and value for lifelong engagement in PA. The higher scores in perceived PL among athletes indicate the potential benefits of sports participation in developing various aspects of PL. In conclusion, this pilot study provides valuable insights into the associations between perceived PL, participation in organized sports, self-organized PA, and physical fitness among female youth athletes and non-athletes. The findings underscore the importance of promoting PL to encourage youth, both athletes and non-athletes, to engage in PA and realize their potential. Further research is warranted to expand our understanding of the relationship between perceived PL and PA outcomes in youth populations.

Conclusions

In conclusion, PE in Cyprus has undergone significant changes in recent years, with an emphasis on lifelong exercise and the introduction of PL as a research focus. However, challenges such as marginalization, inadequate resources, and limited CPD opportunities for PE teachers persist. Addressing these challenges and further promoting PL can contribute to the improvement of PE in Cyprus, ensuring that students acquire the necessary skills and knowledge for a healthy and active lifestyle. In terms of PL, increased attention has been raised on this notion by researchers in Cyprus, with a few studies been concluded so far. Overall, the ongoing research highlights the importance of PL in enhancing the overall quality of PE and promoting lifelong PA.

Italian National Report: Physical Education and Physical Literacy

Premise: the terminology

The term physical literacy in Italian has not yet been translated, as the literal translation departs from the underlying concept of PL. In the articles cited below, PL has been translated only in one case. Another confusing factor may in fact arise from a large PE didactic project in primary school promoted by CONI (Italian Olympic Committee), dubbed 'alfabetizzazione motoria', the term used to translate PL. This helps us to understand the embryonic stage of discussion and study of PL in pedagogical and scholastic circles in Italy.

Physical Education and Physical Literacy

Numerous scientific evidence has demonstrated the educational, pedagogical role of PA in the physical, cognitive, and social development of the individual. PL is a construct characterized by a comprehensive, non-analytical approach in movement education (Monacis & Colella, 2022), allowing to improve social, emotional, physical, and cognitive dimensions (Greco et al., 2019). PL in schools, in fact, concerns PE programs structured on scientific evidence and psycho-pedagogical and methodological assumptions aimed at promoting motor development, as well as motivational factors, self-perception and the metacognitive processes necessary to make the primary school children motor competent (Monacis & Colella, 2022). Physical Education is still based on Reproduction Style, where the teacher has complete responsibility and decision; the non-linear pedagogical-didactic approach is still yet to be present in PE teaching.

Physical Literacy research

Research in the field is still in its very early stages. Various authors started to discuss and reflect on introducing PL in PE context (Colella & Bonasia, 2019; Greco et al., 2019; Monacis & Colella, 2022; Nicolosi, Sgrò, et al., 2016). Nicolosi, Greco, et al. (2016) investigated the knowledge of primary school teachers. This work has shown how teacher educators consider their teaching mainly directed on result-oriented motor-skills related objectives, and only indirectly on the development of social and emotional aspects; far from physical literacy approach, but, as emerged from the covid 19 pandemic, students need a holistic approach especially in this discipline where the social and affective aspects are considered as important emerges particularly (Colella et al., 2020).

From research it is apparent that primary school teachers need to have more material for PE teaching, due to their non-specific background in movement sciences (Nicolosi, Greco, et al., 2016).

Physical Literacy is not related only to the school context, it arises from different experiences in life, such as sport practice. Invernizzi et al. (2021) explored the non-linear approach in developing aquatic motor skills. The findings showed the children perceived their competence

with a non-traditional approach, but their parents did not. Therefore, it was concluded that the parents should be included in the education process as a necessity especially if they are less likely to grasp educational work.

Conclusion

The final reflection is more about what is missing than about what is there, in fact there is a lack of research in schools and studies on applied didactics on PL, but this is missing in the university curricula for both primary and secondary school teachers, who have so far had two different training paths. The concept to students is still largely unknown, as is the approach that this requires.

Czech Republic National Report: Physical Education and Physical Literacy

Physical Education in the Czech Republic

Physical education presents an environment in which students develop their physical abilities and acquire motor skills, thus increasing the self-confidence needed to adopt an active lifestyle. PE teachers can thus positively intervene in the lives of students and increase their awareness of the importance of PL. Although the Czech Republic is yet to take up this challenge and consistently promote the PL concept, some steps have already been taken (Vašíčková et al., 2021). Vlček (2021) reviews the Czech PE curriculum and discusses the possible transformation based on the concept of PL. He points out that there exists incongruence between the intended (conceptual) curriculum and other curriculum forms and that this happened with health-oriented concept of PE which was not accepted by public and not implemented by teachers. In his study and in his book (2019) there is indication in which direction the concept of PE based on PL should go and what transformation of the Czech PE curriculum should or could consist of. He formulates recommendations made for the revision of the PE curriculum based on the research over the last decade focused on the Czech PE curriculum.

Recent Research and Physical Literacy

In the book by Vašíčková (2016) PL was introduced as a complex concept where the individual is responsible for her/his own health and their physical abilities, skills, knowledge, and self-confidence allow her/him to take part in and enjoy life-long physical activities. The concept of PL has been accepted in the Czech Republic and should have the same educational value as other educational literacies. Bunc (2021) states that although the concept of PL seems to be appropriate for the schooling period, L needs to be cultivated throughout the life cycle. Compared to the past, when the basic goal of the PL concept was to defend it and introduce it into the educational environment, the current goals of PL are clearly focused on using this concept to improve lifestyle and consequently improve health. Vašíčková et al. (2021) mention that PL should also be an incentive to link physical activities in free time, including exercise in everyday life. Culková et al. (2021) describe a comprehensive picture of research in the field of PL in preschools children and confirm that the amount of research dealing with PL is not yet sufficient and this should be an impetus for the further expansion of research activities in the institutionalised educational process.

Conclusion

Physical education curricula are currently undergoing revision and there is an effort by their creators to emphasize physical literacy and thus prepare material that would be acceptable to a wide range of actors and supported especially by individual physical education teachers.

The emphasis on the concept of PL in the curriculum also entails higher demands on the preparation of future teachers, especially a thorough familiarity with the concept and its appropriate application in practice.

National report Serbia: Physical education and physical literacy

Physical education in Serbia

This report provides an overview of the development and current situation in the field of PE in Serbia. The report also includes relevant research conducted in Serbia, focusing on the concept of PL and its implications for PE.

The reform of PE in Serbia in 2015 led to a change in the name of the subject, which is now called physical and health education, as well as an increase in the number of hours for students aged 11-14 from 2 hours per week to 3.5 hours per week for students in the fifth and sixth grades, while students 7th and 6th grades have 3 hours of PE per week. The concept of the teaching and learning program for the subject of physical and health education is based on learning outcomes and the emphasis is placed on lifelong learning. The teaching and learning program includes courses from health education, which occupy a significant segment of the program. Also, in primary and secondary education, there are optional subjects that cover the field of PE, such as Exercise for health in primary school and Health and Sport in secondary school. These subjects aim to, together with the subject of physical and health education, contribute to the development of healthy lifestyles and contribute to the development of PL among students.

Until 2015, we had 2 hours of PE and one hour of sports activities if the students chose to do so. The program was based on content and not on learning outcomes. Instead of results, there were tasks aimed at the teacher, not at the student.

The modern methodology of PE in Serbia emphasizes the method of encouraging and motivating students to engage in physical exercise.

Through various projects, we try to put modern technology into practice, such as e-textbooks and various applications that we can use in classes.

From the next school year, national software for monitoring biological development and the development of motor skills of students of all ages will be introduced. The tests are based on the FIT BACK battery of tests. Parents and teachers will be able to have insight into the development of their children, and indirectly into their health status.

In Serbia, classes are conducted by generalists for students aged 6-10 years, while from 11 years until the end of schooling, classes are conducted by specialists.

Starting next school year, a pilot project will start in which specialist teachers will teach students aged 6-11.

Recent research on physical literacy

Recent research efforts in Serbia have begun to focus on the notion of PL. A very small number of works were found in Serbia and Montenegro related to PL. Parents, teachers and PE teachers have a key role in the development of PL (Visnjic, 2016).

Conclusions

Physical education in Serbia has undergone significant changes in recent years, with an emphasis on lifelong learning and program outcomes. However, there are still challenges such as inadequate conditions and the problem of realization of teaching for students aged 6-10. Solving this problem is continuous work on the promotion of PA and the importance of physical and health education in developing and improving the PL of students. Unfortunately, very few researches and works are dedicated to PL and if it is seen through teaching and learning programs as well as optional programs in schools from both areas.

Field research

Survey findings (online questionnaire)

Participants

During the informal interviews of the project in four European countries (Czech Republic, Cyprus, Italy, and Serbia), a total of 92 participants completed the PL survey. There was an almost even split between gender (males 46.7%, females 53.3%), and most of the respondents were university students (76.1%). Most of the participants were between 17-25 years old (65.2%) and their average teaching experience was 4.72 ± 8.34 years (range between 0 to 36 years). This teaching experience consisted mainly of teaching physical education (PE) (27.2%) and teaching during school placement and practicum experiences (33.7%), while 33.7% replied that had no previous teaching experience.

The statistical analysis was conducted with the use of the statistical package SPSS version 28.0 (IBM SPSS Corp., Armonk, NY, USA). The data were analyzed through descriptive (mean, standard deviation, and percentages) and inferential statistics.

Main results from the online survey

Initially the survey was designed to elicit descriptive responses for the stand-alone items. In general, most of the participants answered that they “agreed” or “strongly agreed” with the various items, as in all items the cumulative percentage of “agree” and “strongly agree” answers were well over 70%, except for the 6th statement: “Physical literacy means being able to read and write while moving the body (such as balancing, walking on a beam, etc.)”. This result shows that most participants had a substantial knowledge and understanding of the PL concept and the role of PE in schools.

Comparison between students and teachers

In general, significant differences between the views and understanding of the PL items did not exist between students and teachers, except for one statement, where students agreed more that every individual can develop his/her PL compared to the teachers’ views.

Comparison between males and females

In general, significant differences between the views and understanding of the PL items did not exist between male and female participants, except for two statements, where females seemed to have a better understanding and more positive attitude towards the PL concept compared to their male counterparts.

Correlation with years of teaching experience

The results partially suggest that participants with more teaching experience agreed more with the statements related to PL and lifelong physical activity engagement, as well as the statement that PL is influenced by previous physical activity experiences and environment.

Conclusion

The PL survey was completed by 92 participants in four European countries (Czech Republic, Cyprus, Italy, and Serbia). Most of the participants answered that they “agreed” or “strongly agreed” with the various survey items. This result shows that most participants had a substantial knowledge and understanding of the PL concept and the role of PL in schools. In general, significant differences between the views and understanding of the PL items did not exist between university students and PE teachers, except for one statement, where students agreed more that every individual can develop his/her PL potential compared to the teachers’ views.

An important item related to participants’ knowledge about PL was the one that asked if PL means being able to read and write while moving the body (such as balancing, walking on a beam, etc.). Even if only 26.1% of the participants agreed or strongly agreed that PL means being able to read and write while moving the body, 29.3% were not sure about this. Further analysis of this finding by comparing the answers of male and female participants showed that, even though most males and females agreed that every individual can develop his/her PL, significantly more females strongly agreed with this statement, while a significant number of males disagreed (i.e., not every individual can develop his/her PL). Additionally, most males were not sure whether PL is about reading and writing while moving the body. This result provides initial evidence that females had a better understanding and more positive attitude towards the PL concept compared to their male counterparts.

Finally, the correlation analysis results suggested that the participants’ years of teaching experience do not correlate significantly with the knowledge and understanding of the PL concept and the role of PL in schools. However, the participants with more teaching experience agreed more with the statements related to PL and lifelong physical activity engagement, as well as the statement that PL is influenced by previous physical activity experiences and environment.

Focus group findings

In-service teachers (PE teachers)

Focus group sessions were organised in three countries (Cyprus, Czech Republic, and Serbia). Altogether 22 in-service PE teachers participated in several focus groups (10 Cypriot PE teachers – 5 females and 5 males, 7 Czech PE teachers – 2 females and 5 males, and 5 Serbian PE teachers – 3 females and 2 males).

Four skilled experts (two Cypriot experts, one Czech and one Serbian expert) led the discussions and there was a set of 14 questions used as per the project’s provided focus group protocol.

Following the questions, we are summarizing all the received feedback:

1. What comes to your mind when you hear the term “physical literacy”?

The PE teachers have not encountered the term before in Cyprus. As a result, they tried to define the term “physical literacy” based on their own understanding. PL was defined as a

broad term that is linked to knowledge, PA and education from an early age and the promotion of a healthy lifestyle that students will follow throughout their lives. It was also mentioned that PL is associated with the social and psychological aspect of students' personal growth and development. The way exercise affects young people socially and mentally is also part of the term. Some PE teachers assumed that the term is linked to the theoretical analysis of physical exercises which helps a student understand the significance of PA for one's body and mind. Moreover, it was stated that physical literacy is linked to the combination of regular physical exercise and a healthy and balanced diet which ensures that an individual will have an improved lifestyle and a healthier upbringing. The term PL was also defined as a generalized term that will replace lifelong learning. It was also mentioned that within the concept of PL, students acquire skills and competencies that they can apply in all aspects of their lives. It was also assumed that PL is associated with medical terms that students should know about. It was also assumed that the term is linked to the idea that students are seen as illiterate in relation to PA, and they gradually gain knowledge and skills. The term is also associated to fundamental principles like self-awareness, the relationship between humans and nature, mental and physical balance, coordination of one's senses and breathing control, control of body movements.

Most Czech PE teachers think of PL as a certain level of movement skills and abilities expressed in a particular movement expression. They also mention that it can mean using movement purposefully to function in the world, doing what one can do and expressing oneself in some way. The ability to do general movement tasks was also mentioned, but also what awareness they have of sport. The movement foundation was often mentioned with specific names of movement skills that one learns from the beginning of life and that they can control their body in different conditions and environments.

Serbian PE teachers believed that it is the use of learned basic motor skills in everyday life.

SUMMARY: Physical education teachers in Cyprus were unfamiliar with the term "physical literacy." They defined it as a broad concept encompassing knowledge, PA, and promoting a lifelong healthy lifestyle. Czech teachers saw it as movement skills and abilities, while Serbian teachers associated it with using basic motor skills in daily life.

2. What learning domains do you think are associated to the concept of physical literacy?

The Cypriot PE educators mentioned various learning domains as well as the benefits of PE for students. More specifically, it was stated that PE, healthy and balanced diet are domains that are associated to PL and as part of the PE lesson educators should explain the correlation between physical exercise and healthy diet and the benefits for students' mental and physical health. It was also stated that students as part of the concept of PL should learn the terms fair play, sportsmanship, and gamesmanship. Through these concepts, students will appreciate the benefits of PL for their health and body. Moreover, it was stated that another learning domain which is part of PL is the incorporation of games in PE. It was pointed out that any PA, and not only PE, can positively affect the healthy social and mental development of an individual. Another element associated to PL is the concept of body mass index and other theoretical elements related to body measurements. Some PE educators mentioned that PE should include both theory and practical activities so that students can apply in practice the theoretical knowledge they acquire. It was also stated that an interdisciplinary approach to teaching PE related issues would contribute to the promotion of PL. Physical literacy is a concept that can be addressed in various subjects like biology, chemistry, and languages.

Czech PE teachers most often mentioned motor learning or natural learning. Some also mentioned learning in general, as a new-born learns through stimuli during ontogenetic development. Unfortunately, some also mentioned that they did not fully understand the question.

Serbian PE teachers believed that all learning concepts are covered.

SUMMARY: Cypriot PE teachers highlighted the importance of various learning domains within PL, including PE, healthy diet, fair play, and gamesmanship. They emphasized the correlation between physical exercise, diet, and students' mental and physical health. The incorporation of games in PE and theoretical elements like BMI were also mentioned. Czech teachers associated PL with motor learning and general learning, while Serbian teachers believed it encompasses all learning concepts. Interdisciplinary approaches and addressing PL in other subjects were seen as beneficial.

3. Are you aware of the philosophical concepts of Monism, Existentialism and Phenomenology that underpin the concept? If so, do you know what they are?

Cypriot PE educators have never encountered these philosophical concepts before, and they had a difficulty understanding how these terms could be associated to physical literacy. Some of the PE educators mentioned that these terms may not be associated with physical literacy at all. Some PE educators assumed about the definition of the term “existentialism”. It was assumed that existentialism is associated with the idea that human existence depends on how well a person maintains his or her physical and mental health.

Czech teachers usually replied that philosophy was not their field and that they would have to invent some terms. They hardly connect these terms with physical literacy at all, one mentioning that movement is a basic principle of life.

Three Serbian PE teachers answered that they are aware of Phenomenology and Existentialism and two did not know.

SUMMARY: PE teachers in Cyprus had difficulty understanding the association between philosophical concepts and PL, with some expressing scepticism about the connection. Czech PE teachers admitted their lack of expertise in philosophy and struggled to relate the terms to PL, except for acknowledging movement as a fundamental principle. Among Serbian PE teachers, some were familiar with phenomenology and existentialism, while others had no knowledge of these concepts.

4. How is physical education different from physical literacy?

It was stated in Cyprus that PL is the result of PE. Physical literacy can be achieved only through a consistent and coherent PE curriculum that includes all the necessary components, like regular exercise and a healthy diet. Through this education that starts at an early age, a person can adopt a healthy lifestyle that will follow for the rest of his/her life. Lifelong learning is an important aspect of PL. Moreover, it was stated that PE includes various elements such as psychology, socialization, healthy diet, and hygiene and through the knowledge of all these elements a person can achieve PL. It was also mentioned that PE is a process with various steps that lead someone to PL. Moreover, it was mentioned that the two terms are interrelated and the one is dependent on the other, and they are both parts of a puzzle. It was also assumed that PL includes the theory of PA while PE includes the practical elements of PA. The overall impression of the PA educators was that PL can be achieved through PE.

Physical education is a kind of artificial system to develop PL in the Czech Republic. Physical education is a subject that is taken as a tool to develop PL, which we have somehow created to develop it purposefully. So, teachers primarily see PL as part of PE, but it is also a parent activity. In PE we are supposed to respond to deficiencies and improve movement structure through motor learning. Most often teachers perceive the two terms as connected vessels, with PE being one means of developing PL.

Serbian PE teachers think that PL is developed through PE. This theme incorporates the perspective that PL is a more holistic, all-encompassing approach to PA, including mental and cognitive aspects, as well as skills development.

SUMMARY: In Cyprus, it was emphasized that PL is achieved through a consistent PE curriculum that includes regular exercise, a healthy diet, and lifelong learning. PE covers various elements such as psychology, socialization, and hygiene, leading to PL through knowledge of these components. The relationship between PL and PE was seen as interdependent, with PE providing practical elements while PL encompassed the theoretical understanding. Czech educators viewed PE as an artificial system to develop PL, while Serbian teachers saw PE as a means to develop a more holistic approach to PA, including mental and cognitive aspects.

5. Why is it important for physical education teachers to focus on supporting children on their physical literacy journeys?

It was mentioned in Cyprus that through PL children can develop their personality and gain confidence. Through physical exercise and movement of the body, a person develops both physically and mentally. It was also mentioned that through all the elements associated to PL (psychology, socialization, exercise) students will have more self-confidence and stamina during PA. An important aspect of PL, that is taught during PE, is empowering and inspiring young people to improve their personality. Physical education does not encourage students to become athletes or achieve athletic excellence but to have a deeper connection with their body and mind and to invest in their personal development. Moreover, PE educators try to encourage students to adopt an athletic mindset and apply it in all aspects of their lives. Through PE and PL, the quality of life of students is improved and they recognize the benefits of being physically active and having healthy eating habits for their wellbeing throughout life.

The Czech PE teacher is an important person because he/she has the task of increasing PL offering them as many choices of PA as possible so that they can make choices and develop a positive relationship with movement. Educators are very sensitive to the importance of the PE teacher because sometimes some have not formed a positive relationship with PE through negative memories. The teacher is very important in a situation where parents do not have time for their children or movement does not mean anything to them. Then teachers are there to give them the basic movement skills in primary school and teachers should get them excited. Another importance is that PL should be developed as injury prevention, they also mention prevention from stress, obesity, compensating for sedentary work and socialization.

Serbian PE teachers think that PL is redeveloped through PE, and it is very important for the development of the child's cognitive potential, that is why the teacher's support is important.

SUMMARY: In Cyprus, PL was seen as a means for children to develop their personality, gain confidence, and improve both physically and mentally through physical exercise and movement. PL encompassed elements such as psychology, socialization, and exercise, which were believed to enhance self-confidence and stamina in PA. PE aimed to empower and inspire students, promoting a deeper connection with their body and mind for personal development. The goal was not to

produce athletes but to instil an athletic mindset applicable to all aspects of life, improving students' quality of life and fostering an understanding of the benefits of PA and healthy habits. Czech educators highlighted the importance of the PE teacher in offering various PA to develop a positive relationship with movement, especially for students who may not have parental support or positive experiences. Serbian teachers emphasized the role of PE in the cognitive development of children and the significance of teacher support in fostering PL.

6. Do you understand physical literacy enough for it to underpin your work in physical education? If yes, can you explain how? If not, why not?

It was mentioned by Cypriot PE teachers that since PL is linked to the idea of lifelong learning, it should be incorporated to the PE lesson from a very early age (preferably from the age of 4). It was pointed out that in Cyprus, in the pre-primary and primary state schools, PE is not taught by PE educators but by primary teachers. Moreover, PE is a lesson offered to students in secondary education schools and this causes problems as it is a bit late to engage students in PE. The participants then stated the differences between state (public) and private schools in Cyprus in relation to PE. In private schools, physical education is taught in pre-primary education. Because of that, a child gradually develops physically and mentally and by the time this child is in high school, he/she already has the knowledge and understanding of the importance of physical exercise and a healthy lifestyle. On the contrary, in state schools, students start having PE lessons delivered by PE teachers at the age of 13 (beginning of secondary education level), while at the primary school level, students are taught by generalists teachers, who in most cases do not necessarily have the knowledge and expertise, or personal interest to teach PE. As a result, there is a difference in the opportunities provided to engage in PA within the context of PE classes and the school environment, between the students of state and private schools. According to the interviewed PE teachers, state school students have lower physical competencies compared to private school students, and they have a difficulty keeping up with the rest of the class in terms of performance and knowledge. These children seem to dislike PA in general because of their limited or no contact with it during their early years. One of the PE educators mentioned some activities related to PL that are implemented in pre-primary schools. Through a gamified approach (games and interactive activities), children are taught to jump back and forth, throw a ball to a target and follow instructions. This process begins at this stage and continues until the sixth and last grade of elementary school. So, PL is an integral part of the primary school PE curriculum. It was also mentioned that in state primary schools, the PE lesson is taught only once a week (40-minutes session) and in high school the lesson is held only 2-3 times a week (40-minutes session). Consequently, there is not enough time for teachers to properly educate students and raise awareness on PL. One of the PE educators suggested that various professionals should be involved in the PE lesson like a psychologist, sports nutritionist or even a sociologist. Their input would be useful in achieving PL. The absence of sports scientists in school PE lessons at the critical age of 4-12 years old inevitably makes the work of high school PE educators harder. It was also mentioned that incorporating artistic elements to PE like music or dance would contribute to the development of PL. An interdisciplinary approach would be helpful for all students in terms of understanding and grasping the notion of PL. It was also stated that the lack of adequate investment in state school both financially and in terms of hiring qualified professionals creates difficulties in delivering PE and PL to students.

If Czech PE teachers understand it well enough, they tend to develop, first of all, the correctness of movement, enough PA for a healthy lifestyle and the principles of healthy nutrition. Mostly, however, PL is seen as developing movement skills and abilities, so it teaches children to move, to feel their body and to express themselves through that body.

Teachers always try to analyse the level of movement skills of the group first so that they can try to help them progress. However, they often find that students don't know the complete basics and so they have to go back to them in high school. Some people mention a lesson plan so that pupils do not get bored in PE.

Serbian PE teachers understand PL as something that is part of lifelong learning, regardless of the level of its development. Therefore, they believe that it is necessary to constantly work with the students on its development.

SUMMARY: Cypriot PE teachers emphasized the importance of incorporating PL into early childhood education, ideally starting from the age of 4. However, in Cyprus, PE is taught by generalist teachers in pre-primary and primary state schools, causing a delay in engaging students in PE until secondary education. This difference was highlighted between state and private schools, where PE is introduced earlier in private schools, leading to better physical capacities and competencies among students. Limited time allocated for PE in state schools was mentioned as a challenge, along with the suggestion of involving professionals such as psychologists, sports nutritionists, and sociologists to enhance PL education. Czech teachers focused on developing movement skills and abilities, while Serbian teachers stressed the continuous work on PL regardless of its level of development.

7. What are your memories of your pre-service program related to physical literacy (both in and outside of the actual program)?

Cypriot physical educators stated that since the term PL is relatively new, they have not encountered it during their studies. One of the PE educators mentioned that he came across different elements associated to the term during his master's degree, but the term PL itself was not used during his studies. Another PE educator mentioned that the term is applied in sports coaching, since the coach should have a holistic approach in preparing and empowering an athlete employing elements from various disciplines.

The term PL was not used when PE teachers were studying at the university, but it is obvious to the teachers that everything they learned about in the faculty leads to this. However, it has never been spelled out because it is a concept quite new to the conditions of the state and was not at all prevalent at the time of teacher training. Previously, everything was based on performance, and it was assumed that one would enter the study with a certain level of PL. It was also assumed that one enjoyed the sport and wanted to develop in it and pass it on. It is not assumed in the teaching that teachers will work with individuals who have no habits. In practice, however, this problem is encountered quite often.

Serbian PE teachers believed that there was no strict program related to PL. Parents took care of children and their development, children played more and moved outside and acquired PL in nature, and PE played a role in spreading that literacy.

SUMMARY: Cypriot PE educators noted that the term "physical literacy" was not part of their formal education, although they encountered related elements during their studies. However, they recognized that the concept of PL aligns with the principles they learned. The term has gained prominence more recently and is applied in sports coaching, where a holistic approach is emphasized. Serbian PE teachers mentioned that there was no specific program for PL, as it was believed that parents and natural outdoor play contributed to its development, while PE played a role in spreading this PL.

8. Do you think that by focusing on physical literacy within PE, we might influence children to be physically active in the future?

It was mentioned by Cypriot PE teachers that focusing on PL within PE, students could be encouraged to be more active. The concept of PL has a positive effect on their confidence and through PA they realize that they can achieve their goals and improve their skills and competencies. Physical literacy can be part of the overall development of students. Moreover, it was stated that one of the positive effects of PL is that students acknowledge the value of PA for a better quality of life. It was also stated that, within the concept of PE, students meet athletes or sportsmen who share their experiences, and this interaction helps students to appreciate the benefits of PA. It was also stated that PE educators have the willingness to put action in encouraging students to be physically active but the limited time available for PA education in the curriculum creates obstacles.

Czech PE teachers mentioned that PE alone is not enough and that it is good that there is a push to make the subjects and their content more intertwined in schools. Teachers perceive that they can influence PL in PE, but it certainly should not just be in PE. The intention is often also to create a positive relationship with movement, so that pupils learn something, so that they enjoy it, so that they come back to it when they are older because they will have positive emotions and enjoy movement. Mostly teachers mention motivating the pupil to work on themselves, because if the individual doesn't want to, it's hard to change things individually. Another factor is the relationship built towards exercise within the family or from friends who can motivate the individual. Also, teachers realize that any focus towards awareness of the need to live actively is beneficial.

Serbian PE teachers think that PE cannot be solely responsible for PL, but it is certainly the most important for its development. It can also be influenced by other entities. An important factor is parents and the environment in which children grow up. Motivating the child is very important.

SUMMARY: Cypriot PE teachers emphasized that incorporating PL into PE encourages students to be more active and boosts their confidence. The concept has a positive impact on their skills and competencies, contributing to their overall development. Students recognize the value of physical activity for a better quality of life, especially through interactions with athletes who share their experiences. However, limited time for PE in the curriculum poses challenges to promoting PA. Czech PE teachers acknowledged the need for integrated subjects and content in schools to develop PL. They aim to create a positive relationship with movement, motivate students to work on themselves, and emphasize the role of family and friends in fostering an active lifestyle. Serbian PE teachers believe that while PE is crucial for PL, other factors such as parents and the environment also play important roles.

9. As a teacher/future teacher, what do you need to consider as essential, within your lessons, if you are aiming to support your children on their physical literacy journeys?

The PE educators mentioned various methods that can support children on their PL journeys, with the most important to be more PE lessons per week in all levels of education. It was stated that game-based learning and interactive activities, especially in early ages, definitely contribute in encouraging students to be more physically active. It was also mentioned that by teaching new sports activities, like swimming, CrossFit programs, water polo or water activities, educators can more easily motivate students to be physically active and more engaged in sports. It was further stated that in the state secondary education curriculum, there

was a 6-hours subject called Olympic Education (2 hours on the theoretical part and 4 hours on the practical part) that was optional for students, but it is no longer part of the national curriculum. This subject focused on theory covering elements such as fair play, Olympic values, multiculturalism. It was pointed out that this subject should be available again as it can support students on their PL journey. It was also stated that this subject should only be taught in high schools but also in elementary schools as it enhances students' knowledge and skills both on a theoretical and practical basis. It was stressed once again that PE lessons are offered only once or twice a week in state schools, and this is an obstacle in achieving better results in relation to PL.

Czech PE teachers often consider it essential to keep some joy in children and not destroy their inner motivation to move. It's about the pupils' joy of moving, of learning new skills, of discovering them and of moving into the leisure space. In some schools, sports performance or limits are essential to force children to move based on grades. Other teachers, on the other hand, consider it essential that children enjoy it and cannot make excuses for not practicing. Some see it as essential in a system of motivation where they assess pupil progress. Again, some mention a variety of activities, and ones to keep pupils interested, for example focusing on coordination and dexterity.

Three Serbian PE teachers said it was the motivation, diversity, and creativity of the teachers. Two teachers said that, in addition to the above, it is also important to direct students to daily practice and not just practice in PE class.

SUMMARY: Cypriot PE educators highlighted the importance of increasing the number of PE lessons per week at all levels of education to support children in their PL journey. They emphasized the effectiveness of game-based learning and interactive activities, particularly at early ages, to encourage students to be more active. Introducing new sports activities like swimming, CrossFit, and water polo can also motivate students to engage in PA. The need to reintroduce the Olympic Education subject in the curriculum was emphasized, as it covers important theoretical aspects such as fair play and Olympic values. Czech PE teachers emphasized the importance of maintaining joy and intrinsic motivation in children's PA, while Serbian PE teachers emphasized the role of teacher motivation, diversity, creativity, and daily practice in fostering PL.

10. Have you developed/designed any programmes and implemented them, to promote physical literacy?

In pre-primary schools in Cyprus, the focus of PE is on game-based learning, but children also have classes on theory. Time is also dedicated to first aid lessons. As part of the curriculum, one week is dedicated to the Olympic Games, and children are taught Olympic education, values and philosophy. Moreover, for a period of 2 weeks, students are taught on healthy eating habits and the benefits of regular exercise. In secondary school education, the Physical Social Health Education program is implemented, during which professionals in the field of sports are invited to schools to give speeches on nutrition, sports, and healthy habits. In athletic schools, veteran athletes are invited to share their experiences and their career path with students. Moreover, in the sports club of state schools, shooting (Olympic game) was added as an optional type of sport for students. Introducing new sports to the school curriculum motivates students to be more physically active. It was also stated that in secondary education schools, PE educators invite coaches, sports champions, handicapped athletes to share their career path and talk about Olympic games and Olympic values. Championships in various sports, like basketball and volleyball championships are organized in schools giving students the incentive to become physically active and get involved with sports. Moreover, in state schools, the Be Active week is organized by the Cyprus Ministry of Education, Sport and Youth

and the Office of Physical Education. This week is dedicated to PE and many actions related to physical activity and sports are implemented in all state schools. One of the PE educators participating in the Focus Group, shared his experience on the organization of a workshop on the value of physical exercise and healthy eating that took place in his high school with the participation of various professionals like dietitians, nutritionists, athletes, and government officials. During this workshop, students had the opportunity to share their experience with sports and the benefits they gained on a personal level. Some students with migratory background shared their experience on how sports helped them to become more sociable and become socially active through sports. Therefore, several workshops, seminars, championships, and other activities are implemented in both state and private schools in Cyprus with the aim of promoting PL but for specific period or limited amount of time.

For most Czech PE teachers, each lesson is a specific programme to promote PL. Some mention various activities offered within the school (sports clubs, inter-class sports matches) or extra-curricular activities. Other teachers mention research activities in collaboration with other university faculties (programmes to promote active lifestyles, good nutrition).

Almost all Serbian PE teachers (4) declared that they created programs for the development and promotion of PL through both curricular and extracurricular activities. One teacher declared that he thought he did not do that.

SUMMARY: In Cyprus, PE in pre-primary schools focuses on game-based learning and includes theory classes, first aid lessons, and dedicated weeks for Olympic education and healthy habits. Secondary schools implement the Physical Social Health Education program, inviting sports professionals to give speeches and organizing championships to motivate students to be physically active. State schools also participate in the Be Active week organized by the Ministry of Education. Workshops, seminars, and activities involving professionals, athletes, and government officials are organized to promote PL. In the Czech Republic, PE teachers design specific programs to promote PL, including activities within the school and collaborations with other faculties. Serbian PE teachers mostly create programs for the development and promotion of PL through curricular and extracurricular activities.

11. If you would like to focus on physical literacy in your teaching, what resources or support do you need to effectively develop physical literacy of your students (e.g., lesson plans, activities, workshops, assessment tools, online resources, video demonstrations, etc.)?

It was stated by Cypriot PE teachers that an approach that would help towards the development of PL is for students to set their own personal goals and conduct self-evaluation. It is important to measure their personal development and progress and to validate in which areas they have made more progress and in which they need further improvement in relation to physical activity. It was also mentioned that there is a need for PE educators to receive training on PL and the ways it can be implemented in PE. PE educators expressed the need to attend workshops or seminars on PL in order to enhance their understanding and skills on this area. It was also stated that in order to provide the best possible education to students, sports facilities and equipment in schools need to be improved. It was also mentioned that in Cyprus, all PE educators are well equipped for their position, but the state should invest more in promoting PL.

The most often mentioned tools in the Czech Republic are video demonstrations, ideas for various movement activities, new inspiring things that could interest this generation. Other teachers mention various improvements to their material conditions rather than programmes.

Assessment tools are also mentioned, and most lack different motivational activities for groups with different levels.

All Serbian PE teachers agreed that they need seminars, workshops, work materials and manuals.

SUMMARY: Cypriot PE teachers emphasize the importance of students setting personal goals and self-evaluation to develop PL. They express the need for training and workshops to enhance their understanding and skills in this area. Improving sports facilities and equipment in schools is also crucial. In the Czech Republic, PE teachers rely on video demonstrations, new movement activities, and improving material conditions. Serbian PE teachers unanimously agree on the need for seminars, workshops, and educational materials to support their work.

12. Is physical literacy is clearly articulated within your physical education curriculum?

Cypriot PE educators mentioned that the concept of PL and the ideas associated with it are applied in the PE curriculum, but the term “physical literacy” does not exist in the curriculum, and it has never been used. The curriculum focuses on enhancing the engagement of students with PA, teaching about the value of healthy eating and having a balanced lifestyle and on encouraging students to be physically active throughout their lives. The goal of the curriculum is not to turn students into athletes but to encourage them to adopt an athletic mindset. Some PE educators apply elements that are consistent with PL in their teaching because of their previous training, while others who are not well equipped cannot do this. It was also pointed out that in Cyprus, there is a difference between private and state schools. In primary state schools, PE is taught by primary teachers who are not specialized in PE. Moreover, PE teachers in private schools follow the national PE curriculum issued by the Ministry of Education but they can apply additional activities within the framework of the lesson, with the approval of the school management. It was also noted that in the Cyprus school system, there is not a coherent and integrated educational framework for PE in all the educational levels. It is worth noting that some PE teachers suggested that an interdisciplinary approach should be applied in PE, meaning that PL should be addressed in other subjects like biology, chemistry or languages.

Czech PE teachers mention that the concept as it is in the curriculum or programmes does not appear, but the elements of the concept appear in each grade.

The Serbian PE teacher's answers could be classified as one, which is that the teaching and learning program does not explicitly state PL, but there are outcomes that need to be achieved, some of which contain elements of PL. Only one teacher declared that he did not see that PL was articulated in the PE program.

SUMMARY: Cypriot PE educators acknowledge the application of PL principles in the PE curriculum, despite the term itself not being explicitly mentioned. The curriculum focuses on engaging students in PA, promoting healthy lifestyles, and fostering an athletic mindset. However, there is a difference between private and state schools, with primary state schools relying on non-specialized teachers for PE. PE teachers in private schools can supplement the national curriculum with additional activities. The lack of a coherent framework for PE across educational levels is highlighted, with some suggesting an interdisciplinary approach. Czech and Serbian PE teachers also note that while PL may not be explicitly articulated in the curriculum, elements of it are present in the outcomes that need to be achieved.

13. Do your school's policies and/or practices contribute to promoting physical literacy opportunities for students? If yes, how do they contribute?

Cypriot PE teachers noted that in pre-primary and primary state schools, there are no coherent policies on PL. The only thing available to pre-primary and primary school teachers is a training course on PE practices but it is uncertain whether teachers receive adequate training. It was also mentioned that in private schools, teachers are free to combine the curriculum material with additional activities but there is not a comprehensive framework on PE or even guidelines on how to conduct a PE lesson, except from thematic areas. In secondary education state schools, there is not a fully comprehensive framework on PE and teachers plan their lessons based on their experience and the learning needs or preferences of their students. It was stated that PE curriculum is prepared by the Ministry of Education, Sport and Youth. The educational framework and approaches are part of the curriculum and students' assessment is done based on the success and capacity development indicators that are also part of the curriculum. However, PE teachers mentioned that the framework is inefficient and does not contribute to promoting PL. It was also mentioned that apart from the need to develop an efficient educational framework for PE, teachers need to receive further training on PL and to be educated on how to apply this term in their teaching.

In most cases, Czech schools organize hiking or sightseeing trips, sports courses, and often the school is actively involved in promoting PA in forms other than PE. Teachers mention that schools build on the curriculum and often offer other PA as part of sports clubs. The material conditions of the schools are also used.

Through the responses of all Serbian PE teachers (n=5), we see that the school policy based on legal, and by-laws contributes to the promotion of PL, all teachers mention the week of school sports and the obligation of local self-government to invest in school sports. Two teachers (n=2) also add local programs such as Sports in schools and Children's athletics.

SUMMARY: Cypriot PE teachers express concerns about the lack of coherent policies and comprehensive frameworks for PL in pre-primary, primary, and secondary state schools. Teachers in private schools have more flexibility but still lack comprehensive guidelines. The existing curriculum is perceived as inefficient and not conducive to promoting PL. It is emphasized that teachers need further training on PL and its implementation in teaching. In the Czech Republic, schools organize various PA beyond the curriculum, utilizing material conditions and sports clubs. Serbian PE teachers highlight the contribution of school policies and local programs to promoting PL, such as school sports weeks and government investment in school sports.

14. Are you aware of any documents from national/international organizations related to physical literacy? If yes, how did you become aware of them (e.g., email/newsletter, school staff meeting, online/web surfing, social media/networks, professional development workshops, conferences/seminars, etc.)?

Some Cypriot PE educators mentioned that they came across the term PL in seminars or conferences that they attended. It was mentioned that during these events, speakers referred to this term in brief without explaining in detail its meaning, the concepts associated with it or how it can be applied in PE. During these conferences, it was mentioned that the term PL is currently used instead of PE or rather that it is an extension of PE. Some of the PE teachers mentioned that they came across the term on social media.

There are no documents at national or international level that support the development of PL in the Czech Republic. The disconnect between theory and practice is also mentioned; the scientific community needs to find ways to apply theoretical knowledge to practice more easily. A single workshop for teachers was mentioned where PE teachers receive new information and interesting impulses, but where practice prevails over theory.

It is very interesting that Serbian PE teachers are not familiar with any official document, but they have read some articles about it.

SUMMARY: Some Cypriot PE educators have encountered the term "physical literacy" in seminars, conferences, and social media, but there is a lack of detailed explanation and guidance on its meaning and application in PE. In the Czech Republic, there are no official documents supporting the development of PL, and there is a noted gap between theoretical knowledge and practical implementation. Serbian PE teachers have read articles about PL but are not familiar with any official documents on the topic.

Summary from in-service PE teachers focus groups

Physical education teachers in Cyprus, Czech Republic, and Serbia have varying understandings of PL. While Cypriot teachers define PL as a broad concept encompassing knowledge, physical activity, and promoting a lifelong healthy lifestyle, Czech teachers associate it with movement skills and abilities, and Serbian teachers relate it to basic motor skills used in daily life. Cypriot teachers emphasize the importance of multiple learning domains within PL, including PE, healthy diet, fair play, and gamesmanship, while also highlighting the correlation between physical exercise, diet, and students' mental and physical health. Czech and Serbian teachers view PL as encompassing all learning concepts, with interdisciplinary approaches and integration into other subjects seen as beneficial. Challenges arise in understanding the association between philosophical concepts and PL, with variations in familiarity among teachers. Overall, PL is seen as a means for students to develop their personality, gain confidence, improve physically and mentally, and foster a deeper connection with their body and mind. PE is viewed as integral to PL, providing practical elements while PL encompasses theoretical understanding. Czech teachers see PE as an artificial system for PL development, while Serbian teachers believe it fosters a holistic approach to physical activity. Efforts are made to instill an athletic mindset applicable to all aspects of life, improve students' quality of life, and promote an understanding of the benefits of physical activity and healthy habits. Teacher support and the allocation of time for PE are mentioned as important factors in fostering PL.

PE educators in Cyprus, Serbia, and the Czech Republic recognize the importance of PL but differ in their exposure to the term and its implementation. Cypriot teachers note that while PL was not part of their formal education, they see its alignment with their principles and emphasize its positive impact on students' skills and overall development. Serbian teachers believe that PE contributes to spreading PL, which is primarily developed through natural outdoor play and parental involvement. Czech teachers emphasize integrated subjects and content to foster PL, highlighting the role of family and friends in promoting an active lifestyle. Cypriot educators stress the need for more PE lessons, game-based learning, and introducing new sports activities. Czech and Serbian teachers advocate for maintaining joy and intrinsic motivation in PA, with Serbian teachers highlighting teacher motivation and diversity. Cyprus implements dedicated weeks for Olympic education and healthy habits, while the Czech Republic focuses on specific programs and collaborations. Professional development,

improved facilities, and educational materials are identified as crucial factors across all contexts.

Cypriot, Czech and Serbian PE teachers acknowledge the importance of PL principles in their PE curriculum, even though the term itself may not be explicitly mentioned. There is a discrepancy between private and state schools in Cyprus, with non-specialized teachers handling PE in state schools and more flexibility in private schools. A lack of comprehensive frameworks and policies for PL is evident, with concerns about the inefficiency of the existing curriculum. Further training on PL implementation is seen as necessary. In the Czech Republic, schools organize extracurricular activities, while Serbian PE teachers highlight the role of school policies and local programs. Some Cypriot and Czech educators have encountered the term "physical literacy" but lack detailed explanations and guidance, and Serbian teachers are not familiar with official documents on the topic. Overall, there is a need for clearer guidelines and support for integrating PL into PE education.

Pre-service teachers (university students)

There were organised several focus group sessions in three countries (Cyprus, Czech Republic, and Serbia). Altogether 67 pre-service PE teachers (11 Italian PE students – 9 females and 2 males; 21 Cypriot PE students, 20 Czech PE students – 11 females and 9 males, and 15 Serbian PE students – 8 females and 7 males)

In each country skilled experts led the discussions and there was a set of 14 questions used as per the project's provided focus group protocol.

Following the questions, we are summarizing all the received feedback:

1. What comes to your mind when you hear the term "physical literacy"?

The Italians answers focused mainly on physical abilities, motor skills and motor competence. Being active during life was a recurrent aspect. Further, only in one focus group students included psychological aspects such as motivation and confidence and knowledge. It is fair to mention that in Italian there is no translation of the term "physical literacy", and this could be a limitation.

Serbian students had in mind basic movement and motor skills and sports.

Cypriot students mentioned that PL is a multifaceted concept perceived to involve skill-building, knowledge acquisition, practical implementation, and lifelong engagement with PA. A main role is played by the educational and cultural environment and there are several themes concerning the perception and understanding of PL – like knowledge and understanding, importance in education, lifelong PA, practical implementation, skill building and cultural influence.

In this question, Czech PE students most often mentioned the topic of practical implementation, that is, they answered with indications that PL for them means mostly the same as movement, but only some basics of movement - basics of all sports on which we can then build further. In general, activities that are not used intentionally but are used for example for everyday things such as running to the bus and so on. The most common association of PA was with the social environment and social impact - i.e., there are good social relationships further with the impact on affective domain and motivation and 2 students also mentioned knowledge or cognitive component of PL and motivational and affective component was mentioned by 4 of these students.

SUMMARY: The Italians focused on physical abilities and being active throughout life, with limited consideration for psychological aspects. The Serbian students emphasized basic movement skills and sports, while Cypriot students viewed PL as a multifaceted concept involving skill-building, knowledge acquisition, practical implementation, and lifelong engagement. The educational and cultural environment played a significant role for them. Czech PE students associated PL with practical implementation and basic movement skills, as well as the social impact of PA. Some students also mentioned the cognitive, motivational, and affective components of PL.

2. What learning domains do you think are associated to the concept of physical literacy?

The physical domain was recognized by all Italian participants. The others domain emerged naturally only in one focus group.

According to the Serbian students the psychomotor and affective concepts of learning are trained. Several of them also add a psychological domain.

Cypriot students mention specifically the following learning domains associated with the concept of PL – like psychological domains (mental and emotional wellbeing), cognitive domain (knowledge and understanding the benefits of PA), psychomotor domain (physical skills and basic physical abilities), affective domain (emotions, attitudes, appreciation and values; social and personal responsibility), social domain (teamwork and social interaction), and behavioural domain (adherence to PA and discipline).

The Czech PE students most often mentioned the cognitive component (probably because they are university students with a focus on PE) and most often talked about topics - motor learning, anatomy, physiology of the human body, for example, the rules of games, competition, and knowledge of how to monitor their movement, such as pedometers and the like. They also mentioned the affective component, which is connected, for example, values with fair play, social domain, to develop connections with the creation of social groups in a sport team.

SUMMARY: The Italian participants primarily recognized the physical domain, while the other domains were mentioned in only one focus group. Serbian students highlighted the psychomotor and affective concepts of learning, with some mentioning the psychological domain as well. Cypriot students identified various learning domains associated with PL, including psychological, cognitive, psychomotor, affective, social, and behavioural domains. Czech PE students, being university students with a focus on PE, predominantly discussed the cognitive component, such as motor learning and knowledge of the human body, and touched upon the affective component, emphasizing values and social connections in sports teams.

3. Are you aware of the philosophical concepts of Monism, Existentialism and phenomenology that underpin the concept? If so, do you know what they are?

Generally, these concepts were not so clear to everybody in Italy. Phenomenology was linked with the experience, but the others were not recognized. Their link with PL was reached within the discussion.

Phenomenology and monism are the most common answers for Serbian students.

Different answers were obtained from Cypriot students from not knowing anything about the concepts up to having some knowledge, but they hardly connected the philosophical concept with PL. This wide array of responses reflects diverse levels of philosophical understanding among the participants and hints at the complexity of the philosophical underpinnings of PL.

In this question, Czech respondents were largely unoriented. Nine of the respondents stated that they know the concepts of monism, existentialism and phenomenology and roughly know what philosophy they contain. However, in the field of physical literacy at all have no idea how these concepts are incorporated.

SUMMARY: In Italy, the concepts related to philosophy were not clear to everyone, except for phenomenology, which was linked to experience through discussions about PL. Serbian students commonly associated phenomenology and monism with PL. Among Cypriot students, there was a wide range of responses, from lack of knowledge about the concepts to some understanding, but with limited connection to PL. This variability suggests diverse levels of philosophical understanding and highlights the complexity of the philosophical foundations of PL. Czech respondents, on the other hand, were generally unoriented and lacked knowledge of how concepts like monism, existentialism, and phenomenology relate to PL.

4. How is physical education different from physical literacy?

The Italian students recognized the context in which PE is carried out, the role of PE to build the PL. They also recognized how PL develops from the most varied experiences across the life.

PE is a school subject according to Serbian students that leads to PL. Three of them believe that PL develops outside of PE classes.

Also, Cypriot students considered PE as more of a school subject focusing on the practical implementation of PA. On the other hand, PL was described as an overarching concept that goes beyond just practical PA. Interviewees also highlighted the point that PE can be a means to cultivate PL. It was also suggested that PL takes a more holistic approach to child development compared to PE.

All Czech PE students answered almost unanimously in such a way that physical education is associated with school, school teaching, with certain rules and, for example, determined by the educational program of the given country. In contrast, physical literacy does not begin with school attendance or end, which means that in the home environment, under the influence of parents or in other social groups, a person still develops his physical literacy and, of course, develops it on his own without influencer/s.

SUMMARY: Italian students acknowledged the role of PE in building PL and recognized how PL develops from various experiences throughout life. Serbian students viewed PE as a school subject that contributes to PL, although a few believed that PL also develops outside of PE classes. Cypriot students perceived PE as primarily focused on practical PA, while PL was seen as a broader concept encompassing holistic child development. They emphasized that PE could serve as a means to cultivate PL. Czech

PE students associated PE with school and structured teaching, while they viewed PL as a continuous process that extends beyond the school environment, encompassing personal development influenced by factors such as family and social groups.

5. Why is it important for physical education teachers to focus on supporting children on their physical literacy journeys?

Italian students think that PL allows students to have awareness and be active all their lives, considering the wholeness of the individual. The teachers' task is to accompany children as they grow and develop their skills, abilities, but also to develop logical and critical thinking on any subject, including physical activity and the pleasure and health that comes from it. The teachers could directly (as example themselves) or indirectly (creating an inspiring) stimulate PL.

Serbian students think that a teacher is a key motivator for a school-age child, and it is very important to motivate him to move and exercise.

Some of the Cypriot PE students mentioned the crucial role teachers and schools play in forming habits and providing education related to PA. Some responses highlighted how PE and PL not only promote physical health but also impact mental, spiritual, and environmental well-being. Another emerging theme is the role of PE in fostering self-confidence and motivation for PA.

In question number 5, Czech respondents expressed themselves in the most detailed way, because it is "their" topic, most of them want to become physical education teachers in the future. They can see the role of the teacher and his or her influence on the pupil as a crucial role, both from a positive and negative point of view, which means that the teacher can greatly help the pupil on his way to physical literacy, but on the other hand he can also hurt him. They mentioned the role of the teacher in shaping physical activity habits, the need to motivate them and make them feel confident about what they are doing in sport exercises, and they supported the thought that PE teacher should be important for gaining PL as a lifelong activity.

SUMMARY: Italian students believe that PL promotes lifelong awareness and activity, emphasizing the role of teachers in guiding students' growth and development of skills, logical thinking, and enjoyment of PA. Serbian students consider teachers as crucial motivators for school-age children, emphasizing the importance of encouraging movement and exercise. Cypriot PE students recognize the significant role of teachers and schools in shaping habits, providing education on physical activity, and promoting holistic well-being. Czech respondents, particularly aspiring PE teachers, express a detailed understanding of the teacher's influence on students' PL journey, emphasizing the teacher's role in shaping habits, motivation, confidence, and the importance of PE for lifelong activity.

6. Do you understand physical literacy enough for it to underpin your work in physical education? If yes, can you explain how? If not, why not?

The Italian students' PL knowledge was fragmented. They perceived themselves as physically literate individuals, their PL journey made them example for the pupils.

Serbian interviewees seemed to agree that they need more knowledge about PL to adequately implement it in their PE work. Most of the interviewees recognized the importance of PL but felt they lack the necessary understanding to fully implement it into their teaching methodologies.

Cypriot interviewees seemed to agree that they need more knowledge about PL to adequately implement it in their PE work. Most of the interviewees recognized the importance of PL but felt they lack the necessary understanding to fully implement it into their teaching methodologies. Some students emphasized the importance of introducing elements of PL at young ages. Finally, one student asserted the importance of PL, especially for children's overall growth, health, and future career.

Eight Czech PE student expressed their belief that they were able to support children in building lifelong physical literacy. This was mainly because these students already work with children as trainers, have training, have certificates and apparently enough practice. The remaining 13 students pointed to their own incomplete education and lack of experience, for this reason they had the impression that they did not understand the concept of physical literacy so completely, which they consider to be a very broad concept.

SUMMARY: Italian students had fragmented knowledge of PL but perceived themselves as physically literate individuals, serving as examples for their pupils. Serbian and Cypriot interviewees recognized the importance of PL but expressed a need for more knowledge to effectively implement it in their PE work. Some Cypriot students emphasized the importance of introducing PL at a young age. In contrast, eight Czech PE students felt confident in supporting lifelong PL due to their experience and training, while the remaining students acknowledged their incomplete education and lack of experience, leading to a limited understanding of the broad concept of PL.

7. What are your memories of your pre-service program related to physical literacy (both in and outside of the actual program)?

Italian students reported a heterogeneity of experiences and situation. They reported the school context as not conducive to the development of free motor experience, the lessons were reported to be repetitive and with limited motor experiences. In addition, the general teachers seemed to be not prepared and frightened by the PE context. There was no shortage of positive experiences (different context and different motor skills) that indirectly aid the construction of PL, but they seem to have been linked to the initiatives of individuals rather than the school organisation.

Serbian students think that very little deal with the concept of PL as such during our studies, but from what is available to them, they think that still understand it enough to use it in class even if they were not working yet.

Cypriot students shared mixed responses from not having any relationship with PL, to having come across the concept of PL in their lives but did not know the term for it until the concept of PL was only introduced during their university studies. Varied experiences with PL seemed to have a significant influence on their understanding and approach towards the concept in their professional lives based on their current understanding of the term PL.

Question number 7 was answered by most Czech respondents that their physical literacy was certainly developed in the pre-service program, they perceived it positively, especially from

the mention of participation in practical courses. Students also mentioned 4 basic subjects that are at their home faculty covered by the concept (and title) “physical literacy”, basically the ground of gymnastics, athletics, games, and swimming. Only 2 students replied that they did not think their physical literacy was developed and 1 student answered that he doesn’t know as he is not sure what physical literacy is so he cannot give comments on it.

SUMMARY: *Italian students reported a heterogeneous range of experiences, noting that the school context was not conducive to the development of free motor experiences and that general teachers lacked preparation and were apprehensive about PE. Positive experiences, albeit initiated by individuals rather than the school, indirectly contributed to the construction of PL. Serbian students felt they had limited exposure to the concept of PL during their studies but believed they understood it enough to apply it in the classroom. Cypriot students had mixed experiences with PL, ranging from no prior relationship to encountering the concept during university studies. Czech respondents generally felt that their PL was developed through their pre-service program, particularly in practical courses, while a few were unsure or unaware of the concept.*

8. Do you think that by focusing on physical literacy within PE, we might influence children to be physically active in the future?

Italian students think exploring various PA contexts facilitates pupils in building their PL journey and their needs related to movement (social, emotional, ...).

All Serbian respondents agreed that by focusing on PL within PE, we could positively influence children to be more physically active in the future.

The Cypriot respondents uniformly agree that early exposure to and understanding of PL has a lasting influence on an individual's level of PA throughout life. Moreover, it is noted that PL encompasses a variety of PA, not just traditional sports. This diversity allows individuals to choose activities that align with their personal interests and abilities. Overall, the focus group data suggests that enhancing PL within PE could have profound and multifaceted effects on children's future PA levels and overall wellbeing.

In this question, all Czech PE students answered that they certainly did, because otherwise the choice of their future profession (since they will be PE teachers or coaches) would not actually make sense, still 1 respondent expressed a slight doubt that as a PE teacher he would be able to overcome, for example, the negative influence of the family or the environment around the child. Respondents also gave examples from their own past, when they were positively influenced by physical education teachers or coaches, and basically led them to study physical education or to study coaching. Some also recalled that in difficult periods of a child, such as puberty, sometimes parents would go to the child's coach for advice on how to work with him, knowing that the coach's educational approach was more valid now.

SUMMARY: *Italian students believe that exploring various PA contexts helps students in their journey of building PL and addresses their needs related to movement, including social and emotional aspects. Serbian respondents unanimously agree that focusing on PL in PE can positively impact children's future PA levels. Cypriot respondents agree that early exposure and understanding of PL have a lasting*

influence on individuals' lifelong PA levels, emphasizing that PL encompasses a wide range of activities beyond traditional sports. The focus group data suggests that enhancing PL within PE can have significant and multifaceted effects on children's future PA levels and overall well-being. All Czech PE students express confidence in developing PL as future PE teachers or coaches, citing positive influences from their own PE teachers and coaches, and recognizing the potential role of educators in overcoming external negative influences on children's PL.

9. As a teacher/future teacher, what do you need to consider as essential, within your lessons, if you are aiming to support your children on their physical literacy journeys?

The Italian students mentioned the importance of proposing activities that are varied, and of free exploration for the pupils. They underlined the importance of tools (e.g., balls) and the environment. Another key aspect was the amount of time allocated to PE, the PL journey at school needs to use the different moments of the school day as educational spaces for movement. Further to promote PL it is fundamental to involve the parents repeated in the educational process, sharing with the families the targets, the knowledge, the approaches, an educational pact.

Most of the Serbian students (n=16) think that it is motivation and variety of content, while 2 of them think that it is versatility and fun. Also 2 believe that it is an individual approach to each student.

Cypriot students highlighted practical implementation (various games or exercises, PA both inside and outside school, fun activities, etc.), understanding the importance of PL (rationale behind PA), behavioral aspect (being physical active themselves), adaptability (be adaptive in PE lesson plan), role of other stakeholders (PL cultivating also at home and with friends), and lifelong PA (responsibility for engagement of PA).

In this question, all respondents answered identically and in the first place named motivation and joy from movement, the need to give children a wide range of possible movements, possible physical activities, alternating them so that the children enjoy teaching, so that they are not disgusted by the teaching of physical education and that they are not judged for their current performance, but rather for the effort and progress they make.

In other comments, they named the need for entertainment in physical education classes so that there is a positive emotional experience for children, so that teachers are not afraid to praise the child, but also to be taught to obey the teacher's commands so that he is able to ensure safety in physical education classes.

SUMMARY: Italian students emphasized the importance of proposing varied and exploratory activities, utilizing tools and the environment. They also highlighted the need for sufficient time allocated to PE and the involvement of parents in the educational process. Serbian students mentioned motivation, variety of content, versatility, and individualized approaches as key factors in promoting PL. Cypriot students emphasized practical implementation, understanding the importance of PL, behavioural aspects, adaptability, involvement of other stakeholders, and the promotion of lifelong PA. In Czech respondents' answers, motivation and joy from movement were identified as crucial, along with providing a wide range of movements

and activities, promoting positive emotional experiences, and ensuring safety in PE classes through obedience to teacher commands.

10. Have you developed/designed any programmes and implemented them, to promote physical literacy?

Directly, none of Italian student developed PL programs. But they reported to stimulate pupils' PL multiplying their movement experiences (and skills), promoting the socialization and respect.

Two Serbian students said that they did this a little during their teaching practice. The others did not have the opportunity to design and create programs for the development and promotion of PL.

Several Cypriot students indicated that they had not yet had the opportunity to implement such programs but expressed an intention to do so. Some students mentioned their own initiatives where they partly promoted PL from different point of view (contribution to better physical and mental health, asking question and encouraging critical thinking, encouraging self and peer evaluation and promotion self-esteem and motivation etc.).

Most Czech PE students replied that they had not proposed anything like this and had not had the opportunity to do so yet, and two that they would not even have the ambition to try something like this in their experience. Eight other students said they tried to create a program within the university, one as part of a project, or one as a bachelor's thesis. Others created projects while participating in summer camps with children and 3 interviewees created programs as part of their coaching practice.

SUMMARY: Italian students did not directly develop PL programs but focused on multiplying movement experiences, promoting socialization, and fostering respect to stimulate students' PL. In Serbia, only two students had the opportunity to create PL programs during their teaching practice, while the others lacked the opportunity. Cypriot students expressed an intention to implement PL programs in the future, with some already initiating initiatives to promote better physical and mental health, critical thinking, self-evaluation, and self-esteem. Most Czech PE students had not yet proposed PL programs, although eight of them attempted to create programs within the university or through projects and coaching practice.

11. If you would like to focus on physical literacy in your teaching, what resources or support do you need to effectively develop physical literacy of your students (e.g., lesson plans, activities, workshops, assessment tools, online resources, video demonstrations, etc.)?

Example of lessons/activities and experiences of PL interventions were largely asked by Italian students. Video demonstrations could guide also to understands the needs and ability of pupils in each phase of the life. Laboratories could be very useful but required a significant amount of time that teachers less motivated in PE did not follow.

Most of the Serbian students said that it was video tutorials, books (n=12), some added that it was lessons within the study (n=5), while some (n=3) said that it was online materials.

Cypriot students provided diverse responses regarding what resources or support they need – like age-appropriate resources, group activities, incorporation of PL into broader lesson plans, practical and visual learning aids, and teacher training.

Again, all respondents replied that they would like to use some support material, two of the respondents voted for the book to study, seven of the voters would like to use the workshop or conference and seven would welcome a support video and only one respondent said that he would not use any of the support materials offered. To supplement it: one of the respondents answered that children nowadays are used to using videos and modern teaching resources in other subjects, so physical PE should not be an exception. And one participant warned that in this case form should not prevail over content.

SUMMARY: Italian students expressed a strong interest in examples of lessons and activities for PL interventions. They suggested video demonstrations and laboratories as useful resources, although the latter required significant time commitment from less motivated PE teachers. Serbian students relied on video tutorials, books, and online materials for PL support, while Cypriot students expressed diverse needs, including age-appropriate resources, group activities, and teacher training. Czech respondents also preferred support materials such as books, workshops, and videos, emphasizing the importance of content over form in teaching PE.

12. Is physical literacy is clearly articulated within your physical education curriculum?

PL was not clearly articulated in the Italian PE curricula and in general it did not seem to be the objective of PE. During their university curriculum, PL was clearly expressed.

All twenty Serbian students believe that PL is also articulated in the new PE curriculum

Most Cypriot students noted the lack of clear articulation of the concept in the national PE curriculum, suggesting that it is often up to the individual teachers to interpret and incorporate PL into their teaching. There exists variability of PL presentation depending on the type of school or the PE teacher's approach and there is gap in age and maturity regarding the introduction and understanding of PL concept.

One participant does not know and does not know what the content of the curriculum is accurate, he has not met them yet, he has not yet held them in his hands, another 8 respondents said that they do not know, but assume that PL is somehow articulated in curriculum, the twelve remaining answers think that yes, because they had a subject at school „Physical literacy“ 1 to 4, but the content of this subject was, for example, swimming (practical lesson) and actually only in subjects as Didactics and Pedagogy did they find out what the content of the phrase physical literacy is. Because courses with this name are accredited at the university, they suppose PL is also part of national curricula.

SUMMARY: Italian PE curricula lacked clear articulation of PL as an objective, but it was expressed more clearly in university curricula. Serbian students unanimously believed that PL is articulated in the new PE curriculum. In Cyprus, there was a lack of clear articulation of PL in the national curriculum, leading to variability in its presentation depending on individual teachers and schools. Some Czech students were unsure about the content of the curriculum but assumed that PL was included based on the existence of accredited university courses.

13. Do your school's policies and/or practices contribute to promoting physical literacy opportunities for students? If yes, how do they contribute?

The Italian schools organizing sports or other events (also out of PE courses) indirectly stimulate pupils' PL, allowing to make different PA experiences. These initiatives were not systematic, and each institute was responsible for promoting PA or PL.

Serbian students mostly said that the school policy promotes mainly through competitions in the field of sports and sports events.

Cypriot PE student mentioned the lack of focus on PL in school settings and that PE in their schools was largely unstructured with an emphasis on playing games rather than teaching or promoting PL. There was greater support among students who were already showing their interest in PE or were doing some sport in their leisure time. They mentioned an imbalance in promotion of PL regarding the student's interest and the type of school where private schools provided a richer repertoire of PA. There was also mentioned the significant role of external coaches in promoting PL.

All Czech respondents again agreed that school and its policy contributes to development of physical literacy. Others named the most often that this is done through competitions, sports courses, other four interviewees named only the general term „events”, and one also mentioned the appropriate policy of the city where the university is located. Furthermore, one respondent said that he is also motivated by professionals who work at the university and is inspired by their approach to life, to their health, to physical activities, etc.

SUMMARY: Italian schools indirectly stimulate pupils' PL through sports and other events, although these initiatives are not systematic and vary between institutions. Serbian students mentioned that school policy primarily promotes PL through sports competitions and events. Cypriot PE students expressed a lack of focus on PL in school settings, with an emphasis on unstructured games rather than teaching or promoting PL. Students who already had an interest in PE or engaged in sports outside of school showed greater support for PL. The Czech respondents agreed that the school and its policy contribute to the development of PL, with mentions of competitions, sports courses, events, and the influence of professionals at the university.

14. Are you aware of any documents from national/international organizations related to physical literacy? If yes, how did you become aware of them (e.g., email/newsletter, school staff meeting, online/web surfing, social media/networks, professional development workshops, conferences/seminars, etc.)?

In general, Italian students did not know organization or documents related specifically to PL; some of them had remembered the of Canadian PL organization from university lessons.

All Serbian students said that the only document they were familiar with was the Education Development Strategy of the Republic of Serbia 2020-2030.

Five key themes emerged in Cypriot students, each reflecting distinct sources of information or experience – from unfamiliarity of lack of exposure, university education as a source of

information (from the expert who is involved in this project), online platforms and media, organizational documents (WHO, national curriculum), and experiential learning (through experiences with other teams during games).

To the last question, seven Czech respondents replied that they were not aware of any documents. Two interviewees assumed that the documents are international but not national. Six respondents said that they think it is part of the national curriculum. Another three said that it is part of the school curriculum and one respondent stated that it is part of the White Paper on Sport. One PE student also stated that it is part of the National Report on Physical Activity, which was published in the Czech Republic.

SUMMARY: Italian students had limited knowledge of specific organizational documents related to PL, with some recalling information from their university lessons about Canadian PL organization. Serbian students were familiar with the Education Development Strategy of the Republic of Serbia 2020-2030 as the only relevant document. Cypriot students mentioned various sources of information or experience, including university education, online platforms and media, organizational documents such as those from the World Health Organization and the national curriculum, and experiential learning. Among Czech respondents, there was a range of opinions, with some unaware of any documents, while others speculated about international or national curriculum inclusion, and mentioned documents such as the White Paper on Sport and the National Report on Physical Activity in the Czech Republic.

Summary from pre-service PE teachers (students) focus groups

Different groups of students from Italy, Serbia, Cyprus, and the Czech Republic shared their perspectives on PL and its relationship to PE. Italian students focused on physical abilities and lifelong physical activity, with limited consideration for psychological aspects. Serbian students emphasized basic movement skills and sports, while Cypriot students saw PL as a multifaceted concept involving various learning domains and lifelong engagement. Czech PE students associated PL with practical implementation, basic movement skills, and the social impact of physical activity. The students' understanding of philosophical concepts related to PL varied across the groups. Italian students acknowledged the role of PE in building PL, while Serbian and Cypriot students recognized the significant role of teachers and schools in shaping habits and promoting holistic well-being. Czech students recognized the influence of teachers but also felt the need for further knowledge and training to effectively implement PL in their work.

Regarding students' experiences and perspectives on PL and its implementation in PE, Italian students highlighted the need for diverse and exploratory activities, sufficient time for PE, and involvement of parents. Serbian students emphasized motivation, variety, and individualized approaches in promoting PL, while Cypriot students focused on practical implementation, stakeholder involvement, and lifelong physical activity. Czech students highlighted motivation, joy, and safety in PE classes. Although not all students had the opportunity to create PL programs, there was a general intention among Cypriot and Czech students to implement them in the future. Italian students expressed a strong interest in examples of PL interventions, while Serbian, Cypriot, and Czech students sought various support materials such as video tutorials, books, workshops, and videos. Overall, the students emphasized the importance of promoting PL through diverse activities, stakeholder involvement, and access to appropriate resources.

Different perspectives on the articulation of PL in PE curricula were shared. Italian curricula lacked explicit mention of PL, but it was addressed in university curricula. Serbian students unanimously believed that PL was clearly articulated in the new PE curriculum. In Cyprus, the national curriculum lacked clear articulation of PL, resulting in variability across teachers and schools. Some Czech students were uncertain about the curriculum content but assumed PL was included due to accredited university courses. Italian schools indirectly stimulated PL through sports and events, while Serbian schools emphasized PL through competitions and events. Cypriot PE students felt a lack of focus on PL in school settings, with an emphasis on unstructured games. Czech students recognized the contribution of the school and its policies to PL development. Italian students had limited knowledge of organizational documents, while Serbian students were familiar with the Education Development Strategy. Cypriot students drew information from various sources, and Czech students had a range of opinions regarding relevant documents.

Proposed teaching and learning pedagogical framework for Physical Literacy

Based on desk and field research, the proposed teaching and learning pedagogical framework for physical literacy is shared below.

ePhyLi Physical Literacy Modules

The ePhyLi project aims to promote awareness and activity in health-enhancing physical activity (HEPA) environments and the adoption of a healthy lifestyle. This will be achieved by (i) increasing the knowledge and understanding about the notion of Physical Literacy (PL) of university students, who study Physical Education (PE), Sport Pedagogies, Sport and Exercise Science, Primary school teaching, and related fields and intend to become PE teachers and/or generalists primary school teachers teaching PE, (ii) properly preparing them for further promoting Physical Literacy to their students, as part of their future teaching career. A gamified digital learning approach will be endorsed towards the design and development of an e-book, a serious digital game (mobile app), and an e-platform with interactive learning material, that can be used by Higher Education Institutions (HEI) as part of the future (PE) teachers' preparation. The ePhyLi project will have a long-term impact on future (PE) teachers' teaching and pedagogical practices and therefore the experience of children being taught in the future, with a subsequent impact on the currently sedentary population, as children will start to value and engage in physical activity more regularly. Also, the project will strengthen the competency profiles of HEIs staff when it comes to educating their university students in the field of Physical Education, as well as when it comes to the use of digital tools in Physical Education related courses. Assessment for these modules will be developed and linked to Gamification. A final summative assessment will also be developed.

Module	Main Focus - Objective	Assessment Task – linked to overall portfolio (Can be modified during planning and development)	Gamification Link	Learning Outcomes (Can be modified during planning and development)	Learning Objectives (Need to think carefully about these so as not to expect too much! 10 hours work – can be modified during planning and development)
Module 1 – Introduction to the concept of physical literacy	Introduction to Physical Literacy and how it links to PE – overview of the concept relative to the environment and situation e.g., teaching, coaching etc.	Create a reflection of your personal physical literacy journey – including who and what have been significant influences.		<ol style="list-style-type: none"> 1. Appreciation of physical literacy related to PE. 2. Consideration of why do we need a different approach to teaching PE? (Wellbeing, inclusion, everyone flourishing, development of the whole person, life skills, personal skills etc.) 3. Consideration of what is currently working or not working and why, relative to country and culture. 4. Consideration of what are the key issues. 5. Reflection on our personal PL Journey key influences and 	<p>Knowledge:</p> <ul style="list-style-type: none"> • Understand the concept and components of physical literacy and its importance in physical education (PE). • Understanding the reasons for needing a different approach to teaching PE including aspects of wellbeing, inclusion, holistic development, life skills, and personal skills. • Recognize the current state of PE teaching and identify what is working and what is not. • Identify the key issues in PE teaching and learning relative to physical literacy. <p>Skills</p> <ul style="list-style-type: none"> • Analyse the relationship between physical literacy and PE. • Critically appraise existing methods of teaching PE and propose improvements based on physical literacy principles. • Reflect upon and evaluate personal experiences with physical education and physical literacy, both positive and negative.

				<p>times when desire to be engaged were not as positive/were positive.</p> <p>6. Appreciation of philosophical underpinning.</p>	<ul style="list-style-type: none"> Develop communication skills to articulate personal physical literacy journey and its influences. <p>Competences</p> <ul style="list-style-type: none"> Apply understanding of physical literacy to propose modifications in PE teaching approaches. Develop a critical thinking approach to evaluate existing PE methods and devise solutions. Advocate for the implementation of physical literacy principles in PE teaching.
<p>Module 2</p> <p>The Early Years</p>	<p>Reflection on current early years practice of providing physical activity experiences (parent, child carer, community worker).</p>	<p>Explanation of an early years positive and negative physical activity experience based on PL – What makes experiences positive and what makes them negative? Examples from personal experience.</p>		<ol style="list-style-type: none"> Reflection on current and changing practices in early years provision in different countries. Consideration of how early years experiences impact and relate to personal lifelong journeys. Approaches that will promote physical literacy in the early years. 	<p>Knowledge</p> <ul style="list-style-type: none"> Understand current practices in early years provision of physical activity experiences in different countries and how they have changed over time. Recognize the impact of early years experiences on personal physical literacy lifelong journeys. <p>Skills</p> <ul style="list-style-type: none"> Critically reflect on existing practices of early years physical activity provision and suggest improvements or innovations. Connect personal physical literacy lifelong journey to early years experiences and discern their effects on current attitudes and behaviors toward physical activity.

					<p>Competences</p> <ul style="list-style-type: none"> • Critically assess and compare practices in early years provision from an international perspective. • Draw on personal experiences and knowledge to advocate for effective early years physical activity experiences. • Utilize effective communication and reflection skills to articulate the impact of early years experiences on personal physical literacy lifelong journeys.
<p>Module 3 Charting Progress</p>	<p>Exploring progress in relation to PL. How can progress be measured/charted? Key Principles of charting progress. (Ipsative Assessment)</p>	<p>Chart the progress of someone you have worked with (child, pupil etc.) Devise an Authentic Core Task and use it with a group.</p>		<ol style="list-style-type: none"> 1. Consideration of how we know the starting point. 2. Reflection on where we are going. 3. Consideration of how we will know what we have achieved or improved at. 4. Reflection on assessment strategies 	<p>Knowledge</p> <ul style="list-style-type: none"> • Understand the principles of charting progress in relation to physical literacy. • Comprehend different methods of identifying a starting point for physical literacy development. • Learn about different assessment strategies and their applications in measuring improvement or achievement in physical literacy. <p>Skills</p> <ul style="list-style-type: none"> • Analyze different assessment strategies to evaluate their effectiveness for specific contexts.

					<ul style="list-style-type: none"> • Set clear, attainable goals for progress in physical literacy and outline a plan for reaching those goals. • Critically reflect on personal physical literacy journeys, including starting points, goals, and indicators of progress. <p>Competences</p> <ul style="list-style-type: none"> • Apply knowledge of assessment strategies to create a plan for tracking personal or others' progress in physical literacy. • Use critical reflection to regularly evaluate progress toward physical literacy goals and adjust plans as necessary. • Communicate effectively about progress in physical literacy, including identifying starting points, setting goals, and describing achievements or improvements.
Module 4 Positive learning experiences in PE to promote PL – Part 1 (Early School Years)	<p>What and how experiences can be provided within the school, community, family, and sports club environments for children in the early years of school. Key Principles of</p>	<p>Provide an outline experience plan (curriculum). How will you provide positive physical activity experiences appropriate to the needs of individuals in the early years of</p>		<ol style="list-style-type: none"> 1. Consideration of what and how experiences should be provided within PE in the early years of school education. 2. Consideration of what a curriculum plan should look like. 3. Consideration of how experiences in the community 	<p>Knowledge</p> <ul style="list-style-type: none"> • Understand the key principles of providing positive physical activity experiences in various environments (school, community, family, sports clubs) for children in the early school years. • Comprehend the elements of a curriculum plan for promoting physical literacy in early school years.

<p>– 0 – 5 years generally)</p>	<p>providing positive physical activity experiences appropriate to the needs of individuals.</p>	<p>school? Short presentation (by un. Students) explaining how community and family experiences can support physical literacy development.</p>		<p>and family can support PL in young children.</p> <p>4. Consideration of lesson planning linked to overall plans - learning outcomes focused on physical, affective and cognitive domains.</p>	<ul style="list-style-type: none"> • Recognize how community and family experiences can support the development of physical literacy in young children. • Learn strategies for creating lesson plans that focus on physical, affective, and cognitive outcomes. <p>Skills</p> <ul style="list-style-type: none"> • Apply knowledge to design physical activity experiences for children in early school years in a variety of environments. • Develop a draft curriculum plan that promotes physical literacy. • Plan lessons with clear learning outcomes focused on physical, affective, and cognitive development. • Evaluate how different environments (community, family, etc.) can contribute to a child’s physical literacy journey. <p>Competences</p> <ul style="list-style-type: none"> • Critically assess and adapt physical activity experiences for children in the early years of school. • Design comprehensive curriculum plans and lesson plans to promote physical literacy in young children.
--	--	--	--	--	--

					<ul style="list-style-type: none"> • Incorporate community and family experiences in planning for physical literacy development. • Effectively communicate the importance and strategies for promoting physical literacy in the early school years to various stakeholders (e.g., parents, community members, fellow educators).
Module 5 Positive learning experiences in PE to promote PL – Part 2 (Middle School Years - 6 - 13 years generally)	<p>What and how experiences can be provided within the school, community, family, and sports club environments for children in the middle years of school. Key Principles of providing positive physical activity experiences appropriate to the needs of individuals.</p>	<p>Provide an outline experience plan (curriculum). How will you provide positive physical activity experiences appropriate to the needs of individuals in the middle years of school?</p> <p>Learners are asked to present their outline experience plan to peers (e.g., a presentation targeting stakeholders such as parents, peers</p>		<ol style="list-style-type: none"> 1. Consideration of what and how experiences should be provided within PE in the middle years of school education. 2. Consideration of what a curriculum plan should look like. 3. Consideration of how experiences in the community and family can support PL in young children. 4. Consideration of lesson planning linked to overall plans - learning outcomes focused on physical, affective and cognitive. 	<p>Knowledge</p> <ul style="list-style-type: none"> • Understand the key principles of providing positive physical activity experiences in various environments (school, community, family, sports clubs) for children in the middle school years. • Learn about the elements of a curriculum plan for promoting physical literacy in the middle school years. • Recognize how community and family experiences can support the development of physical literacy in children of this age group. • Gain insights into the strategies for creating lesson plans that focus on physical, affective, and cognitive outcomes in the middle school years. <p>Skills</p>

		and future fellow educators ...).			<ul style="list-style-type: none"> • Develop and adapt physical activity experiences for children in the middle school years in a variety of environments. • Create a draft curriculum plan that promotes physical literacy for this specific age group. • Plan lessons with clear learning outcomes focused on the physical, affective, and cognitive development of middle school children. • Assess how different environments (community, family, etc.) can contribute to a child’s physical literacy journey at this age. <p>Competences</p> <ul style="list-style-type: none"> • Critically evaluate physical activity experiences for children in the middle school years. • Design an outline experience plan (curriculum) to promote physical literacy in middle school children. • Integrate community and family experiences in planning for physical literacy development. • Effectively communicate the importance and strategies for promoting physical literacy in the middle school years to various stakeholders (e.g., parents, community members, fellow educators).
--	--	-----------------------------------	--	--	---

<p>Module 6 Positive learning experiences in PE to promote PL – Part 3 (Later School Years – 13 – 18 years - generally)</p>	<p>What and how experiences can be provided within the school, community, family, and sports club environments for children in the later years of school. Key Principles of providing positive physical activity experiences appropriate to the needs of individuals.</p>	<p>Provide an outline experience plan (curriculum). How will you provide positive physical activity experiences appropriate to the needs of individuals in the later years of school?</p>		<ol style="list-style-type: none"> 1. Consideration of what and how experiences should be provided within PE in the later years of school education. 2. Consideration of what a curriculum plan should look like. 3. Consideration of how experiences in the community and family can support PL in young children. 4. Consideration of lesson planning linked to overall plans - learning outcomes focused on physical, affective and cognitive. 	<p>Knowledge</p> <ul style="list-style-type: none"> • Understand the key principles of providing positive physical activity experiences in various environments (school, community, family, sports clubs) for children in the later school years. • Learn about the elements of a curriculum plan for promoting physical literacy in the later school years. • Recognize how community and family experiences can support the development of physical literacy in teenagers. • Understand the strategies for creating lesson plans that focus on physical, affective, and cognitive outcomes in the later school years. <p>Skills</p> <ul style="list-style-type: none"> • Design and adapt physical activity experiences for teenagers in a variety of environments. • Develop a draft curriculum plan that promotes physical literacy for this specific age group. • Create lesson plans with clear learning outcomes focused on the physical, affective, and cognitive development of teenagers.
---	---	---	--	---	--

					<ul style="list-style-type: none"> Evaluate how different environments (community, family, etc.) can contribute to a teenager’s physical literacy journey. <p>Competences</p> <ul style="list-style-type: none"> Implement and critically assess physical activity experiences for teenagers. Design comprehensive curriculum plans and lesson plans to promote physical literacy in teenagers. Integrate community and family experiences in planning for physical literacy development in the later school years. Communicate effectively about the importance and strategies for promoting physical literacy in the later school years to various stakeholders (e.g., parents, community members, fellow educators).
Module 7 Teaching Strategies that promote PL	What Strategies can be used to promote positive holistic learning/development? Key Principles of holistic learning/development.	Select one strategy and consider how you will try and utilise it as part of your practice. Reflect on why you have selected this approach.		<ol style="list-style-type: none"> Consideration of Inclusion, challenge, variety, engagement. Consideration of Teaching Strategies – Mosston’s Spectrum - what is it and how do the strategies impact on the development of PL. 	<p>Knowledge</p> <ul style="list-style-type: none"> Understand the key principles of holistic learning/development and how they contribute to physical literacy. Learn about different teaching strategies that promote positive holistic learning, such as those described in Mosston’s Spectrum.

				<p>3. Possible inclusion of social cognitive theory, self-efficacy, self-determination theory etc.</p>	<ul style="list-style-type: none"> • Understand how inclusion, challenge, variety, and engagement contribute to the promotion of physical literacy. <p>Skills</p> <ul style="list-style-type: none"> • Apply knowledge of teaching strategies from Mosston’s Spectrum to design effective physical education experiences. • Incorporate principles of inclusion, challenge, variety, and engagement into lesson planning and teaching practice. • Critically evaluate different teaching strategies for their effectiveness in promoting physical literacy. <p>Competences</p> <ul style="list-style-type: none"> • Implement and adapt teaching strategies from Mosston’s Spectrum to promote physical literacy in different learning environments. • Design and evaluate physical education experiences that promote inclusion, challenge, variety, and engagement. • Effectively communicate about the importance and application of different teaching strategies in the promotion of physical literacy.
--	--	--	--	--	---

<p>Module 8</p> <p>Teaching Models that promote PL</p>	<p>What Models can be used to promote positive holistic learning/development? Key Principles of holistic learning/development.</p>	<p>Reflect on a Model currently used, how can this be more PL informed? Reflect on the impact.</p>		<ol style="list-style-type: none"> 1. Consideration of different teaching Models and how they can impact on PL. 2. Appreciation of the impact of Sport Education, TGfU, and Cooperative Learning on the development of PL. 	<p>Knowledge</p> <ul style="list-style-type: none"> • Understand different teaching models that promote holistic learning/development and their impacts on physical literacy. • Gain knowledge about Sport Education, TGfU (Teaching Games for Understanding), and Cooperative Learning models and their application in physical literacy development. <p>Skills</p> <ul style="list-style-type: none"> • Apply different teaching models to design physical education experiences that promote physical literacy. • Evaluate the impact of different teaching models on the development of physical literacy. • Design and plan lessons using Sport Education, TGfU, and Cooperative Learning models. <p>Competences</p> <ul style="list-style-type: none"> • Implement and adapt teaching models such as Sport Education, TGfU, and Cooperative Learning to promote physical literacy. • Assess and modify teaching practices using these models based on their effectiveness in promoting physical literacy.
--	--	--	--	--	---

					<ul style="list-style-type: none">• Effectively communicate about the importance and application of these teaching models in the promotion of physical literacy.
--	--	--	--	--	--

References

- AISEP. (2020). AIESEP Position Statement on Physical Education Assessment. Retrieved from: <https://aiesep.org/scientific-meetings/position-statements/>
- Almond, L. (2013) "What is the value of physical literacy and why is physical literacy valuable?" *ICSSPE Bulletin*, 65, 35–41. <https://www.icsspe.org/content/no-65-cd-rom-0>
- Andjelkovic, A., & Andjelkovic, D. (2022). Physical literacy in school and approaches to improvement physical and health education. In *Yearbook of the Faculty of Education in Vranje*, (book XIII). Serbia.
- Annerstedt, C., & Larsson, S. (2010). "I have my own picture of what the demands are: Grading in Swedish PEH - problems of validity, comparability and fairness." *European Physical Education Review*, 16(2), 97–115. <https://doi.org/10.1177/1356336X10381299>
- Armour, K., Quennerstedt, M., Chambers, F., & Makopoulou, K. (2015). What is 'effective' CPD for contemporary physical education teachers? A Deweyan framework. *Sport, Education and Society*, 22, 799–811. <https://doi.org/10.1080/13573322.2015.1083000>
- Arnold, P. J. (1979). *Meaning in movement, sport and physical education*. Heinemann
- Atencio, M., Jess, M., & Dewar, K. (2012). 'It is a case of changing your thought processes, the way you actually teach': Implementing a complex professional learning agenda in Scottish physical education. *Physical Education and Sport Pedagogy*, 17, 127–144. <https://doi.org/10.1080/17408989.2011.565469>
- Bailey, R. (2022). Defining physical literacy: making sense of a promiscuous concept. *Sport in Society*, 25(1), 163-180. <https://doi.org/10.1080/17430437.2020.1777104>
- Barnett, L. M., Mazzoli, E., Bowe, S. J., Lander, N., & Salmon, J. (2022). Reliability and validity of the PL-C Quest, a scale designed to assess children's self-reported physical literacy. *Psychology of Sport and Exercise*, 60, Article 102164. <https://doi.org/https://doi.org/10.1016/j.psychsport.2022.102164>
- Belton, S., Connolly, S., Cameron, P., Goss, H., Murphy, M., Murtagh, E., Kavanagh, J., Corr, M., Ferguson, K., & O'Brien, W. (2022). Are all domains created equal? An exploration of stakeholder views on the concept of physical literacy. *BMC Public Health*, 22, Article 501. <https://doi.org/10.1186/s12889-022-12931-5>
- Beni, S., Fletcher, T., & Ní Chróinín, D. (2017). Meaningful experiences in physical education and youth sport: A review of the literature. *Quest*, 69(3), 291–312. <https://doi.org/10.1080/00336297.2016.1224192>.
- Biggs, J., & Collis, K. (1982). *Evaluating the quality of learning: The SOLO Taxonomy*. Academic Press.
- Bunc., V (2021). Physical literacy – Past and present. *Gramotnost, pregramotnost a vzdělávání*, 5(2), 7–16.
- Casey, A., & Goodyear, V. A. (2015). Can cooperative learning achieve the four learning outcomes of physical education? A review of the literature. *Quest*, 67(1), 56–72. <https://doi.org/10.1080/00336297.2014.984733>.

- Casey, A., & MacPhail, A. (2018) Adopting a models-based approach to teaching physical education. *Physical Education and Sport Pedagogy*, 23(3), 294-310. <https://doi.org/10.1080/17408989.2018.1429588>
- Castelli, D. M., Centeio, E. E., Beighle, A. E., Carson, R. L., & Nicksic, H. M. (2014). Physical literacy and comprehensive school physical activity programs. *Preventive Medicine*, 66, 95-100. <https://doi.org/10.1016/j.ypmed.2014.06.007>
- Castelli, D. M., Barcelona, J. M., & Bryant, L. (2015). Contextualizing physical literacy in the school environment: The challenges. *Journal of Sport and Health Science*, 4(2), 156-163. <https://doi.org/10.1016/j.jshs.2015.04.003>
- Chen, A., & Darst, P. W. (2001). Situational interest in physical education: A function of learning task design. *Research Quarterly for Exercise and Sport*, 72(2), 150-164. <https://doi.org/10.1080/02701367.2001.10608945>
- Christodoulides, E., Sofokleous, G., Tsivitanidou, O., Grecic, D., Kenneth Sinclair, J., & Dana, A. (accepted). Associations between physical literacy and mental health during the COVID-19 post-quarantine era among children in Cyprus: Mediating role of physical activity. *Youth*.
- Christodoulides, E., Tsivitanidou, O., & Hadjimatheou, A. (2022). Physical education in Cyprus: Learning from the past, in the present and for the future. In K. Kleiner & B. Höger (Eds.), *Sports didactics in Europe – History, current trends and future developments* (pp. 333-351). Waxmann.
- Χριστοδουλίδης Ε., & Τσιβιτανίδου, Ο. (2021). Φυσικός γραμματισμός (Physical Literacy): ο ρόλος της εκπαίδευσης, της οικογένειας και της κοινωνίας ευρύτερα. Εθνική Επιτροπή Βιοηθικής Κύπρου. (επιμ.), Εβδομάδα Ευαισθητοποίησης 'Παιδί και Βιοηθική' Επιστημονικές Παρουσιάσεις. (σελ. 197-221).
- Colella, D., & Bonasia, M. (2019). Teaching styles, physical literacy and perceived physical self-efficacy. Results of a learning unit in primary school. *Spor Hekimliđi Dergisi*, 54(1), 001–007. <https://doi.org/10.5152/tjism.2019.145>
- Colella, D., d'Arando, C., & Bellantonio, S. (2020). Physical literacy ed Educazione Fisica durante la pandemia COVID-19. Problemi e prospettive. *Giornale Italiano di Educazione alla Salute, Sport e Didattica Inclusiva*, 4(3), Article 3. <https://doi.org/10.32043/gsd.v4i3.195>
- Culková, D., Schlegel, P., Fialová, D., & Janiš, K. (2021). Factors Affecting Physical Literacy of Preschool Children. *Gramotnost, pregramotnost a vzdělávání*, 5(2), 35–49.
- Deci, E. L., & Ryan, R. M. (2000). The “what” and “why” of goal pursuits: Human needs and the self-determination of behaviour. *Psychological Inquiry*, 11, 227-268.
- Delaney, B., Donnelly, P., News, J., & Haughey, T. J. (2008). *Improving physical literacy*. Sport Northern Ireland.
- Department of Health. (2018). *Sport 2030*. Retrieved from: https://www.sportaus.gov.au/nationalsportplan/home/featured/download/Sport_2030_-_National_Sport_Plan_-_2018.pdf
- Dinana-Thompson, M., & Penney, D. (2015). Assessment literacy in primary physical education. *European Physical Education Review*, 21(4), 485-503.
- Doherty, J., & Brennan, P. (2008). *Physical education and development 3-11: A guide for teachers*. Routledge.

- Doll-Tepper, G. (2005). Foreword. In U. Pühse, & M. Gerber (Eds.), *International comparison of physical education. Concepts – problems – prospects*. Meyer and Meyer Sport.
- Dudley, D. (2018). Physical literacy: When the sum of the parts are greater than the whole. *Journal of Physical Education, Recreation & Dance*, 89(7–8). <https://doi.org/10.1080/07303084.2018.1418998>
- Dudley, D., & Goodyear, V. (2015). “I’m a facilitator of learning!” Understanding what teachers and students do within student-centered physical education models. *Quest*, 67(3), 274-289. <https://doi.org/10.1080/00336297.2015.1051236>
- Dudley, D., Goodyear, V., & Baxter, D. (2016). Quality and health-optimizing physical education: Using assessment at the health and education nexus. *Journal of Teaching in Physical Education*, 35(4), 324 -336. <https://doi.org/10.1123/jtpe.2016-0075>
- Durden-Myers, E. J., Green, N. R., & Whitehead, M. E. (2018). Implications for promoting physical literacy. *Journal of Teaching in Physical Education*, 37(3), 262-271. <https://doi.org/10.1123/jtpe.2018-0131>
- Durden-Myers, E. J., & Keegan, S. (2019). Physical literacy and teacher professional development. *Journal of Physical Education, Recreation and Dance*, 90(5), 30-35. <https://doi.org/10.1080/07303084.2019.1580636>
- Edwards, L., Bryant, A., & Jones, A. (2015). PE teachers’ perceptions of high quality physical education in Welsh medium secondary schools. *Gwerddon*, 20, 44–60.
- Edwards, L. C., Bryant, A. S., Keegan, R. J., Morgan, K., & Jones, A. M. (2017). Definitions, foundations and associations of physical literacy: A systematic review. *Sports Medicine*, 47, 113–126. <https://doi.org/10.1007/s40279-016-0560-7>
- Edwards, L. C., Bryant, A. S., Keegan, R. J., Morgan, K., Morgan, K., Cooper, S. M., & Jones, A. M. (2018) ‘Measuring’ physical literacy and related constructs: A systematic review of empirical findings *Sports Medicine*, 48, 659–682 <https://doi.org/10.1007/s40279-017-0817-9>
- Edwards, L. C., Bryant, A. S., Morgan, K., Keegan, R. J., Cooper, S. M., & Jones, A. M. (2019). A professional development program to enhance primary school teachers’ knowledge and operationalization of physical literacy. *Journal of Teaching in Physical Education*, 38, 126-135. <https://doi.org/10.1123/jtpe.2018-0275>
- Ennis, C. D. (2013) Implications of exergaming for the physical education curriculum in the 21st century. *Journal of Sport and Health Science*, 2(3), 152-7. <https://doi.org/10.1016/j.jshs.2013.02.004>
- Flemons, M., Diffey, F. and Cunliffe, D. (2018) The role of PETE in developing and sustaining physical literacy informed practitioners. *Journal of Teaching in Physical Education*, 37(3), 299-307 <https://doi.org/10.1123/jtpe.2018-0128>
- Gibbs, R. G. (2006). *Embodiment and cognitive science*. Cambridge University Press
- Giblin, S., Collins, D., & Button, C. (2014). Physical literacy: Importance, assessment and future directions. *Sports Medicine (Auckland, N.Z.)*, 44(9), 1177–1184. <https://doi.org/10.1007/s40279-014-0205-7>
- Gleddie, D. L., & Morgan, M. (2021). Physical literacy praxis: A theoretical framework for transformative physical education. *Prospects*, 50, 31–53 <https://doi.org/10.1007/s11125-020-09481-2>

- Gray, S. (2022). A comparative analysis of discourses shaping physical education provision within and across the UK. *European Physical Education Review*, 28(3), 575–593. <https://doi.org/10.1177/1356336X211059440>
- Greco, G., Cataldi, S., & Fischetti, F. (2019). Becoming “physically educated” to improve health and wellbeing: The meanings of “education” and “physical” in physical education. *Giornale Italiano Di Educazione Alla Salute, Sport e Didattica Inclusiva*, 3(4), Article 4. <https://doi.org/10.32043/gsd.v3i4.146>
- Green, K. (2000). Exploring the everyday “philosophies” of physical education teachers from a sociological perspective. *Sport, Education and Society*, 5(2), 109–129.
- Hadjimatheou, A. (2017). *The effectiveness of physical education continuing professional development for primary school teachers in Cyprus*. Doctoral dissertation, University of Birmingham.
- Harmon, R. (2022, October 5). *Sport Ireland and Sport Northern Ireland develop all-island Physical Literacy Consensus Statement*. Retrieved from: <https://council.ie/sport-ireland-and-sport-northern-ireland-develop-all-island-physical-literacy-consensus-statement/>
- Harris, M., Crone, D., Hughes, S., & Bird, W. (2022). Creating a social movement to engage communities in physical activity: A mixed methods study of motivations to engagement. *PLoS ONE*, 17(2), Article e0263414. <https://doi.org/10.1371/journal.pone.0263414>
- Harris, J. (2020). *AfPE 2020 Health Position Paper*. Retrieved from: <https://www.afpe.org.uk/physical-education/wp-content/uploads/Health-Position-Paper-2020-Web.pdf>
- Hastie, P., & Wallhead, T. L. (2015). Operationalizing physical literacy through sport education. *Journal of Sport and Health Science*, 4(3), 132–138. <https://doi.org/10.1016/j.jshs.2015.04.001>
- Hattie, J., & Timperley, H. (2007). The power of feedback. *Review of educational research*, 77(1), 81–112. <https://doi.org/10.3102/003465430298487>
- Hattie, J. (2009). *Visible learning: A synthesis of over 800 meta-analyses relating to achievement*. Routledge.
- Hellison, D. (2003). *Teaching responsibility through physical activity* (2nd ed.). Human Kinetics.
- Hunzicker, J. (2011). Effective professional development for teachers: A checklist. *Professional Development in Education*, 37, 177–179. <https://doi.org/10.1080/19415257.2010.523955>
- Hursh, D. (2005). Neo-liberalism, markets and accountability: Transforming education and undermining democracy in the United States and England. *Policy Futures in Education*, 3(1), 3–15. <https://doi.org/10.2304/pfie.2005.3.1.6>
- International Council of Sport Science and Physical Education. (2011). *ICSSPE's International Position Statement on Physical Education*. Author.
- International Physical Literacy Association. (2017). *IPLA*. Retrieved from: <https://www.physical-literacy.org.uk/>
- Invernizzi, P. L., Rigon, M., Signorini, G., Alberti, G., Raiola, G., & Bosio, A. (2021). Aquatic physical literacy: The effectiveness of applied pedagogy on parents' and children's

- perceptions of aquatic motor competence. *International Journal of Environmental Research and Public Health*, 18(20), Article 10847. <https://doi.org/10.3390/ijerph182010847>
- Jones, G. R., Stathokostas, L., Young, B. W., Wister, A. V., Chau, S., Clark, P., Duggan, M., Mitchell, D., & Nordland, P. (2018). Development of a physical literacy model for older adults – a consensus process by the collaborative working group on physical literacy for older Canadians. *BMC Geriatrics*, 18, Article 13. <https://doi.org/10.1186/s12877-017-0687-x>
- Jurbala, P. (2015). What is physical literacy, really? *Quest*, 67(4), 367–383. <https://doi.org/10.1080/00336297.2015.1084341>
- Kawartha Lakes Sport and Recreation Council. (2015). *Canada's physical literacy consensus statement*. https://klsrc.ca/wp-content/uploads/2016/05/Consensus-Handout-EN-WEB_1.pdf
- Keegan, R., Barnett, L. M., & Dudley, D. (2017). Physical literacy: Informing a definition and standard for Australia. Australian Sports Commission.
- Keegan, R. J., Keegan, S. L., Daley, S., Ordway, C., & Edwards, A. (2013). *Getting Australia moving: Establishing a physically literate and active nation (Game Plan)*. University of Canberra. Retrieved from: https://researchsystem.canberra.edu.au/ws/portalfiles/portal/19592578/full_text_final.pdf
- Kirk, D. (2010) *Physical education futures*. Routledge
- Kovac, M., Sloan, S., & Starc, G. (2008). Competencies in physical education teaching: Slovenian teachers' views and future perspectives. *European Physical Education Review*, 14(3), 299-323. <https://doi.org/10.1177/1356336X08095668>
- López-Pastor, V. M., Kirk, D., Lorente-Catalán, E., MacPhail, A., & Macdonald, D. (2013). Alternative assessment in physical education: A review of international literature. *Sport, Education and Society*, 18(1), 57-76. <https://doi.org/10.1080/13573322.2012.713860>
- Lund, J., & Tannehill, D. (2015). *Standards-based physical education curriculum development* (3rd ed.). Jones & Bartlett.
- Lundvall, S. (2015). Physical literacy in the field of physical education - A challenge and a possibility. *Journal of Sport and Health Science*, 4(2), 113-118. <https://doi.org/10.1016/j.jshs.2015.02.001>
- Metzler, M. (2011). *Instructional models for physical education* (3rd ed.). Holcomb Hathway.
- Ministry of Education, Ontario, Canada. (2015). *Health and physical education*. Retrieved from: <https://www.dcp.edu.gov.on.ca/en/curriculum/secondary-hpe>
- Monacis, D., & Colella, D. (2022). Physical literacy: Definition and didactic-methodological approaches. Towards an Italian model? *Giornale Italiano di Educazione alla Salute, Sport e Didattica Inclusiva*, 6(1s), Article 1s. <https://doi.org/10.32043/gsd.v6i1s.476>
- Mosston, M. (1981). *Teaching physical education* (2nd ed.). Merrill.
- Ní Chróinín, D., & Cosgrave, C. (2012). Implementing formative assessment in primary physical education: Teacher perspectives and experiences. *Physical Education in Sport and Pedagogy*, 18(2), 219–33. <https://doi.org/10.1080/17408989.2012.666787>

- Nicolosi, S., Greco, C., Mangione, J., Sgrò, F., & Lipoma, M. (2016). Toward the physical literacy: Pathways of thoughts and searching for the meaning in teaching primary physical education (*Verso la Physical Literacy: Percorsi di riflessione e ricerca di senso nella pratica dell'educazione fisica nella scuola primaria*). *Formazione & Insegnamento*, 14(2), 263-280. Retrieved from: <https://ojs.pensamultimedia.it/index.php/siref/article/view/1847/1771>
- Nicolosi, S., Sgrò, F., & Lipoma, M. (2016). Interdisciplinary physical education teaching: A literature review. (La didattica interdisciplinare in educazione fisica: Una rassegna della letteratura). *Formazione & Insegnamento*, 14(1Suppl.), 35–45. Retrieved from: <https://ojs.pensamultimedia.it/index.php/siref/article/view/1875/1784>
- O'Sullivan, M. C. (2002). Effective follow-up strategies for professional development for primary teachers in Namibia. *Teacher Development*, 6, 181–203. <https://doi.org/10.1080/13664530200200164>
- Parpa, K., Paludo, A. C., Christodoulides, E., Kobus, M., & Michaelides, M. (2023). Physical literacy in female youth: A pilot study examining its association with physical activity, sports participation, and physical fitness. *Youth*, 3(1), 392-400. <https://doi.org/10.3390/youth3010026>
- Pennsylvania State Education Association. (1930). Official bulletin. *Pennsylvania School Journal*, 78, 12.
- Phillips, P. (2008). Professional development as a critical component of continuing teacher quality. *The Australian Journal of Teacher Education*, 33, 37–45. <https://doi.org/10.14221/ajte.2008v33n1.3>
- Pill, S., Penney, D., & Swabey, K. (2012). Rethinking sport teaching in physical education: A case study of research based innovation in teacher education. *Australian Journal of Teacher Education*, 37(8), Article 8. <http://ro.ecu.edu.au/ajte/vol37/iss8/8>
- Renshaw, I., Oldham, A. R., & Bawden, M. (2012). Nonlinear pedagogy underpins intrinsic motivation in sports coaching. *The Open Sports Sciences Journal*, 5(Suppl. 1-M10), 88-99.
- Roberts-Holmes, G., & Bradbury, A. (2016). Governance, accountability and the datafication of early years education in England. *British Educational Research Journal*, 42(4), 600-613. <https://doi.org/10.1002/berj.3221>
- SHAPE America. (2013a). *Grade-level outcomes for K-12 physical education*. Author.
- SHAPE America. (2013b). *National Standards and Grade-Level Outcomes for K-12 Physical Education*. Human Kinetics.
- Shearer, C., Goss, H.R., Edwards, L. C., Keegan, R. J., Knowles, Z. R., Boddy, L. M., & Fowweather, L. (2018). How is physical literacy defined? A contemporary update. *Journal of Teaching in Physical Education*, 37, 237–245. <https://doi.org/10.1123/jtpe.2018-0136>
- Sheehan, D., & Katz L. (2010). Using interactive fitness and exergames to develop physical literacy. *Physical & Health Educational Journal*, 76(1), 12-19.
- Society of Health and Physical Educators. (n.d.). *Physical literacy*. Retrieved from: <https://www.shapeamerica.org/events/physicalliteracy.aspx>
- Sparkes, A. C. (1991). Curriculum change: On gaining a sense of perspective. In N. Armstrong & A. Sparkes (Eds.), *Issues in physical education* (pp. 1-19). Cassell Education.

- Spengler, J. O., & Cohen, J. (2015). *Physical literacy: A global environmental scan*. The Aspen Institute.
- Sport England. (2019). Active lives children and young people survey: Attitudes towards sport and physical activity (Academic year 2017/18). Retrieved from: <https://sportengland-production-files.s3.eu-west-2.amazonaws.com/s3fs-public/active-lives-children-survey-2017-18-attitudes-report.pdf?VersionId=rdOnW8j.55mOjQkMAHfYLpi9D2ZLiHR>
- Stabback, P. (2016, March). *What makes a quality curriculum? In-progress reflection No. 2 on "Current and Critical Issues in Curriculum and Learning"*. UNESCO – International Bureau of Education. Retrieved from: <https://unesdoc.unesco.org/ark:/48223/pf0000243975>
- Strommer, S., Shaw, S., Jenner, S., Vogel, C., Lawrence, W., Woods-Townsend, K., Farrell, D., Inskip, H., Baird, J., Morrison, L., & Barker, M. (2021). How do we harness adolescent values in designing health behaviour change interventions? A qualitative study. *British Journal of Health Psychology*, 26(4), 1176-1193. <https://doi.org/10.1111/bjhp.12526>
- Sun, H. (2015). Operationalizing physical literacy: The potential of active video games. *Journal of Sport and Health Science*, 4(2), 145-149. <https://doi.org/10.1016/j.jshs.2015.03.006>
- Sun, H., & Gao, Y. (2016). Impact of an active educational video game on children's motivation, science knowledge, and physical activity. *Journal of Sport and Health Science*, 5(2), 239-245. <https://doi.org/10.1016/j.jshs.2014.12.004>
- Sun, H. (2012). Exergaming impact on physical activity and interest in elementary physical education. *Research Quarterly for Exercise and Sport*, 83(2), 212-20.
- Sun, H. (2013). Impact of exergames on physical activity and interest in elementary physical students: A follow up study. *Journal of Sport and Health Science*, 2(3), 138-45. <https://doi.org/10.1016/j.jshs.2013.02.003>
- The Aspen Institute. (2015). *Physical literacy in the United States: A model, strategic plan, and call to action*. Retrieved from: https://www.aspeninstitute.org/wp-content/uploads/files/content/docs/pubs/PhysicalLiteracy_AspenInstitute.pdf
- Tinning, R. (2006). Thinking about good teaching in physical education. In R. Tinning, L. McCuaig, & Hunter, L. (Eds.), *Teaching health and physical education in Australian schools* (pp. 232-239). Pearson Education Australia.
- Tremblay, M., & Lloyd, M. (2010). Physical literacy measurement – The missing piece. *Physical & Health Education Journal*, 76(1), 26.
- Tsangaridou, N. (2017). Early childhood teachers' views about teaching physical education: challenges and recommendations. *Physical Education and Sport Pedagogy*, 22(3), 283-300.
- United Nations Educational, Scientific and Cultural Organization. (2017). *Quality Physical Education*. UNESCO Publishing. Paris, France, Available at: <https://unesdoc.unesco.org/ark:/48223/pf0000231101>.
- Van den Berghe, L., Vansteenkiste, M., Cardon, G., Kirk, D., & Haerens, L. (2014). Research on self-determination in physical education: Key findings and proposals for future research. *Physical Education & Sport Pedagogy*, 19(1), 97–121. <https://doi.org/10.1080/17408989.2012.732563>.

- Vašíčková, J. (2016). *Physical literacy in the Czech Republic*. Univerzita Palackého v Olomouci. <https://books.google.cz/books?id=MDpZDgAAQBAJ>
- Vašíčková, J., Poláková, M., & Čapková, M., (2021). Physical literacy in the environment of Czech education. *Gramotnost, pregramotnost a vzdělávání*, 5(2), 17–33. Retrieved from: https://pages.pedf.cuni.cz/gramotnost/files/2021/11/Gramotnost_02_2021_Vasickova.pdf
- Visnjic, D. (2016). *What is physical literacy and why is it important?* Retrieved from: <https://www.eci-pec.me/blog/sto-je-fizicka-pismenost-i-zbog-cega-je-vazna>;
- Vlček, P. (2019). *A critical analysis of the physical education curriculum in the Czech Republic*. Logos.
- Vlček, P. (2021). Reviewing the concept of physical education in the Czech Republic – Orientation towards physical literacy. *Gramotnost, pregramotnost a vzdělávání*, 5(2), 51–66. Retrieved from: https://pages.pedf.cuni.cz/gramotnost/files/2021/11/Gramotnost_02_2021_Vlcek.pdf
- Whitehead, M. (2010). *Physical literacy: Throughout the lifecourse*. Routledge.
- Whitehead, M. (2019). *Physical literacy across the world*. Routledge.
- WHO [World Health Organization] (2018). *Global action plan on physical activity 2018–2030: More active people for a healthier world—At-a-glance*. Geneva: WHO. <https://www.who.int/ncds/prevention/physical-activity/global-action-plan-2018-2030/en/>.
- Ydo, Y. (2021) Physical literacy on the global agenda. *Prospects*, 50, 1-3. <https://doi.org/10.1007/s11125-020-09524-8>
- Young, L., Alfrey, L., & O'Connor, J. (2019). Physical literacy: A concept analysis. *Sport, Education and Society*, 25(8), 945-959. <https://doi.org/10.1080/13573322.2019.1677586>
- Young, L., Alfrey, L., & O'Connor, J. (2022). Moving from physical literacy to co-existing physical literacies: What is the problem? *European Physical Education Review*, 29(1), 55-73. <https://doi.org/10.1177/1356336X221112867>

