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Promoting Physical Literacy in Irish Adolescent Youth: The Youth-Physical Activity Towards Health (Y-PATH) Intervention

Abstract

In their most contemporary model, strategic plan and call to action, the Aspen Institute have encouraged a cross-sector embrace towards the concept of 'physical literacy', specifically defined as the 'ability, confidence, and desire to be physically active for life.' This proposed physical literacy definition is a welcome addition to policy and practice for health, considering the unprecedented prevalence in recent years of topical areas such as physical inactivity, movement inefficiency and unhealthy weight gain during childhood. Aligned with the United States primary objective of creating conditions for all youth to be physically literate by the middle schools years, the inception of the Youth-Physical Activity Towards Health (Y-PATH) programme in Ireland is of particular consideration.

The Y-PATH school-based physical education (PE) intervention for adolescent youth was developed in 2011, as guided by the contextual Irish need for physical activity (PA) promotion and the subsequent wealth of literature surrounding this thematic field. In this evidence-based study, the reader will be introduced to the guiding principles of the intervention, specifically the educational focus of promoting physical literacy for adolescent youth.

The Y-PATH intervention consists of a multi-component whole-school approach to PA promotion in second level education. In terms of originality, the PE component of the intervention addresses psychosocial, health related activity (HRA) and fundamental movement skills (FMS) as particular strategies for increasing adolescent PA participation. All of the intervention components are grounded within a cost-efficient and feasible approach to overall physical literacy promotion.

Keywords: Physical literacy; Physical activity; Physical education; Fundamental movement skills; Health related activity; Adolescent; Intervention

Abbreviations: FMS: Fundamental Movement Skills; HRA: Health Related Activity; MRC: Medical Research Council; PA: Physical Activity; PE: Physical Education; PEAI: Physical Education Association of Ireland; QPE: Quality Physical Education; UNESCO: United Nations Educational, Scientific and Cultural Organization; YPAP: Youth Physical Activity Promotion

Introduction

In 2007, Margaret Whitehead outlined that the sporadic term of "physical literacy" was gaining momentum, specifically in relation to physical education (PE) practice in the United Kingdom [1]. Most recently, in 2014, the Physical Education Association of Ireland (PEAI) launched their annual conference with the major focus towards "physical literacy" and the importance of building a "movement culture" during childhood [2]. In the global context, physical literacy across the lifespan is now becoming a critical field of focus in physical activity (PA), exercise, sport settings and other public health sectors [3,4].

Previous research, by Whitehead, contextualised physical literacy as a multifaceted conceptualisation of the skills required to fully realise physical activity potential through the embodied experience [5]. In a more recent classification, Whitehead defined

physical literacy as having the motivation, confidence, physical competence, knowledge and understanding that underpin someone's values and responsibilities for life-long purposeful physical pursuits [6]. An important component of lifelong physical literacy development is the acquisition of fundamental movement skills (FMS) [7].

In most recent years, the implementation of FMS programmes in sport, exercise and school-based environments has received considerable evidence-based attention [8-12]. FMS as aligned with physical literacy, can be defined as basic observable patterns of behaviour and movement present from childhood to adulthood [13,14]. The skills include, for example, running, hopping, skipping (locomotor), balancing, twisting, dodging (stability), and throwing, catching and kicking (object control). Individuals at the fundamental movement stage are preparing for the acquisition of more advanced skills within the sport specific stage [13,14]. Whilst FMS are often considered the initial building blocks of more complex movements [14], their specific mastery are a prerequisite for everyday movements, and participation in sports and PA [15,16].

While physical literacy, as a concept, is the "new kid on the

Case Report

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block" [17], it is reasonable to state that both PA and physical fitness in childhood have been extensively researched over the past number of years [18-23]. Undeniably, there is now a plethora of strong research evidence demonstrating that the physical fitness and health status of youth are substantially enhanced by regular PA participation [24-26]. Lifestyle changes to people in industrialised countries over the past few years, has resulted in the decline of people engaging within physically active behaviours [27]. A growing body of literature is now showing that the prevalence of chronic disease risk factors are increasing during adolescence [28,29], and that levels of PA decline dramatically during adolescence [30,31]. Therefore, it is a valuable contribution to the literature that Tremblay & Llyod's concept of physical literacy for youth specifies the importance of integrating assessment for FMS, PA and physical fitness [17]. Yet, it must be recognised that knowledge of health is a critical component for skill development, PA participation and physical fitness; it is the foundation of characteristics, attributes, behaviours, awareness, and understanding related to healthy active living [17].

Previous work by Alexander on the alteration of an individual's knowledge base describes learning as a relatively permanent change in the way a person thinks and processes information [32]. In light of the concept of physical literacy, it is interesting that research by Ennis suggests that participants can learn the kinaesthetic principles of fitness-related sciences within an educational fitness curriculum [33]. The importance of knowledge within physical literacy [17] is reinforced by Physical and Health Education Canada, specifically that PE programmes for youth provide the best opportunity to experience a variety of activities in a progressive, sequential format to ensure maximum learning and enjoyment [34]. The "knowledge, skills and understanding" of physical literacy [35] can be acquired constructively through the medium of PE for children and youth [36]. In this particular instance, the provision of a knowledge based PE programme may provide a platform for the development of physically literate and physically active youth [8].

Most recently, the concept of physical literacy across the lifespan has been subject to strategic action planning within the United States [4]. Critical philosophical debate around physical literacy began in the mid-1990s, yet, there is now a global emphasis towards the promotion of physical literacy through the enactment of multi-sectoral approaches [3-5,35], with education firmly positioned as a platform for delivery. The purpose of the present evidence-based study is to highlight that many of the well-established components associated with physical literacy promotion (such as FMS, PA, health related knowledge and awareness, etc...) are currently being delivered in Irish second-level schools for adolescent youth, aged 12 to 15 years old, as part of the longitudinal Y-PATH randomised-controlled trial.

Case Presentation

Synopsis Y-PATH intervention

A systematic review on youth PA intervention effectiveness concluded that for adolescent youth, multi component interventions involving the school, family and community have the potential to make important differences in the increase of

youth PA [37]. More recently, a systematic review summarising the effectiveness of school-based interventions in promoting youth PA and fitness, found that the evidence continues to advocate for the on-going implementation of school-based PA interventions for youth [24]. The Y-PATH programme is fundamentally guided by research informed findings [8,38]. As previously reported in O' Brien et al. [39], there are four essential intervention components within the existing Y-PATH evidence-based study:

Student component: A targeted focus on the integration of HRA and FMS for students within a specifically tailored post-primary PE curriculum (delivered by specialist PE teachers).

Parent/guardian component: A PA promotion (across the lifespan) workshop prior to the beginning of the intervention, and distribution of research informed Y-PATH information leaflets for parents and guardians.

Teacher component: All school teachers attend two workshops (pre and mid intervention) which among other concepts, highlight the importance of "active role modelling", and voluntary participation in a one week "Teacher Pedometer Challenge" to enhance participation and compliance.

Website component: All student, parent and teacher resources are made readily available for all intervention participants (http://www.dcu.ie/shhp/y_path.shtml).

A comprehensive overview and theoretical structure for the Y-PATH programme has been reported elsewhere [8]; (Figure 1) contextualises the component structure of the intervention.

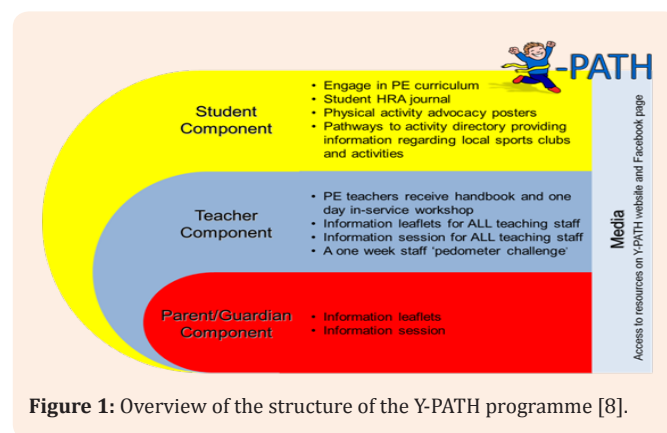


Figure 1: Overview of the structure of the Y-PATH programme [8].

In line with the promotion of physical literacy [5,6,40], it is important to note that the Y-PATH intervention was developed with a strong focus on PE based HRA [41-46] and FMS [47-50], with additional school, teacher and parental components.

Research considerations in the development and extension of the Y-PATH intervention

This Y-PATH intervention was initially based on the Medical Research Council's (MRC) guidance document, 'Developing and Evaluating Complex Interventions' [51], which is shown in Figure 2. Since the inception of this evidence-based study, the Y-PATH programme has progressed from the theory/modelling phase one [8, 38], to the exploratory trial phase two [39] and is

currently, undergoing the definitive randomised-controlled trial of phase three. The four stages, as outlined in the MRC document, for 'Developing and Evaluating Complex Interventions' are: 1) Development, 2) Feasibility, 3) Evaluation, and 4) Implementation.

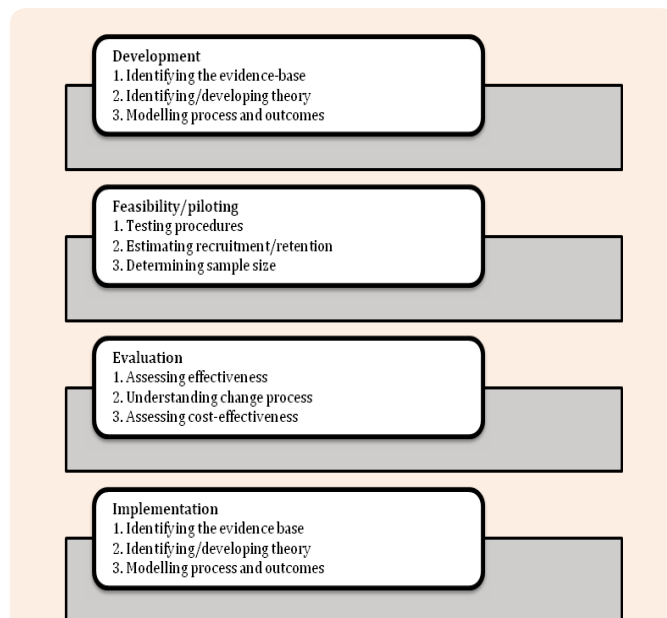


Figure 2: Key elements of the development and evaluation process [51].

Following the MRC's guidelines [51], the Y-PATH research study is continuing to generate and increase the longitudinal evidence-base. The development of the Y-PATH intervention (phase one theory/modelling 2010-2011) was guided by previously reported research findings [8], specifically the low levels of PA participation and FMS proficiency amongst Irish adolescent youth. As part of this theory and modelling phase, the development of the Y-PATH intervention also identified an evidence-base of literature relating to youth PA and FMS promotion during PE classes. The development of this intervention then used the Youth Physical Activity Promotion (YPAP) model as a theoretical framework [52]. The Y-PATH intervention hypothesised that if the research team (Principal Investigators and trained field staff) were successful in positively influencing the enabling, predisposing and reinforcing factors for PA experienced by youth, then a successful adolescent PA intervention would occur. The purpose of using the Y-PATH framework, as part of the theory/modelling phase, was to collect specific data, including levels of PA, FMS, body mass index and psychological influences (including attitudes and self-efficacy), so that a meaningful and relevant intervention could be implemented [8]. Phase two's 'Exploratory Trial' (2011-2012) within the MRC framework evaluated the Y-PATH intervention effectiveness after nine and twelve months respectively. Findings from this quasi-experimental non-randomised controlled trial suggested a positive effect for the Y-PATH intervention in the increase of PA and FMS levels of Irish adolescent youth [39].

The Y-PATH intervention [8], was therefore, shown to be

effective in increasing adolescent PA and FMS levels. As part of the definitive randomised controlled trial (phase three 2013-2014), the Y-PATH research team were looking at the evaluation of the programme's evidence base on a larger population sample (data analysis and results under review) to further demonstrate the impact of Y-PATH on PA and FMS levels.

Within the Y-PATH intervention, physical literacy promotion is ideally positioned for Irish post-primary school PE, specifically to foster students' development of the skills, knowledge, and attitudes needed to become physically literate [53]. Through this evidence-based Y-PATH programme [8,39], students become physically active and skilled through PE, which in turn enables them to demonstrate the core components of physical literacy throughout the lifespan. A positive spiral towards physical literacy promotion for adolescent youth can be achieved within the Y-PATH intervention, specifically with the emphasis on 'quality, well-delivered PE' [53].

Making the physical literacy case for the Y-PATH programme in Ireland

In her response to 'Physical Literacy in the context of Physical Education in the Secondary School', Whitehead outlined:

"The development of physical literacy depends as much, if not more, on the nature of the interaction between the teacher and the pupil, as on the content of the lesson. Above all physical education must provide a positive and rewarding experience for all young people – whatever their ability. At the heart of Physical Literacy is the motivation to take part in physical activity. This is acquired as young people make progress in movement mastery and develop self-confidence and self-esteem in this significant aspect of their human potential [54]".

From the recently published evidence, it appears that positive school-based PE provides an opportunistic window for physical literacy promotion across the lifespan [4-6,17,40], particularly for youth. In this section, Whitehead and Murdoch's conceptual map on the attainment and maintenance of lifelong physical literacy for second level youth [55] will be documented specifically in relation to the Y-PATH programme [56] (Table 1).

Discussion

In the present Y-PATH evidence-based study, the authors are creating awareness and equally advocating for an approach to increasing adolescent PA participation through the structured teaching of secondary school PE in Ireland, that is fundamentally rooted within components of physical literacy promotion [54]. The domains of the Canadian Assessment of Physical Literacy include 'physical activity behaviours, physical fitness, motor skills, awareness, knowledge and understanding'[17]; from the evidence-based study presented, it is clear that the Y-PATH programme is targeting the promotion of physically literate secondary school youth through the medium of PE, as delivered by specialist teachers. Whitehead has suggested that physically literate individuals ought to possess assurance and self-confidence in parallel with their movement proficiency [5].

Table 1: A comparative relationship between Whitehead and Murdoch's conceptual map and the Y-PATH programme in the attainment of physical literacy for secondary school youth.

Stages In Attaining And Maintaining Physical Literacy Secondary School [55]	Stages In Attaining And Maintaining Physical Literacy In Y-PATH
<p>Development of Physical Literacy as a fundamental goal of Physical Education.</p> <p>Fundamentals of Physical Literacy established and contextualised in a range of physical activities.</p> <p>Activity opportunities outside of school introduced.</p>	<p>Development of PA, FMS, HRA and psychosocial health is the goal of Y-PATH Physical Education.</p> <p>Fundamentals of Physical Literacy and components of FMS contextualised in the 7 strands of Irish Junior Cycle Physical Education [56] (adventure activities, aquatics, athletics, dance, games, gymnastics, HRA).</p> <p>Activity opportunities outside of school introduced through 'Pathways to Activity' initiative as part of the Y-PATH intervention (inventory of and links to the extra-curricular opportunities for PA and sport within the local community).</p>
Personnel influencing the attainment and maintenance of Physical Literacy in secondary school [55]	Personnel influencing the attainment and maintenance of Physical Literacy in Y-PATH
<p>Teachers, parents, family, peers, coaches, club and local facility personnel.</p>	<p>Teachers (PE specialists and non-specialists) receive Y-PATH leaflets attend PA workshops and engage in 'pedometer challenge'.</p> <p>Parents/family receives Y-PATH leaflets and attend PA workshop.</p> <p>Coaches, club and local facility personnel contact details (email, url, phone etc.) available in the 'Pathways to Activity' document.</p>
Situations, contexts where Physical Literacy can be encouraged, established and maintained in secondary school [55]	Situations, contexts where Physical Literacy can be encouraged, established and maintained in Y-PATH
<p>School Physical Education, extracurricular opportunities. Sports/activity clubs. Home, local environment, local facilities.</p>	<p>Y-PATH is a multi-component whole-school approach to PA promotion, with school physical education the medium for programme dissemination. The developed resources also provide direct links to the local sports clubs, home, environment and facilities.</p>

In a recent publication from the United Nations Educational, Scientific and Cultural Organization (UNESCO) in 2015 on 'Quality Physical Education (QPE) guidelines for policy-makers' [57], documented the importance of physical literacy for healthy, able and active citizens. From this policy guideline document [57], UNESCO outlined that QPE should comprise of the following:

- (a) QPE should enable children and young people to become physically literate, and provision should feature from the early years through the entire school journey to secondary school education.
- (b) Fundamental movement skills are a vital aspect of physical literacy and, also, to the development of healthy, able, and active citizens.
- (c) The promotion of physical literacy should then remain a key feature of any physical education curriculum throughout primary and secondary education [57].

From the presentation of this evidence-based study, physical literacy promotion is clearly a strong platform within the delivery of Y-PATH PE. The core components of physical literacy (PA behaviours, motor skills, physical fitness, PA knowledge, awareness, and understanding) have been at the heart of the Y-PATH programme since its inception in 2010. This was not due

to a direct attempt of researchers to address physical literacy per se, but rather was driven by the research identified needs evident in Irish adolescent youth [8] for whom the intervention was developed. The attainment of physically literate youth is readily integrated and embedded within Y-PATH, specifically as learners encounter a range of age and stage appropriate opportunities [57].

Conclusion

Over the past decade, many public health agencies have introduced and embraced a variety of initiatives based on the desired outcome of physically literate individuals and populations [4]. While this concept is primarily aimed at young people, physical literacy programmes seek to provide the motivation, confidence, physical competence, knowledge and understanding to be active for life [6]. With this emergent shift towards physical literacy, the Y-PATH school-based PE intervention for Irish adolescent youth is well positioned for addressing this call to action. This Y-PATH evidence-based study has introduced the guiding principles of the PE-based intervention, specifically the sustainability of learning to be active during adolescence. It is important to note that the Y-PATH intervention consists of a multi-component approach to whole-school PA promotion, many

components which reflect the integration of physical literacy in the school environment. By actively engaging the student, teacher, parent, guardian and local community in the intervention process, the Y-PATH intervention is adhering to Whitehead and Murdoch's previously published conceptual map in the attainment of lifelong physical literacy [55]. In terms of originality, the PE components of the intervention addresses psychosocial, HRA and FMS content in the promotion of skill competency, attitudes, self-efficacy and educational belief towards the importance of sustainable PA participation. The intervention is grounded within a cost-efficient and feasible approach to overall physical literacy promotion in the school context. The interpretation of the physical literacy concept continues to be refined with updated research informed data [3,4,6,11] and contributions to this 'new kid on the block' are set to continue. This evidence-based study set out to highlight how physical literacy is being promoted within a school-based programme for Irish adolescent youth.

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