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Promoting lifelong physical activity and high level performance: realising an achievable aim for physical education

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Background: Even though all school-aged children in most countries experience some form of curricular physical education many do not maintain a lifelong involvement in sport or physical activity. From a theoretical perspective, the development models that dominate sport are limited by their staged and linear approaches to development (e.g. Côté's Developmental Model of Sport Participation) and their focus on a 'distinct' pathway to elite sport. R.P. Bailey and colleagues in 2010 advocated a new approach to understanding development in sport that enables a lifelong flow between different, but interrelated, motives for participation in sport (e.g. Participation, Personal Excellence, Elite Excellence). It is suggested that a common set of skills facilitate participation for these related but distinct motives across the lifespan. However, we argue that many curricular models in PE do not equip individuals with the skills necessary to maintain their involvement in sport and progress back and forth between different types of activities.

Purpose: The purpose of this paper is to explore the psycho-motor and psycho-behavioural factors that underpin prolonged engagement in sport and physical activity, against a consideration of the extent to which these factors are promoted within PE.

Key findings: Offering an operationalisation of this purpose, the Developing the Potential of Young People in Sport (DPYPS) model was used as an illustration of a developmental and educationally-oriented framework that recognised the interrelated importance of developing key developmental skills, namely psychomotor and psycho-behavioural skills, in a PE context. Essentially the skills offered within the DPYPS program are those psychological and psychomotor fundamentals that underpin learning, development, and performance and act as the foundation of lifelong engagement in sport and physical activity.

Keywords: psychomotor skills; psycho-behavioural skills; youth sport; physical education; participant development

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Introduction

Facilitating life long participation in sport and physical activity

According to the UK's Department of Education and Science (1992) the purpose of learning in physical education (PE) is to develop specific knowledge, skills, and understanding, and to promote the physical development and competence that determines long-term engagement in sport and physical activity. Other countries make similar statements in policy documentation (see, for example, the contributors in Pühse and Gerber 2005). In fact, in their survey of 52 countries around the world, Bailey and Dismore (2006) found that the promotion of lifelong physical activity was a universal aim of PE. Such expectations are not without justification as a large body of literature suggests that PE – as the main societal structure for the promotion of regular physical activity during childhood – is the most suitable vehicle for promoting lifelong participation in sport and physical activity (Fairclough, Stratton, and Baldwin 2002; McKenzie 2001; Shephard and Trudeau 2000; Trudeau, Laurencelle, and Shephard 2004).

In most developed countries children experience some form of regular curricular PE between the ages of 5 and 16 years (Hardman 2001; Hardman and Marshall 2009; Pühse and Gerber 2005). However, many children do not maintain a lifelong involvement in sport or physical activity (Green 2002; Roberts 1996; Sallis and McKenzie 1991). We suggest that this is, at least partly, ascribable to the poor quality of the PE experience. Ten years ago, Williams (2000) described primary PE in England as mixed in quality. After an investment of approximately £1 billion in PE and school sport, one government adviser was only able to say that 'a few schools are beginning to explore how they can realistically expect higher levels of achievement from a greater proportion of pupils, but this culture is proving slow to change' (Casbon 2006, 15). This does not seem to be a local problem as a number of international surveys have described similar situations elsewhere. Hardman and Marshall's (2009) worldwide survey, for example, revealed considerable cause for concern in terms of contributory factors for quality provision in both developing and developed countries. As a consequence, the foundation provided is so inconsistent that the start of the pathway is undermined. At the secondary level, PE is largely organised into short blocks of physical activities dominated by team sports that may not necessarily equip learners with the skills needed for lifelong participation in sport and physical activity (Fairclough, Stratton, and Baldwin 2002; Kirk 2010; Penney and Jess 2004; Trost 2006). In fact, research in PE is increasingly concerned that the movement skills, knowledge, and understanding essential for lifelong participation are not 'integral, explicit, and valued elements of physical education' (Penney and Jess 2004, 275). Roberts (1996) noted that PE teachers defend a 'sport for all' approach to curricular PE on the premise that by including a range of sports and activities more 'pupils would be able to find a sport at which they were competent and which they enjoyed and this would extend their participation into out of school and post-school lives' (1996, 50). Kirk's (2010) analysis suggests that a multi-sport approach continues to dominate and shows little sign of losing influence. However, Penney and Jess (2004) argue that it is important to broaden the skills, knowledge, and understanding encompassed in PE curricula that claim to facilitate lifelong engagement in sport and physical activity.

One question that arises from these data is whether purely sampling a range of activities is the best way in which to generate sufficient enthusiasm for sustained engagement. Alternatively, are there skills or characteristics, introduced at the (more compliant) primary stage and then refined, applied, and exploited through puberty and beyond, which are essential precursors or enablers of participation? The purpose of this paper is to explore the

psychomotor and psycho-behavioural factors that underpin prolonged engagement in sport and physical activity against a consideration of the extent to which these factors are currently promoted within PE and, if they are insufficiently addressed, to explore ways in which they may best be developed. There are, of course, a range of environmental and contextual factors (e.g. family, schooling, date of birth and place of birth; Côté 1999; Côté, Baker and Abernethy 2007; Helsen et al. 2000; Perleth, Schatz, and Mönks 2000) that have been shown to influence motivation towards, and participation in, sport and physical activity. However, the line of research presented in this paper seeks to minimise the impact of these factors by systematically developing the psychomotor and psycho-behavioural factors that equip individuals with the ability and capacity to make informed choices about participation in sport and physical activity across the lifespan.

The Three Worlds Continuum – a single thrust with multiple outcomes

Of course, lifelong participation in sport and physical activity can take many forms and the lifelong aspect will necessitate a relatively fluid movement between these forms throughout the span. Penney and Jess (2004) conceptualised lifelong physical activity holistically by incorporating four dimensions; functional physical activity, recreational physical activity, health-related physical activity, and performance-related physical activity. Building on this contention, several authors (Bailey et al. 2010; Collins et al. in press) advocate for a new approach to understanding development that enables a flow between different, but interrelated, motives for involvement, namely participation (i.e. taking part to satisfy needs other than personal progression; Participation for Personal Wellbeing, PPW), personal excellence (i.e. Personal Referenced Excellence, PRE), and elite excellence (i.e. high-level sporting achievement; Elite Referenced Excellence, ERE). Simply, individuals must be equipped with the psycho-behavioural skills, actual and perceived competence, and opportunities to progress back and forth between these different types of activities and along what Bailey and colleagues (2010) term the Three Worlds Continuum (Participation – Personal Excellence – Elite Excellence; see Figure 1). Figure 1 describes how excellence can be usefully considered in terms of a continuum across three different ‘worlds’. Connecting notions of participation and high-level performance is a key

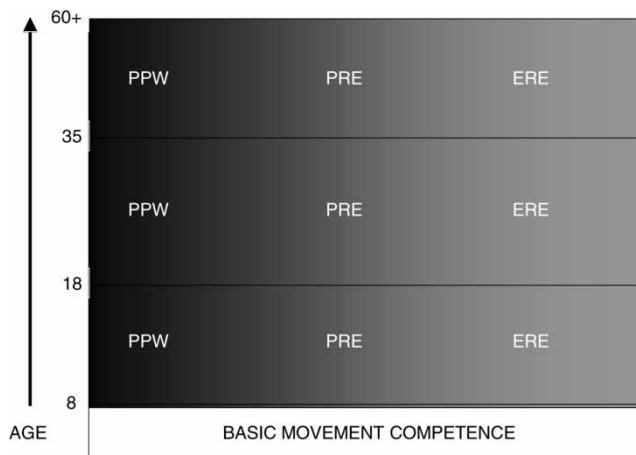


Figure 1. The Three Worlds Continuum.

element of the Three Worlds Continuum and is essential for the realisation of broader health and life-long learning agendas. A key driver for this approach is the contention that the three worlds described above are interrelated, at least in developmental terms (cf. Jess and Collins 2003).

This emphasis on influential features of development is in contrast to many of the models that currently inform PE and youth sport. For example, Tinning, Kirk, and Evans (1993) considered the pyramid model as a way of explaining development in sport, with PE seen as the base of the pyramid and elite sport at the top. As they recognised, the pyramid structure does not seem to be a good analogy to describe progression and participation in sport and physical activity since it accounts for only two pathways: progress towards elite sport or out of the system. Alternative approaches such as Côté's Developmental Model of Sport Participation (DMSP; Côté and Hay 2002) are also limited by a twin-tracked understanding of development, with its description of how individuals move through different stages of development towards either elite or recreational involvement in sport. However, progression and development in sport is likely to be non-linear and dynamic, with individuals choosing to engage in sport and physical activity for different motives at different points in their life (Abbott and Collins 2004; MacNamara, Button, and Collins 2010). The Three Worlds Continuum is based on the premise that individuals' options ought not be determined, and that they should be given opportunities to engage, disengage, and re-engage with sport in a variety of forms, driven by a range of motives and ambitions. For example, a successful young athlete might choose to continue in their sport (or indeed in another sport) during adulthood at a recreational or participatory level while others may begin their involvement in sport at recreational level before moving into elite involvement at a later stage.

Directions for the future – what is needed?

The extent to which PE equips individuals with the skills and motivation to engage in life-long physical activity, and thus form part of a coherent continuum of participation (cf. The Three Worlds Continuum), is not a new area for discussion (Kirk 2005). Lesson objectives focusing on participation in specific activities (soccer, swimming, etc.) are unable to account for the acquisition and development of the kinds of basic competencies that influence movement across the Three Worlds Continuum (Penney and Chandler 2000). In similar fashion, activity-based curricular models (e.g. Teaching Games for Understanding, Bunker and Thorpe 1982; Sport Education Model, Siedentop 2002) do not explicitly address those meta-cognitive skills such as commitment and determination that facilitate the pursuit of excellence in sport and serendipitously, but very positively, achievement in other non-sporting domains (Abbott and Collins 2004; Holt and Dunn 2004). In many ways, these cognitive/attitudinal characteristics act to generate a positive approach to challenge, a perception that physical activity is fun as well as good for you! Finally, and of most relevance to participation, there is no consideration of the interaction between actual and perceived competence which can enable young adults to overcome the various roadblocks and derailers they encounter as an almost inevitable feature of maturation in our modern society (Sallis, Prochaska, and Taylor 2000).

The limitations of PE in meeting a lifelong participation objective are illustrated by what Roberts (1996) described as the 'flight from sport as soon as individuals left full-time education' (106). For PE to be considered as the foundation stone upon which participation in sport and physical activity is based (Evans 1990), the rationale, quality, and content of these early experiences must be considered. The following sections present a

case for emphasising psychomotor competency and psycho-behavioural skills as key features of curricular PE since these factors appear to drive progression and performance in sport and physical activity. Prioritising these factors in PE should make a distinctive contribution to the aims of the national curriculum by developing successful learners and competent individuals who have the knowledge, skills, and understanding to participate successfully in and enjoy physical activities both now and in the future (Qualifications and Curriculum Development Agency 2009). Finally, we offer a brief overview of a piloted initiative which provided a package of activities to cater for these needs.

Essential precursors for long-term engagement in sport and physical activity

Actual and perceived competence

There is increasing recognition of the important role played by the individual's perception of, and confidence in, his or her own motor skill. Jess and colleagues (Jess, Dewar, and Fraser 2004) argue that a range of fundamental movement skills (e.g. running, jumping, hopping, skipping) are prerequisites for participation in sport and physical activity since they allow children to pass through the proficiency barrier between simple activities during childhood and the more complex activities of adulthood with confidence (cf. Payne and Isaacs 1995). Children who fail to develop this motor competence are unlikely to become involved in sport or physical activity because they have inadequate skills to successfully engage in these activities (Wall and Côté 2007). Even children who do initiate participation are likely to drop out quickly if they do not possess these fundamental skills because of the frustration associated with failing to engage successfully in specific tasks (Jess, Collins, and Burwitz 1999). In fact, research suggests that children with the poorest motor skills are the most sedentary while those that choose to engage in extracurricular activities have the best motor skills (Fisher et al. 2005). The literature suggests that fundamental movement skills act as building blocks for future, more specialised participation in sport (Gallahue and Ozmun 2002). Unfortunately, the multi-sport curriculum that dominates PE does not afford sufficient opportunities to develop competence and confidence and seems to be skewed towards the already competent students (Haydn-Davies 2005). Laker (2003) further contends that PE is failing to reach its potential for making an effective educational impact by allowing a multi-activity sport approach to dominate. It follows therefore that children should be provided with early experiences to develop a broad range of fundamental skills as these facilitate both successful early involvement in sport (a prerequisite for prolonged engagement), as well as subsequent development either at elite levels (i.e. ERE) or for personal accomplishment and progression (i.e. PRE, PPW; Côté and Hay 2002; Kirk 2005; Perkins et al. 2004; Wall and Côté 2007; cf. The Three Worlds Continuum). Simply, primary PE should provide the building blocks for all physical activity that follows. However, if the model is weak prolonged participation is unlikely to be sustainable (Griggs 2007).

Although the development of a range of fundamental skills and actual competence is an essential precursor to successful participation in sport and physical activity, the benefits of this approach may be even more far reaching when their influence on the self-schemata of an individual (and hence his/her emotional response to challenging experiences) is considered. The motivation literature stresses the importance of perceived competence in an individual's decision to both engage in and maintain involvement in an activity (Bandura 1997; Fox 2000; Horn and Harris 2002). Without the opportunity to engage successfully in fundamental activities from a young age, the child will lack the self-efficacy beliefs

necessary to maintain participation in physical activity (Abbott and Collins 2004). Actual competence enables choice but perceived competence provides the drive to take the steps and persist in the face of difficulty – behaviours that grow in significance as individuals progress in their activity.

Psychological characteristics of developing excellence

Psychological factors are increasingly acknowledged as pivotal to the realisation of human potential (Abbott and Collins 2004; MacNamara, Button and Collins 2010; Orlick and Partington 1998). Of course, the contribution of psychological factors to development and participation in sport is not a new idea. As early as 1971, Kunst and Florescu highlighted the balance of psychological factors, motor capacity, and anthropometric qualities that act as determinants of achievement in sport. Pertinently, they stressed the even more crucial role played by psychological factors in talent development, with this construct accounting for over 50% of the variance in development efficacy. Crucially, notably, and unfortunately, they also suggested that psychological concerns reflected less than 15% of most development models at that time. We would argue that this picture has still to change despite Bompa's (1999) more recent contention that psychological capacity is the most important determinant of development in sport.

Given the need to invest considerable time into one's activity, it is unsurprising that attitudes and behaviours facilitative of deliberate practice are associated with effective development (Bailey and Morley 2006). For example, determination, confidence, persistence (Bloom 1985; Renzulli 1986), autonomy (Schoon 2000), self-efficacy (Bandura 1997), and a range of coping skills (Dishman et al. 2005) have all been highlighted as characteristics necessary for the attainment of excellence. This claim is further supported by van Yperen's recent (2009) prospective study which found that psychological factors were a significant predictor of career success amongst male soccer players. Abbott and Collins (2004), and others (MacNamara, Button, and Collins 2010), suggest that these psychological characteristics enable individuals to maximise their dispositional tendencies and have been shown to play a crucial role in the realisation of potential by enabling individuals to invest the requisite time to practice, avoid distractions, and stay committed to the development process. There is a large empirical base supporting the important role of psycho-behavioural skills in both high-level performance (Gould, Diefenbach, and Moffett 2002; Orlick and Partington 1998; Williams and Krane 2001) and development (Abbott et al. 2007; MacNamara, Button, and Collins 2010). Abbott and Collins term these Psychological Characteristics of Developing Excellence (PCDEs), a term encompassing both the trait characteristics (the tendency to...) and the state-deployed skills (the ability to ... when...) that have been shown to play a crucial role in the realization of potential. PCDEs are not just mental skills such as imagery or goal setting but also include the attitudes, emotions, and desires young athletes need to successfully fulfil their potential (Martindale, Collins, and Daubney 2005). Fairclough and Stratton (2005) offer support for the role of psycho-behavioural skills within development with their suggestion that young people need to gain the knowledge, understanding, and behavioural skills to ensure physical activity becomes a regular part of their daily lives.

Recognising that pupils interpret psycho-behavioural concepts at their own level of growth and development, PCDEs should be presented developmentally to match the individual's capabilities at different stages of development. Initially children should be encouraged to realise their level of competence and to self-reinforce. At the next level they should be encouraged to begin to take responsibility for their own development and

finally children should be encouraged to aspire to excellence by achieving autonomous development. In fact, placing an early and appropriate emphasis on PCDEs during the primary school years, and continuing this throughout secondary education, has significant merit as not only do these skills contribute to learning and skill development, but they also facilitate the ability to transition from one stage of development to the next.

Competence and PCDEs – an essential interaction

Self-determination theory is a useful framework for understanding individual choices about physical activity and sport participation. The central tenet of this theory is that behavioural regulations can be ordered on a continuum according to the extent to which motivation is self-determined (Deci and Ryan 1995; Thøgersen-Ntoumani and Ntoumanis 2006). As such, the reasons for participation can be amotivated (lacking any intention to engage in the behaviour), extrinsically motivated (controlled behaviour) or intrinsically motivated (self-determined behaviour). Deci and Ryan (1995) suggest that it is only when individuals are intrinsically motivated, or internalise the benefits of the external rewards as is the case with identified and integrated regulation, that behaviour can be considered self-determined. Intrinsic motivation occurs when individuals perform an activity to experience fun, learn new things, and/or develop their competence (Yli-Piipari et al. 2009). Following this, Silverman and Ennis (2003) suggest that in order for PE to play a role in moving individuals towards a self-determined, physically active lifestyle there is a need to consider the interaction of psycho-behavioural and motor skills. These authors further suggest that an investigation of these interactions, and how they can be facilitated in PE, should allow a great deal of insight into how pupils feel and perceive PE, how PE influences their decisions to participate in sport and physical activity, and how pupil motivation affects participation.

Of course, the notion of fun is often associated with PE and youth sport (Garn and Cothran 2006), and O'Reilly and colleagues (2001) highlight the struggle with understanding fun in PE. They draw attention to how PE teachers substituted skill development and challenge for 'having fun' as the most appropriate and achievable outcome for their students. This approach is misguided since Holt and Dunn (2004) suggest that children strive for activities that are fun, but that this might not always be linked to outcome success such as winning. Although objectively defined success may be linked to fun, Wankel and Sefton (1989) suggest that it is the child's perception of whether they performed well that leads to experiences of fun and enjoyment; an interesting distinction that must be considered against the task and ego orientations for involvement espoused by some authors (e.g. Duda 2004; Duda and Hall 2001; Duda and Nicholls 1992). Concepts like game involvement and perceptions of control appear to be among the factors that are most highly associated with fun experiences in youth sport (Bengoechea, Spence, and McGannon 2005; Fairclough 2003). Given these findings, and building on the relationship between enjoyment, self-determination, and perceived competence, it is important that students are provided with optimally challenging tasks in a PE context. This resonates with Csikszentmihalyi (1990) proposition that enjoyment is experienced when the challenges of the task are comparable to the individual's perceived ability level. Within mixed ability classes, the norm in PE contexts, care must be taken to differentiate between abilities and provide appropriate challenges to meet the needs of the individual pupil.

Against the backdrop of lifelong engagement in sport and physical activity, Vallerand, Fortier, and Guay (1997) argue that self-determined regulations are related to more adaptive behavioural outcomes (e.g. adherence) compared to less self-determined regulations. A growing body of evidence suggests that intentions to be physically active and adhere to

these activities are positively correlated with intrinsic motivation and negatively correlated with amotivation and external regulation (Standage, Duda, and Ntoumanis 2003). In simple terms, self-determination appears to be the characteristic of choice if one is to focus effort on an individual's development. Furthering this case, Standage and colleagues (Standage, Duda, and Ntoumanis 2003) found that students in physical education who had increased levels of self-determination reported stronger intentions to participate in physical activity outside of school time. It is also widely accepted that higher levels of perceived competence is associated with higher levels of self-determination and intrinsic motivation (Ferrer-Caja and Weiss 2000; Li, Lee, and Solomon 2005; Standage, Duda, and Ntoumanis 2003). Since the literature suggests that motivation to participate in PE, physical activity and sport declines with age (Mowling et al. 2004), it is important that PE content and pedagogy focuses on developing intrinsic and self-determined forms of motivation that will serve into the future.

One key factor to emerge from this work is the central mediating role played by self-concept and self-schemata in generating emotional responses to physical activity and sport. In short, self-confidence appears to act as a buffer to many of the factors that mitigate participation, such as peer pressure during adolescence (Brewer, van Raalte, and Petitpas 2000). Given the well demonstrated role of self-determination in activity choice, possession of psychological skills and self-confidence would seem a logical inoculation against the socially mediated image-based challenges of puberty (cf. Motl et al. 2001). For example, children who underachieve and drop out of sport and physical activity tend to have low persistence, unrealistic standards, and a lack of aspiration (Vallerand and Losier 1999). There is a need to track groups of adolescents longitudinally through adolescence to discern and promote those factors (e.g. actual and perceived competence) which 'inoculate against dropout'. However, providing early opportunities to develop and refine the behavioural (i.e. PCDEs) and physical competencies (i.e. fundamental movement skills) that underpin long-term engagement in physical activity should reap rich dividends. When both are deployed in an integrated fashion, such an approach may well prove more useful than the highly publicised efforts to provide bespoke physical activity programmes designed to meet the self-stated needs of specific groups (e.g. an exclusive step aerobics programme for adolescent women, as part of the North Lanarkshire physical education initiative in Scotland, cited in Abbott et al. 2007). Once again, a longer term view would seem more appropriate and effective, since lifelong participation rather than a daily dose of physical activity through secondary school is the aim.

An exemplar means of achieving these aims – the DPYPS programme

Developing the Potential of Young People – a curricular approach

Unfortunately, there are few curricular models in PE that recognise the interrelated importance of both psychomotor skills and psycho-behavioural factors. One exception, Developing the Potential of Young People in Sport (DPYPS) programme, was developed by Sport Scotland (Abbott et al. 2007; Collins et al. 2010) and placed a significant emphasis on the holistic development of the individual. Even though DPYPS was developed in response to a critical evaluation of talent identification measures in sport (Abbott and Collins 2004), its developmental and educationally-oriented framework offers significant carry-over benefits to other avenues, most saliently lifelong physical activity.

The DPYPS approach utilised a dual curriculum encompassing both psychological skill and psychomotor skills and was aimed at pupils in primary school and the early years of

secondary school. Essentially, the skills offered within the DPYPS programme are those psychological and psychomotor fundamentals that underpin learning, development, and performance across performance domains and along the Three Worlds Continuum. The psychomotor activities within DPYPS were designed to initially promote a basic moves vocabulary (e.g. the ability to catch) before encouraging the combining of basic moves into increasingly complex coordinative structures (e.g. the ability to run, catch and throw a ball). This approach was similar to the Basic Moves program described by Jess and colleagues (2004). Subsequent involvement in diversified activities encouraged individuals to adapt coordinative structures to various conceptual and perceptual demands. By providing for learning experiences in fundamental components such as jumping, running, hopping, and balance, it was hoped that DPYPS would offer young children the basic skills they need for successful early experiences and subsequent development in sport, be it at elite levels, participatory levels, or as health-related physical activity.

The psycho-behavioural curriculum provided children with the strategies (e.g. goal setting, imagery, realistic performance evaluations, focus and distraction control) that have been shown to facilitate learning and performance across all sporting domains and beyond. While the attainment of actual physical competence has been a traditional focus within PE, the importance of psychological strategies for maximising the developmental opportunities afforded within a learning environment cannot be underestimated. This 'can-do, solution focused' approach is characteristic of achievement across performance domains and for all levels of achievement. Imagery is used here as an exemplar to understand how the psycho-behavioural curriculum worked and how the constructs were delivered appropriately to pupils of different ages. The youngest pupils were provided with practical tasks that promoted the use of imagery and highlighted how imagery can build confidence and improve performance. For example, pupils were encouraged to image performing a skill, using video clips or task cards as prompts, prior to physically performing the task. Pupils were then encouraged to reflect on whether imagery helped them execute the task correctly. Older pupils were presented with practical tasks that promoted the controlled use of imagery during practice and competition. For example, pupils were encouraged to mentally rehearse how a dance sequence would look and feel prior to performing it. These tasks allowed the pupils consider how imagery could be applied to their sport or physical activity. At the most advanced level, pupils were encouraged to incorporate imagery into their sport or physical activity to demonstrate their use and understanding of this skill. The teacher was also encouraged to consider how s/he would encourage imagery use within the lesson by using a variety of strategies such as the use of video or task cards as prompts, allocating time to imagery as well as physical practice, and praising individuals who spent time imaging.

Although situated within a sporting context, the carry-over benefits of the DPYPS approach to other dimensions of excellence are equally desirable. For example, the children were able to transfer the skills acquired through the DPYPS programme to other arenas and challenges (Abbott et al. 2007). Specifically, the generic approach to development and participation which characterised DPYPS was cited as a particular strength since it encouraged children to adapt the psychological skills that they acquired to various sporting and non-sporting activities. For example, the participants used the psycho-behavioural skills to help them in academic and social settings, while the improved levels of both actual, and crucially, perceived competence underpinned the confidence to maintain physical involvement. The generic benefits of the DPYPS approach were in keeping with the notion that individuals will move between different motives for participation as they progress along the Three Worlds Continuum. The idea is that, built on a common fundamental skills

and psychological behaviours foundation, all individuals can be empowered to progress back and forth between different motives for participation. On this basis, young high performers can subsequently stay involved at a participation level whilst late developers or returners can try their luck in the ERE and PRE worlds at any age.

Conclusion

The approach described thus far is in contrast to the ‘daily dose’ of physical activity espoused by some authors and agencies (Twisk 2001). The contrast is akin to promoting literacy by ensuring a daily reading season, but in the absence of lessons to establish adequate reading skills and the motivational climate that would facilitate on-going improvement. Such an approach is doomed to failure and will undoubtedly lead to frustration and de-motivation on the part of pupils who do not have the skills to engage successfully in sport; characteristics that interestingly also typify adolescent dropout from sport and physical activity. The educational and developmental thrust of the arguments presented in this paper is crucial since PE alone cannot meet physical activity recommendations (Fairclough and Stratton 2005). Instead, Sallis et al. (2001) suggests that PE should promote the generalisation of physical activity outside of school by equipping children with the skills and behaviours to successfully engage in sport and physical activity. Consequently, curricular PE must provide a quality programme inclusive of these motor and psycho-behavioural skills if it is to effectively form the foundation of later sporting and physical activity participation.

Placing developmental skills like self-motivation, self-determination, perceived and actual motor competence at the core of curricular PE should provide young people with the capacity and competencies to choose to be physically active and, if they have the necessary capabilities and motivation, to strive for elite sport. Of course, the complex and multifaceted processes involved in participation must also be acknowledged by recognising that participation cannot be understood in terms of biological maturation, psychological development, or social factors alone. Instead, effective interventions must address the various precursors of participation, as well as the appropriate biopsychosocial balance before genuine lifelong pathways in sport and physical activity can be achieved (Collins et al. in press). Reflecting these contentions, it is a necessity to consider the training of physical education teachers and other physical activity and sport providers, especially during the crucial early stages, in order to ensure an educational/developmental orientation to the curricula they offer.

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