Physical activity has been found to have a role in the prevention and management of overweight and obesity in young people, and there is good evidence of an association between physical activity levels and risk of type 2 diabetes and cardiovascular disease, and physical activity and bone health in children and adolescents (Stensel et al., 2008). The World Health Organisation's scientifically informed guidelines recommend that children aged 5-17 years should accumulate at least sixty minutes of moderate to vigorous-intensity physical activity daily (World Health Organisation, 2010). Physical activity can also enhance self-esteem and cognitive function, reduce symptoms of depression and anxiety in young people and contribute to academic performance (National Institute for health and Clinical Excellence (NICE), 2007: Stensel et al 2008; Buscemi et al., 2014). While most of this activity is aerobic in nature, the importance of incorporating activities that strengthen muscle and bone at least three times per week is also suggested.

School-based physical activity interventions, particularly those including a focus on quality physical education, have been reported to have a positive influence on young people's health, activity and fitness levels, as well as their knowledge, understanding and attitudes towards physical activity (Cale and Harris, 2006; Kriemler et al., 2011). Yet, research demonstrates that current practices in physical education classes fail to achieve the adequate amounts of moderate to vigorous physical activity levels necessary for optimising the health of children (McGinnis, Kanner and DeGraw, 1991; Pate et al., 1995; USDHHS, 2000). According to the Irish Primary Curriculum for Physical Education (Government of Ireland, 1999), physical education is 'the process which provides the children with learning opportunities through the medium of movement and contributes to their overall development by helping them to lead full, active and healthy lives' (p. 2). By the time a child reaches the end of primary school a significant proportion of his or her mental and physical potential has already been realised and a child who has not mastered a physical skill may well be disadvantaged for the rest of his or her life (Balyi, Cardinal, Higgs, Norris and Way, 2006).

Opportunities for children to be active should be facilitated through the school and in the community setting where the child lives (Woods, 2014). Within the school environment, *whole school* interventions are identified as one of the seven investments that work for the

promotion of physical activity by the Global Advocacy for Physical Activity (GAPA, 2011). These interventions have the potential to reach the majority of children as in many countries physical education is mandatory. This provides an opportunity to increase the participation even amongst the least active children who are otherwise difficult to target through other programmatic efforts. The role of the teacher in physical education is to help the child develop the knowledge and skills necessary to maintain lifetime activity and fitness and to become independent in his or her physical activity and fitness pursuits. However, we do need to be realistic about what physical education can achieve given that it has a range of objectives and represents only 2% of a young person's waking time (Fox and Harris, 2003) at least half of which involves only light physical activity. While physical education has an important role in children's learning about health and physical activity, it should be only considered as part of a whole school approach; one that can help children to meet their health and physical activity needs.

In reality there are a number of issues which can make the teacher's role quite challenging. Many countries have witnessed a decrease in the time given to physical education in schools (Hardmann and Marshall, 2005). Current guidelines, in Ireland, for primary school physical education recommend, but do not require, 60 minutes of physical education per week (Government of Ireland, 1999). Although only recommended it is important to note 'minimum' in the policy statement. There is concern that the reality of the delivery of physical education in schools is less impressive and falls widely short of recommended standards (Fahey et al., 2005). Recent research (Woods et al., 2010) shows that on average Irish primary school children receive 46 minutes of physical education weekly.

The lack of training, almost non-existent in-service training, and lack of facilities are given as the main reasons for the lack of enthusiasm about teaching physical education amongst primary school teachers (Coulter and Woods, 2012; Fahey et al., 2005). Barriers, such as physical education being perceived as a low priority subject, lack of financial resources, insufficient equipment and facilities, and low level of Principal support exist not only in Ireland but in other countries as well (Barroso, McCullum-Gomez, Hoelscher, Kelder and Murray, 2005; Hardman & Marshall, 2005; Kirk, 2006).

Although teachers may espouse a 'fitness for life' philosophy in their teaching this is not necessarily reflected in their delivery which tends to focus towards 'fitness for sport'. This

emphasis on a games oriented curriculum results in a very narrow experience for the children with limited provision for individual lifetime activities and so little to encourage children's participation in physical activity. Given that schools and physical education have a statutory responsibility to deliver learning about health and physical activity within a broad and balanced curriculum, it might be assumed that teachers have the knowledge, commitment and expertise to do this effectively – but evidence shows us that this is not the case. It is important that those teachers charged with the responsibility of supporting children in their learning about physical activity and health need adequate initial and continued professional development.

The intervention described in this chapter relates to a programme which was put in place over a year to support teachers in their teaching of physical education to ensure children's learning. The intervention also aimed to broaden the children's experiences of sports other than team games; to motivate them to participate in these activities both in and out of school; and be physically active. The dilemma posed to the design and implementation of the intervention is how to focus on learning objectives of a lesson while at the same time allowing for individual responses, and the need to encourage child input into the lessons.

**Description of the case**

The case-study school was a large, suburban, mixed primary school with a number of classes at each level. The school was situated in an affluent area, though a number of children (1%) came from the Travelling Community. Social classes 1 (professional workers) and 2 (managerial and technical) accounted for 59% of the population in the school area in contrast to 32.9% for the national population (Ryan, 2009). There were 28 class teachers and 815 pupils (aged 4 to 13 years) in the school. Each class has approximately 29 children and was timetabled for 45 minutes physical education each week. With 26 classes in the school, it was not possible to schedule an hour of physical education for each class each week in the general purpose (GP) hall therefore times allocated were between 40-50 minutes depending on the class. Physical education lessons took place indoors or outdoors, although if the GP hall was in use for other purposes or if inclement weather, the lesson was postponed or cancelled. However, if the weather was good, teachers kept their class outside for at least 60 minutes. The duration of physical education provision in the case study school was not very different from other schools in

Ireland or internationally (Hardman & Marshall, 2009), but children were not receiving the recommended minimum amount (60 minutes a week) outlined in the curriculum.

The school had a broad array of on and off-site physical education facilities. Within the school grounds there was a small indoor GP hall, two outdoor tarmac areas, one of which had two basketball courts marked complete with hoops, and a grassy area for use, weather permitting. The outdoor facilities were used for free play, at break-times by the children. Off-site facilities available to the school included a local community hall and a large green opposite the school which was used sometimes during better weather for team training and athletics training. Teachers shared the equipment and were responsible for its collection and return to the relevant store prior to, and post their lessons.

The school entered many inter-schools competitions each year. These consisted of Gaelic Football, Hurling/Camogie, Cricket, Tennis, and Athletics. A number of coaches from National Governing Bodies (NGBs) provided additional coaching during the school day, supplementing the games programme of the curriculum. These coaches offered programmes in Gaelic Football, Basketball and Cricket.

## Theoretical framework

### Correlates of Physical Activity

In order to change school-children's behavior we must understand its influences. Understanding why and how young people engage in physical activity will provide more leverage for intervention efforts designed to encourage health promoting lifestyles. Aligned to the social ecological model (Sallis, Owen, & Fisher, 2000), correlates (factors associated with behaviour) and determinants (factors with a causal relationship) can generally be classified into five groups: demographic and biological variables (e.g., gender, age); psychological, cognitive, and emotional variables (e.g., depression, perceived ability); behavioural attributes and skills (e.g., previous physical activity and sedentary time); social and cultural variables (e.g., parental encouragement); and physical environment variables (e.g., access to facilities). A distinction can be made between modifiable and non-modifiable (e.g. age, gender, genetics and, to an extent, social class) correlates and determinants of behaviour. Those that can be modified or controlled are the ones we need to understand and prioritise in the design of evidence-based interventions (Sallis, Owen, & Fotheringham,

2000). Modifiable determinants may include individual factors (e.g., motivation towards physical activity or perceived competence in motor skills), or environmental factors such as social influence (e.g., social climate created by adult leaders) and the physical environment (e.g., access to leisure and sports facilities, transport infrastructure infrastructure within one's locality).

Review studies summarizing the existing literature on correlates of physical activity in children (for example van der Horst, Paw, Twisk, & van Mechelen, 2007; Sallis, Prochaska, & Taylor, 2000) consistently show that boys are more physically active than girls and that physical activity levels decrease with increasing age. Examining the social and physical environmental correlates (Ferreira, I., van der Horst, K., Wendel-Vos, W., Kremers, S., van Lenthe, F. J., & Brug, 2007), physically active and inactive groups of young people systematically differ from each other with regard to perceived social support from significant others (e.g. peers, family, teachers) and perceived family norms toward physical activity e.g. (parental physical activity habits) (Ferreira, I., van der Horst, K., Wendel-Vos, W., Kremers, S., van Lenthe, F. J., & Brug, 2007). These data suggest that a complex set of social variables in the social climate of everyday life of children will determine the development of a physically active or inactive lifestyle. The behavioural correlates suggest that community sports participation is significantly related to adolescent physical activity, whereas participation in school sports is not (Sallis, Prochaska, & Taylor, 2000) (Drake KM, Beach, ML, Longacre, MR, MacKenzie, T., Titus LJ, Rundle AG, 2012). Longitudinal observations in Finland have shown that regular and persistent participation in youth sport strongly increases the probability of being physically active in adulthood (Telama, R., Yang, X. L., Hirvensalo, M., & Raitakari, 2006). Individuals participating in youth sport are usually motivated, their participation is regular and often persists over many years, and through training they learn many new skills, this can have high health benefits (Drake KM, Beach, ML, Longacre, MR, MacKenzie, T., Titus LJ, Rundle AG, 2012). Within the school setting, the social environmental factors include the teacher-child relationship, the provision of physical education in the school, the relationship of the school with the community and educational policy such as physical education curricula.

The focus of the teacher needs to be on the theoretical elements of fitness such as a) increasing participation rates and improving fitness literacy, b) focus on lifetime physical activity rather than traditional games and sports, c) a commitment to teach children how to

be physically active and to understand why this is important, d) help the child become self-motivated and skilled in activities (McConnell, 2014). Put simply physical education can provide opportunities for children to be, and to acquire and develop the skills to be, physically active

The Youth Physical Activity Promotion Model.

There is no single theory or model that thoroughly explains physical activity behavior or confirms how best to intervene with specific populations, particularly from a public health or population perspective. The Youth Physical Activity Promotion (YPAP) model was developed to better understand and promote youth physical activity behavior (Welk, 1999; p. 6) and was used to guide this intervention. Figure 1 provides a simplistic representation of the model; see Welk (1999) for more detail.

Within this model there are three main components namely "predisposing", "reinforcing" and "enabling" factors. The predisposing factors increase the likelihood that youth will participate in physical activity on a regular basis. They address two fundamental questions of the YPAP model: Am I able? and Is it worth it? The 'Am I able?' construct represents variables related to self-perceptions e.g. physical self-worth, perceived competence and self-efficacy. The core of these beliefs involves how individuals think and feel about their abilities in the physical domain. The reinforcing factors deal with influences that reinforce a child's physical activity behavior and are predominantly social in nature (Welk, 1999). They address the values placed on expected outcomes associated with physical activity 'Is it worth it?' Significant others, in this case study the teachers can influence children's physical activity though a variety of mechanisms including encouragement, facilitation, providing lessons and involvement (Welk, Wood, & Morss, 2003) (Brustad, 1993). However, peers are also thought to influence choices to be active or sedentary through mechanisms like encouragement, engagement or peer acceptance (Smith, 1999). In the YPAP model reinforcing factors influence a child's physical activity behavior directly and indirectly. The direct effect is when teachers actively help a child e.g. by teaching a child skills during their PE lesson. The indirect effect is seen when these significant others influence the child's evaluation of the activity, their ability and if the opportunity is worth it (through the predisposing factors). By teachers, parents and peers working together and combining their efforts to encourage active participation in this program the reinforcing factors were developed.

The enabling factors include variables that allow youth to be physically active and are predominantly biological or from the physical environment. The enabling factors are those that permit a child to be active, these are classed as biological or from the physical environment by Welk (1999). A child's fitness level, skill level or percentage body fat are biological factors that influence activity. The physical environment the child is exposed to, the presence or absence of parks, equipment and structured exercise or sport programs also are known to influence physical activity. Both direct and indirect effects of enabling factors are noted in this model. Essentially, YPAP suggests that youths who have positive self-perceptions (Am I able?) and feel that participating has valued benefits (Is it worth it?) are more likely to regularly participate in physical activity (Welk, 1999).

**Needs assessment**

In order to understand the case further the children's perspectives on physical education and physical activity, were examined using a self-report questionnaire (See Coulter & Woods, 2011 for further information) and focus group interviews. Teacher information was gathered using questionnaires and interviews (See Coulter & Woods, 2012, for further information) An overview of the findings which were related directly to the design and implementation of the intervention are presented here.

Although there was no significant difference for gender, more boys than girls reported participation in vigorous physical activity during school break-times, whilst girls were more likely to choose sedentary activities. A school day affect measure rated how children felt when they woke up and thought about school. Seventy percent of children reported being in either a *'very good'* or *'good'* mood at the thought of school, with girls significantly more likely than boys to indicate a positive mood when thinking about school. Forty six percent of children ranked PE as their favorite subject while 78% of children had PE in their top 3 favorite subjects. There was a marked gender difference between boys and girls with 58% of boys reporting that PE was their favorite subject compared to 29.8% of girls. The majority of children (93.8%) answered positively to the questions about how they felt about physical activities, indicating a high level of enjoyment, with only one child not enjoying physical activity.

Following focus group interviews with a sample of the children (n-40) the school environment was described as a large place, with teachers and the Principal being

highlighted as friendly by all Grades. The children enjoy the space they have in the school with large yards to run around. When asked about subjects they liked responses echoed those found in the questionnaire. Many of the children preferred Art and Physical Education, with Mathematics featuring also. When asked why they liked these subjects, answers ranged from *'because they are easy'* to *'they are fun'* to *'there is no homework'*.

All children commented on the large free-play space available to them. One child described being lucky that they were allowed run, as she knew of schools where running wasn't allowed for safety reasons. Another child commented that they also got a long break (15 minutes) where other schools only got 5 minutes outside for little break. Grade 7 children commented on variety of games played in the yard. The main activities outlined by all Grades, were variations on chasing games and if children weren't chasing or running they sat and talked. The children would love to be allowed equipment at break-times especially balls.

The children interviewed had a good grasp on what constituted physical education. Their understanding of 'what is physical education' included discourses from health, physical activity, enjoyment, sport as well as physical education. Children from many Grades stated that physical education was about being healthy, and some linked it with keeping obesity at bay; *'PE stands for physical education, run around and get fit and maybe if you are a tiny bit obese you might lose weight.'* Although we can see that the health message is getting through, there existed some confusion between physical education and physical activity. During a conversation between children during a Grade 3 interview the following was recorded; *'I think you get thin from doing games'; 'you wouldn't get really skinny, you'd get strong from doing games'* followed by *'you'd get fit'*. Many of the children thought that physical education was about running around fast and being active, and they liked to get out of the classroom and move about. Children commented on how they like to be with their friends and doing a variety of games in PE. Though one girl commented that; *'it's not always about being with your friends because sometimes you can have fun with people who are not your friends'*. They liked that it got them out of the classroom and running about outside; *'it's physical education and good to get out of the classroom and have fun for a while'*. Children much preferred when physical education was outside. Children also commented that physical education was about having fun; *'PE is … kind of about having fun'*. Games featured prominently when asked about the type of physical education in which they partook. All of

the boys and some of the girls reported that they wanted to play soccer both in physical education class and after school, a game that was not included by the school in the physical education or extra-curricular programmes. The senior classes spoke about volleyball, a new game that they had been introduced to. The children often linked physical education with competition and winning*; 'we have lots of teams and we win lots of finals for sport'* confusing physical education and extra-curricular activities.

The older Grades (6 – 9) also described physical education as multi-sport in nature whereby each week the class was divided and each group played a different team game, and rotated around the games after 15 minutes. When asked what other activities would they like to do in PE the children answered; *'swimming'*, *'rounders'*, *'variety of things', 'rugby'* and *'tennis',* again activities from the games strand featured highly. The junior classes (K-2) followed a more comprehensive programme of physical education where they covered strands such as games, athletics, dance and gymnastics. Outdoor and adventure activities and aquatics were not taught. Much of the junior programme focussed on 'movement' and 'playground games'. All the children knew that PE stood for physical education. Although children knew that games, athletics and gymnastics were part of PE they didn't think aquatics was, as aquatics was not part of the physical education programme in the school. The children described 'good' physical education as involving lots of running. Some stated 'good' physical education was when everyone is participating and getting on as a team. When asked what they learn in physical education class, answers centred around learning new games skills with some commenting that you also learn to cope with people who can't play games very well or how to work as a team.

The teachers taught a limited range of strands with no Aquatics and little to no Outdoor and Adventure Activities being taught in the case study school. The teachers lacked subject content knowledge and also lacked confidence in teaching physical education (pedagogical content knowledge). It should be acknowledged that these data were collected using self-report methods as there is no 'knowledge test' available to measure teachers knowledge or pedagogical content knowledge of physical education. The teachers were willing and positive about the opportunity to be a part of an intervention in the area of physical education. Teachers required an intervention which would increase their subject knowledge and pedagogical subject knowledge, ensure they taught the recommended

amount of quality physical education, compile resources to assist teachers in teaching PE and establish how best to provide them with support during the intervention.

In order for children and youth to develop a lifestyle of regular physical activity to maximise the long-term health benefits, they need to be 'turned on' to physical activity by making it enjoyable (Weiss et al., 2000). This will keep children coming back because of an intrinsic desire to be physically active. Getting children to enjoy physical activity is not a hard sell (Coulter & Woods, 2011). Children are built to move, they want to move, however it is not something that should be left to chance and opportunities for physical activity during the school day should be provided by schools. The majority of children in the study (93.8%) indicated a high level of enjoyment of physical activity. However, even at this young age, boys indicated significantly higher levels of enjoyment of physical activity than girls. The key is to understand what promotes, this enjoyment, harness it and build it into our school experience for all children. It was decided along with the teachers and the children that the intervention would centre on the teaching of Outdoor and Adventure Activities (O&AA), as this was an area which the teachers had never taught, or the children experienced, as part of their physical education programme.

**Intervention**

The intervention involved designing resources and materials and distributing these to all teachers in advance of their teaching a unit on Outdoor and Adventure Activities. The resources (See Figure 2 and Figure 3 for sample resources) were designed to make the process of teaching the lessons as easy as possible and the lessons were detailed in terms of content and pedagogical approaches to be used. Once the teachers had read the materials and understood what was required, they began to teach O&AA. During this time, a facilitator was available in the school to offer a continuum of support for all teachers. The intervention support provided entailed the facilitator to remain in the school all day (5.5 hours), each week for 6 weeks. Each class teacher received personalised support on request during their scheduled hour-long physical education lesson. This included; 66 complete lessons modelled by the first author; 45 partial lessons modelled or team teaching occurred; 19 lessons explained to the teacher, prior to the lesson being taught by the class teacher. Modelling the lessons for the teachers worked on a number of levels. It produced practical experiences that teachers could see, copy, try out and alter in a safe environment. This

modelling provided concrete examples of how to deliver the lessons in the school context, with all its limitations and challenges.

The lessons included learning opportunities for the children which were physically active and focused on the cognitive and affective domains of learning. Learning is a social activity which that can enhance the 'ability of children to act, interact, and react effectively with other people as well as with themselves' (Gallahue and Cleland Donnelly, 2003). Outdoor and adventure activity lessons offer a wealth of opportunities for affective growth including personal and social development in physical education. In these lessons children should be able to achieve 'I can ...' moments in order for their self-esteem to be nurtured and for them to progress through enhancement of predisposing factors as per the YPAP model. Outdoor and Adventure Activities requires children to work as a team, helping, sharing and decision making. It also provides opportunities for the children to learn trust and to have group success all leading to confidence and independence. Bailey and colleagues (2009) highlighted the importance of planning for such outcomes rather than hoping that they might happen as if by magic. In planning physical education lessons some educators would suggest that lessons should be selected to facilitate the development of certain personal and social qualities, whereby children are encouraged to take increasing levels of responsibility for their learning and behaviour with the ultimate aim of transferring this knowledge. Positive physical education experiences can contribute to social inclusion by equipping children with the skills, motivation and confidence to belong to a group, team or club.

**Reflection**

Throughout the intervention in the school, teachers noticed a change in children's attitude towards physical education during the O&AA lessons;

*I noticed there was always a buzz around the place…I don't know when I have seen that excitement before and they were really utterly oblivious of me. I was standing right beside them and I might as well have not been there whatever that was I want more of that, to do that!*

Children showed enthusiasm for the variety of activities in the lessons. Overall children enjoyed the O&AA programme, with some being sick with excitement;

*…I had a girl that went home sick as she had run so hard and so fast. She wasn't well when she came in in the morning, I had to send for her mother to come and take her home….sure she got sick she was so excited [taking part]…*

The children enjoyed the responsibility, and respected the freedom they were given by their teachers when they were allowed to move freely around the school when orienteering. They commented on not being under the teacher's nose all the time. The children wanted to be active; *'I think it sort of was PE because if you are running around it was PE and it was kind of fun'* and expect activity in their physical education lessons and according to the SOFIT results (A study of the physical activity levels of the children during the intervention - see Coulter, Ní Bhriain and Woods, 2008), the children were achieving the recommended amount of moderate to vigorous activity (50%) in their lessons.

The children's concept of enjoyment and fun being inherent in physical education was evident from the beginning of this intervention. Throughout the intervention, fun and enjoyment remained important to the children and the teachers. These features were evident in the lessons according to the children; *'And it's usually pretty fun' '… and it's very fun, because I think it's good…'*. *'Um I think it's about um, like having fun, being active and um, getting really healthy doing it'*. Other teachers at fifth grade and below felt their classes loved O&AA *'I had one little one say the other day when she was coming in through the hall with her Mum, to the Mum said, this is where we have fun , Mum'* . The teachers recognised that the children enjoyed working in teams and being challenged in the activities

Though teachers noted the social dynamic in physical education was changing as the O&AA programme continued; *'The way they were talking and encouraging and there was no arguing which I often find I have problems with in teams or maybe it was just the dynamic of it and they go off together' the* teachers recognised that their games lessons were not inclusive compared to the O&AA lessons. This observation was supported by other teachers and the Principal who recognised the impact that the intervention had on the children;

> *It's obviously impacted the children…you know children are also involved. And you may have even noticed this going through the yards, where I see a significant change in that where you had girls who would stand to the side…..and they didn't want to be there. Whereas now it's cool to be involved in PE and to be there. And they're involved. And if you move through the classes or watch what's happening in the yard, there's a*

> *far greater inclusion of everybody…. And they're teaching not the traditional games, children who wouldn't normally be sporty can actually get on, involved in outdoor activities.*

The children who may have been on the periphery of groups during games according to teachers were now coming into their own and they were growing in self-confidence. Others wanted to be in their groups, maybe because they now felt that this person had something to offer in the O&AA physical education lesson; *'…the kids really loved it and every single one of them was involved compared ….if you were doing games on the pitch'.* The intervention had a motivating effect on the children through enjoyment of the lessons and teachers positive response to the support they were receiving from the intervention facilitator. Physical activity was also an important feature of physical education throughout the intervention and although teachers recognised that certain 'less active' activities were necessary for progression and continuity of the lessons they felt the children didn't like these activities as they were inactive. Children were motivated by active lessons and complained when lessons were inactive and began to complain that *'this wasn't PE'*.

Children were quick to respond following the intervention, that physical education involved teaching and learning; *'It's physical education, teaching you what to do, teaching you different types of activities and different games.'* '*But in PE you're learning different things, and you learn different games, and you can show them. And like I learned how to make a pyramid hula hoop [hut]. And I learned um, how to read a map better. And like you actually need those for when you are older…* Children were also aware that they were learning during the O&AA lessons in comparison with their physical education lessons, prior to the intervention *'It's different to what you usually do because you would usually be playing games. You would be kind of learning and you would be kind of educated'.* Children enjoyed learning and had fun; *'I learned how to use a map.' 'There's two things I like, one, I learned how to work in a team and, two, I learned how to work with a map. And they were both really fun'.*

The comments here show that the new teaching styles and the subject content were acceptable to the children. They were learning, having fun, being active, were able to be responsible for their own learning and were given problems to solve all of which were motivating factors in the intervention. Through the intervention children's self-esteem was being nurtured and they had positive physically active experiences.

Children were able to recount what they had learned and the fact that the physical education lessons they experienced as part of the intervention were different, compared to other physical education lessons, where they took part for competition and recreational purposes. As a result of the intervention there was a change in children's attitude towards physical education, with children enjoying O&AA lessons and the new teaching styles being employed by the teachers. The children's physical education experiences throughout the intervention were positively impacted and this could in turn lead to increased learning. Other benefits of the teacher's professional development programme were inclusion, whereby all children were involved in O&AA lessons compared to limited participation by girls and some boys in physical education prior to the intervention, were highlighted by teachers and children. It was beyond the scope of the intervention to evaluate its effect on other aspects of children's learning, although research suggests that participation in physical activity may improve academic performance (Sallis, McKenzie, Kolody, Lewis, Marshall & Rosengard, 1999; van der Mars, 2006), and may contribute to children's alertness and concentration with benefits for learning (Bailey, Armour, Kirk, Pickup & Sandford, 2009).

The goal of helping children become physically active for a lifetime is a difficult one – should we concentrate on giving children more of what they enjoy while moving or should we focus on teaching them the acquired skills to help them enjoy activity in the future (Locke & Lambdin, 2003)? Teachers have the potential to inspire a passion for physical activity in children. They need to develop programmes which are meaningful, worthwhile and relevant for children. They need to design learning experiences to help children achieve success as success can inspire and encourage children.

**Suggested readings**

Cale, L. and Harris, J. (eds)(2005*) Exercise and Young People: Issues, Implications and Initiatives*, Hampshire: Palgrave.

European Sport Psychology Association, Liukkonen, Jarmo (2007) Psychology for physical educators: student in focus. Champaign, IL: Human Kinetics.

Lavin, J. (2008) Creative Approaches to Physical Education: Helping children achieve their true potential, London, Routledge.

McConnell, K., (2015) Fitness and Wellness Education. In J. Lund and D. Tannehill (eds) *Standards-Based Physical Education Curriculum Development* 3rd Ed, Jones & Bartlett Learning, Burlington, MA.

*The Elementary School Journal*, (2008) 108 (3) – (Special Edition)

Woods, C.B., (2014). The role of theory in designing physical activity interventions for school aged children. In J.G. Cremades and L.S. Tashman (eds) *Becoming a Sport and Exercise and Performance Psychology Professional A global Perspective*. Psychology Press, New York.

**Review questions**

Q. Who are key stake holders in this intervention delivery and why?

The key stakeholders in this intervention are the school community, including principal, teachers and children, and the intervention facilitator. The intervention impacted on the children and their learning in physical education, and according to research this will, in turn, affect children's lifelong physical activity. In order to do this the teachers taught a quality programme of physical education, supported and mentored by an external expert in physical education (facilitator) who also provided the materials and resources to enable these lessons (the intervention). In order for the whole school intervention to be successful, the teachers need the leadership and support of their principal for the intervention and their learning. Each of the stakeholders in this case study is interdependent on each other to implement the intervention initially and to ensure its sustainability.

Q. Why is it important for children to engage in regular health enhancing physical activity?

Physical activity has been found to have a role in the prevention and management of overweight and obesity in young people, and there is good evidence of an association between physical activity levels and risk of type 2 diabetes and cardiovascular disease, and physical activity and bone health in children and adolescents (Stensel et al., 2008). Physical activity can also enhance self-esteem and cognitive function and reduce symptoms of depression and anxiety in young people (National Institute for health and Clinical Excellence (NICE), 2007: Stensel et al 2008; Society of Behavioural Medicine, 2014

Q. What is the current recommendation for physical activity for children and young people in order to protect their current and enhance their future health?

The World Health Organisation's scientifically informed guidelines recommend that children aged 5-17 years should accumulate at least sixty minutes of moderate to vigorous-intensity physical activity daily (World Health Organisation, 2010). While most of this activity is aerobic in nature, the importance of incorporating activities that strengthen muscle and bone at least three times per week is also suggested.

Q. List and explain the five categories commonly used to describe the correlates of physical activity for children and young people, and give an example of each.

Demographic and biological variables (e.g., gender, age); psychological, cognitive, and emotional variables (e.g., depression, perceived ability); behavioural attributes and skills (e.g., previous physical activity and sedentary time); social and cultural variables (e.g., parental encouragement); and physical environment variables (e.g., access to facilities).

Q. Explain the Youth Physical Activity Promotion Model as it applies to the promotion of youth physical activity.

The Youth Physical Activity Promotion (YPAP) model has three main components namely "predisposing", "reinforcing" and "enabling" factors. The predisposing factors increase the likelihood that youth will participate in physical activity on a regular basis. They address two fundamental questions of the YPAP model: Am I able? and Is it worth it? The 'Am I able?' construct represents variables related to self-perceptions e.g. physical self-worth, perceived competence and self-efficacy. The core of these beliefs involves how individuals think and feel about their abilities in the physical domain. The reinforcing factors deal with influences that reinforce a child's physical activity behavior and are predominantly social in nature (Welk, 1999). They address the values placed on expected outcomes associated with physical activity 'Is it worth it?' Significant others, in this case study the teachers can influence children's physical activity though a variety of mechanisms including encouragement, facilitation, providing lessons and involvement (Welk, Wood, & Morss, 2003) (Brustad, 1993). However, peers are also thought to influence choices to be active or sedentary through mechanisms like encouragement, engagement or peer acceptance (Smith, 1999). The enabling factors include variables that allow youth to be

physically active and are predominantly biological or from the physical environment. The enabling factors are those that permit a child to be active, these are classed as biological or from the physical environment by Welk (1999). A child's fitness level, skill level or percentage body fat are biological factors that influence activity. The physical environment the child is exposed to, the presence or absence of parks, equipment and structured exercise or sport programs also are known to influence physical activity. Both direct and indirect effects of enabling factors are noted in this model.

Q. From your reading of this chapter, what contribution do you feel a professional development programme designed to enhance teachers teaching ability can make to the experience of physical education by the pupils they are teaching? Discuss.

Q. Using this case study as an example, what do you feel are the strengths and limitations of qualitative research? Discuss.

**References**

Anderson, L.B., Harro, M., Sardinha, L.B. Froberg, K., Ekelund, U., Brage, S., et al. (2006) Physical activity and clustered cardiovascular risks in children: A cross sectional study (The European Youth Heart Study). The Lancet, 368, 299-304.

Bailey, R., Armour, K., Kirk, D., Pickup, I., & Sandford, R. (2009). The educational benefits claimed for physical education and school sport: An academic review. *Research Papers in Education, 24,* 1-27.

Balyi, I., Cardinal, C., Higgs, C., Norris, S., & Way, R. (2006). *Long-term athlete development - Canadian Sport for Life* Vancouver BC: Canadian Sport Centre.

Barroso, C. S., McCullum-Gomez, C., Hoelscher, D. M., Kelder, S. H., & Murray, N. G. (2005). Self-reported barriers to quality physical education by physical education specialists in Texas. *Journal of School Health, 75,* 313-319.

Brustad, R. J. (1993). Who will go out and play? Parental and psychological influences on children's attraction to physical activity. *Pediatric Exercise Science*, *5*(3), 210–233.

Buscemi, J., Kong, A., Fitzgibbon, M., Bustamante, E., Davis, C., Pate, R., & Wilson, D. (2014). Society of Behavioral Medicine position statement: elementary school-based physical activity supports academic achievement. *Transl Behav Med*, *4*(4), 436–438. doi:10.1007/s13142-014-0279-7

Cale, L. and Harris, J. (2006) School-based physical activity interventions – effectiveness, trends, issues, implications and recommendations for practice, *Sport, Education and Society*, 11 (4) 401-20.

Coulter, M., Ni Bhrian, C and Woods, C.B, An examination of activity levels of primary school pupils during a PE specialist taught Outdoor and Adventure Strand of the PE curriculum, *AIESEP World Congress, 15-19 Jan 2008, Sapporo, Japan*

Coulter, M. & Woods, C. B. (2011). An exploration of children's perceptions and enjoyment of school-based physical activity and physical education. *Journal of Physical Activity and Health, 8,* 645-654.

Coulter, M., & Woods, C. (2012). Primary teachers' experience of a physical education professional development programme. *Irish Educational Studies Journal*. *31*(3), 329-343.

Drake KM, Beach, ML, Longacre, MR, MacKenzie, T., Titus LJ, Rundle AG, D. M. (2012). Influence of sports, physical education and active commuting to school on adolescent weight status. *Pediatrics*, *130*(2), e296–304.

Fahey, T., Delaney, L., & Gannon, B. (2005). *School children and sport in Ireland*. Dublin: The Economic and Social Research Institute.

Ferreira, I., van der Horst, K., Wendel-Vos, W., Kremers, S., van Lenthe, F. J., & Brug, J. (2007). Environmental correlates of physical activity in youth - a review and update. *Obesity Reviews*, *8*, 129–154.

Fox K., and Harris, J. (2003) Promoting physical activity through schools, In J. McKenna and C. Riddoch (eds) Perspectives on Health and Exercise, Basingstoke: Palgrave Macmillan, 181-201.

Gallahue, D. and Cleland Donnelly, F. (2003) Developmental Physical Education for all Children, Champaign, Il: Human Kinetics.

Global Advocacy Council for Physical Activitiy, & Health, I. S. for P. A. and. (n.d.). NCD Prevention: Investments that work of physical activity. Retrieved from http://www.globalpa.org.uk/investments/

Government of Ireland (1999). *Primary School Curriculum Physical Education*. Dublin: The Stationary Office.

Hardman, K. & Marshall, J. (2005). Update on the status of physical education worldwide. In *2nd World Summit on Physical Education* Magglingen, Switzerland.

Hardman, K. & Marshall, J. (2009). Second world-wide survey of school physical education. ICSSPE.

Kirk, D. (2006). Sports education, critical pedagogy, and learning theory: Toward an intrinsic justification for physical education and youth sport. *Quest, 2006,* 255-264.

Kriemler, S., Meyer, U., Martin, E., van Sluijs, E., Anderson, L.B. and Martin, B. W. (2011). Effect of school-based interventions on physical activity and fitness in children and adolescents: A review of reviews and systematic update. *British Journal of Sports Medicine*, *45*, 923–950.

Locke, L. F. & Lambdin, D. (2003). Putting research to work in elementary physical education: Conversations in the gym. Champaign, IL: Human Kinetics.

McConnell, K., (2015) Fitness and Wellness Education In J., Lund, and D., Tannehill (eds), Standards-Based Physical Education Curriculum Development 3rd Ed, Jones & Bartlett Learning, Burlington, MA.

McGinnis, J.M., Kanner, L. and DeGraw, C. (1991) Physical education's role in achieving national health objectives. Research Quarterly for Exercise and Sport, 62 (2), 138-142.

National Institute for Health and Clinical Excellence (NICE), 2007. Physical Activity and Children. Review 1: Descriptive Epidemiology. NICE Public Health Collaborating Centre: www.nice.org.uk.

Pate, R.R., Small, M.L., Ross, J.G., Young, J.C., Flint, K.H., and Warren, C.W. (1995). School physical education. Journal of School Health, 65 (8), 312-318.

Sallis, J. F., McKenzie, T. L., Kolody, B., Lewis, M., Marshall, S., & Rosengard, P. (1999). Effects of health-related physical education on academic achievement: Project SPARK. *Research Quarterly for Exercise and Sport, 70,* 127-135.

Sallis, J. F., Owen, N., & Fisher, E. B. (2000). Ecological models of health behavior. In K. V. B. K. Rimer (Ed.), *Health behavior and health education: Theory, research and practice* (4th ed., pp. 465–486). San Francisco: Jossey-Bass.

Sallis, J. F., Owen, N., & Fotheringham, M. J. (2000). Behavioral epidemiology: A systematic framework to classify phases of research on health promotion and disease prevention. *Annals of Behavioral Medicine*, *22*, 294–298.

Sallis, J. F., Prochaska, J. J., & Taylor, W. C. (2000). A review of correlates of physical activity of children and adolescents. Medicine and Science in Sports and Exercise. *Medicine and Science in Sports and Exercise*, *32*, 963–975.

Smith, A. L. (1999). Perceptions of peer relationships and physical activity participation in early adolescence. *Journal of Sport and Exercise Psychology*, *21*(4), 329–350.

Stensel, D., Gorley, T., and Biddle, S. (2008) Youth health outcomes. In A.L. Smith and S.L.H. Biddle (eds) Youth Physical Activity and Sedentary Behaviour: Challenges and solutions, Leeds: Human Kinetics, 31-57.

Telama, R., Yang, X. L., Hirvensalo, M., & Raitakari, O. (2006). Participation in organized youth sport as a predictor of adult physical activity: A 21-year longitudinal study. *International Journal of Behavioural Mediicine*, *18*, 76–88.

US Department of Health and Human Services (2000). Healthy People 2010 (CD-ROM ed.) Atlanta, GA: Centres for Disease Control and Prevention.

van der Mars, H. (2006). Time and learning in physical education. In D. Kirk, D. Macdonald, & M. O' Sullivan (Eds.), *The Handbook of Physical Education* (pp. 191-204). London: Sage Publications.

Van Der Horst, K., Paw, M. J. C. A., Twisk, J. W. R., & Van Mechelen, W. (2007). A brief review on correlates of physical activity and sedentariness in youth. *Medicine and Science in Sports and Exercise*, *39*, 1241–1250.

Welk, G. J. (1999). The Youth Physical Activity Promotion model: a conceptual bridge between theory and practice. *QUEST*, *51*(1), 5–23

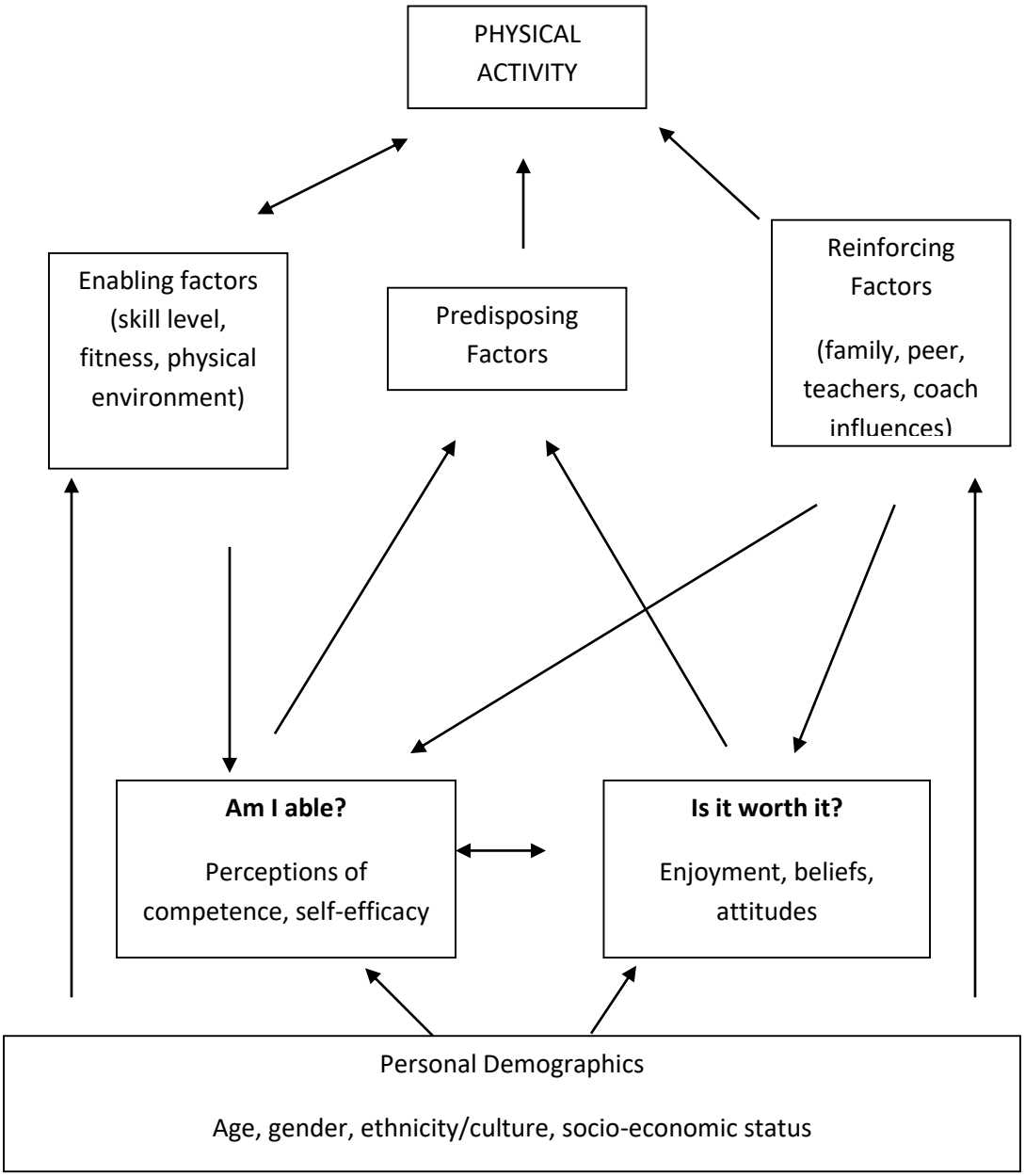
Welk, G. J., Wood, K., & Morss, G. (2003). Parental influences on physical activity in children: an exploration of potential mechanisms. *Pediatric Exercise Science*, *15*(1), 19–33.

World Health Organisation. (2010). Global recommendations on physical activity for health. Retrieved from www.euro.who.int/pubrequest/

Woods, C.B., (2014). The role of theory in designing physical activity interventions for school aged children, In J.G. Cremades and L.S Tashman (eds) Becoming a Sport and Exercise and Performance Psychology Professional A global Perspective. Psychology Press, New York.

Woods, C. B., Moyna, N., Quinlan, A., Tannehill, D., & Walsh, J. (2010). *The Children's Sport Participation and Physical Activity Study. Research Report No.1.* Dublin: School of Health and Human Performance, Dublin City University and The Irish Sports Council.

**Figure 1:** The Youth Physical Activity Promotion Model (adapted from Welk, 1999**)**



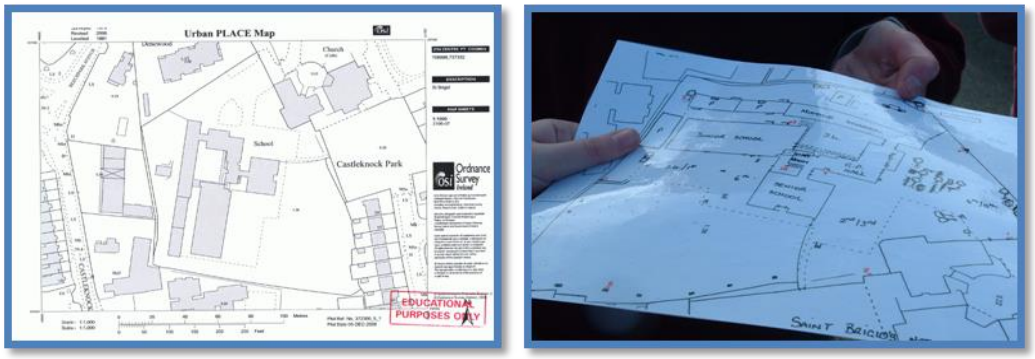



Figure 2 Ordinance survey map adapted for school use

Figure 3 Sample photographs for photo orienteering