Physical education for the person with Down syndrome: More than playing games?

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Children and adolescents with Down syndrome have a range of physical problems and difficulties that may affect their motor development. Therefore it is important that programming which is directed towards facilitating motor skill development reflect quality practices. This article presents five elements regarded as demonstrating 'quality' in physical education and some guidelines for programming. It is considered that physical education programs need to provide learning opportunities which assist the individual with Down syndrome to go beyond the playing of games to become a physically educated person.

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Children and adolescents with Down syndrome are at risk from a wide range of physical problems and difficulties that may interfere with their attainment of motor milestones and subsequent motor skill development. Such children present challenges for teachers and therapists as they require carefully considered instruction and the maintenance of quality in physical education practices. These practices need to ensure not only that injuries are prevented but that the person's developing physical abilities are not further handicapped by poorly acquired movements or techniques.

However, quality in physical education instruction involves more than just its 'physical' expression. It also requires that children have access to, and learn to understand, the knowledge-based set of principles, practices and values into which the 'physical' expression of the skill or movement fits. Skills acquired and practiced are learnt, not just for their own sake, but to be used in different activity contexts. Children need to be taught to understand their skills in everyday movement and games activities.

An emphasis on more than just the 'physical' expression of skill enables the physical education program to present and develop exciting challenges and problems. These can be presented in an enjoyable way which will assist not only the physical, but also the social, emotional and cognitive growth of the individual.

Rather than adopting a restrictive remedial focus for those with Down syndrome, quality in physical education programs can provide learning experiences in all aspects of development which can lead to positive attitudes, and the adoption of an active and healthy lifestyle.

Graham (1992) defined and described a process of teaching which results in a qualitatively successful physical education program. He used the Franck et al (1991) definition of a 'physically educated person' to propose that Physical Education is *"about more than simply keeping children busy, happy and good two or three days a week" (p.8)* but that quality physical education programs are about the development of a 'physically educated person'. 'Physically educated persons' are individuals who can demonstrate the following attributes:

* they have learnt skills necessary to perform a variety of physical activities.
* they are physically fit.
* they participate regularly in physical activities.
* they know the implications of and benefits from involvement in physical activities.
* they value physical activity and its contribution to a healthy lifestyle.

Graham (1992) p.8-9.

However, do children with Down syndrome have the opportunities to learn the above aspects of physical education and thus the means to become a physically educated person? Or do their difficulties and deficits in the motor development area lead to modified, selective and adapted-type programs that limit their attainment of this status? I suspect the latter is often the case, so it may be useful to consider programs in terms of the five attributes of the 'physically educated person'.

Firstly, do programs provide opportunities to learn skills that will enable the performance of a variety of physical activities?

To enable the body to move efficiently and effectively, many personal physical characteristics and developed skills need to work together. Strength, agility, postural stability, speed, coordination and reaction time form the basis from which more complex skills such as throwing, catching and kicking can be developed. As these complex skills are refined and practiced, games and sports can be played.

The motor skills of children with Down syndrome are reported to be below their age-matched peers and even in some cases below other persons with intellectual disability (Burns & Gunn,1993; Block, 1991). Studies have also indicated specific deficits in aspects of movement such as timing (Henderson, Morris & Frith,1981), balance (Shumway-Cook & Woollacott,1985) and co-ordination, as well as in physiological aspects such as muscle tone and strength (Harris, 1984). The development of motor skill proficiency through childhood and into adolescence is slower for those with Down syndrome and in some areas they persistently make slow progress that is below their mental age (Jobling and Gunn, in press).

Physical education programs need to address these problem areas specifically, but also to focus on the development of a comprehensive complement of movement abilities that can be developed and practiced. These should include activities involving body awareness, space awareness and the concepts of balance, time and effort in movement (Barham, 1993; Sherborne 1990). At all ages these aspects of movement and their quality development are the basic requirements for the successful progression to other more complex skills.

Varied opportunities for practice can be given in games and sports as well as in dance, gymnastics, and in leisure pursuits such as walking, fishing and cycling.

Many programs in physical education are chronologically age-based. As the person with Down syndrome is known to be delayed in motor development, this style of programming may lead to little progress and frustration for the child. The age-appropriateness of activities deemed necessary as part of these programs may be of little value if the children and adolescents do not have the basic movement skills required. It would be more benefical for the child and the physical education teacher to consider the basic movements in the skill development. This means a 'back to basics' approach, with the person with Down syndrome considered as a novice learner rather than as an age-appropriate participant. Ask yourself- if you can't do this and you have these abilities and/or disabilities where would you start to teach the skill and how?

As yet we do not know how skilled in movement children with Down syndrome can become, so we must be careful about modifying motor skills. Although the equipment and the environment may need to be modified and/or adapted, modifications to the performance of the actual skill may not be appropriate. You may need to break down the skill into small components, teach each of these specifically before 'chaining' all the pieces gradually together again to form the whole.

Also, in the learning of motor tasks, errorless learning (that is a learning approach which enables errorless practice, supported as necessary until the skill is mastered) is important as incorrectly learnt movements or faults in style are extremely difficult to correct. Can you remember that faulty golf, tennis or swimming stroke that you never corrected, or the old habit that was hard to break? There is the further disadvantage that incorrect motor skill patterns, especially if repeated frequently, can cause injury.

The practicing of movements and skills is vital. However, constant repetition of skills can make sessions boring. Thus, practice routines and sessions need to be creative and varied. There needs to be plenty of pertinent, purposeful, progressive, paced and participatory practice (Siedentop, 1983). This practice also needs to be pleasurable as enjoyment is a key element in motivation to continue with an activity.

The learning context for skill development needs to establish a 'mastery climate'; one that encourages improvements and efforts rather than performances and ability (Roberts & Treasure, 1992). The facilitation of a 'mastery' learning environment for those with Down syndrome includes not only the physical skills but also the teaching and learning of social and emotional aspects related to the game or the activity. Thus, children and adolescents with Down syndrome can learn about themselves, about their abilities and the abilities of others in the game situation, about winning and losing, and about doing their best.

Secondly, do the programs provide opportunities to become physically fit?

The general fitness level in children, adolescents and adults with Down syndrome is low and is believed to have both a motivational and physiological basis (Fernhall, Tymeson, Millar & Burkett, 1989; Pitetti, Climstein, Campbell, Barrett & Jackson, 1992). It is suggested that some of this may be due to syndrome-specific conditions such as heart problems, but it seems also that there is a lack of expectations in programming. Individuals with Down syndrome have a tendency to become obese in childhood (Cronk, Chumlea & Roche, 1985) which leads to an adolescent and adult who is less likely to participate in physical activity.

It is acknowledged that this, of course is true of all obese children, not just those with Down syndrome. Heart and respiratory problems, and abnormalities in thyroid function in some children, as well as orthopaedic problems, may also contribute to low activity levels and the lack of participation in activities of a vigorous nature. Children and adults with Down syndrome require some skill in locomotion and a certain level of muscular strength in order to gain fitness benefits from their activities. This can be difficult for individuals with Down syndrome. These factors need consideration, and remediation needs to provide alternatives to prevent the adoption of a sedentary lifestyle.

So, activities in physical education need to be carefully taught and chosen for their 'fitness' benefit. For example, an adolescent program may include social dance rather than social bowling, or cycling instead of cricket (for a list of activities with fitness benefits see Corbin & Lindsey, 1984).

Another suggestion to help create opportunities for the development of fitter young people with Down syndrome is to relate certain activity aspects of the physical education 'get-fit' program to classroom programs. Corbin (1991) suggests that there are many factors which influence the development of fitness and an integrated approach in programming is essential to ensure exercise involvement. In health and home economics the teacher could assist children to develop an athletes' eating plan, and in geography, an around Australia/ England run or cycle could be simulated on the school oval or field.

Thirdly, do the programs provide opportunities to participate in regular physical activities?

Opportunities to participate in regular physical activities are often restricted in two ways. Firstly, children and young people with Down syndrome often do not have the skill level necessary to participate. Secondly, there is a certain lack of spontaneity because many of their activities are structured and organised by adults rather than by peers (Cheseldine & Jeffree, 1981 and Buckley & Sacks, 1987). Thus, 'spur of the moment' activities are sometimes difficult and in many cases non-existent.

However, worthwhile participation can be developed and encouraged. It may not just happen! The skills developed for a variety of physical activities need to be related to participation in a realistic way for the individual either through family or community groups. Experiences given need to be related to the development of skills. For experience without skills or skills without experiences leave the learner without the context and/or the ability to regularly participate. Young people with Down syndrome need opportunities to be able to use what they have learnt.

These opportunities need to be realistically related to the lifestyle of their families initially, and then to the individuals' own independent way of life. The range of opportunities must also allow for choice, not only between various activities, but also between various levels of involvement for the young person. The levels of involvement can be along a continuum from competitive to recreational or from segregated to integrated. Young people need to have both the skills and the knowledge to make choices, and also to be able to change that choice later if they desire to do so.

The social contacts and networks that are developed from regular participation, as with all of us, bring the social benefits and friendships that are part of being in a club, group or team. These may be of greater benefit to the young person with Down syndrome than the activity itself.

Fourthly, do the programs provide opportunities to know and understand about physical activities and education?

Young people with Down syndrome need to be taught to understand movement; the where, what and how about their movements. There is a need for them to develop an understanding of the 'feeling' of movement and to process this feedback information in order to repeat movement and movement sequences in their skill development. The 'feeling' of movement or kinesthesis is an important factor in movement retention (Geron, 1986). The movement work of Laban is a useful resource for teachers to help encourage this learning (Laban, 1971).

Wall (1990) discussed a knowledge-based approach to motor skill acquisition for children with developmental delays. It was suggested that there are five types of knowledge about actions that could assist in the development of motor skills. These were:

1. knowledge about the body and how it functions motorically with relationship to the object (holding the ball) and the context (throwing the ball into the basket or ring, passing the ball) - that is the movement interaction between the person, the equipment and the environment (in the game, i.e. netball).

2. knowledge about how to perform a movement sequence (leap frog) or action (catching); to develop an understanding of each aspect of the action perceptually, and then to put this perceptual information into an order which generates a response, to initiate and execute the task. These motor tasks in sequence then need to be understood in relationship to the game.

3. knowledge about subjective feelings of self-confidence and competence in the activity situation and the development of the ability to deal with low self-worth which could lead to discontinued participation. The use of music and a style of activities such as Sherborne's relationship play in movement classes can assist in this aspect (Sherborne, 1990).

4. self-knowledge about skills, which are the 'best' skills and which skills need to improve? Knowledge of the 'when', 'what' and 'how' about the acquired skills in relationship to choosing to participate?

5. knowledge about how to think (mental rehearsal) about moving; an awareness developed from talking, observing and solving movement problems such as those that children can discover using Laban's analysis of movement. These are the relationships between the concepts of time in movement - quick and slow, or levels of movement - high and low, or space of movement -big and small as they occur in actions.

Physical education programs for children and adolescents with Down syndrome should include all these opportunities to learn to understand both kinesthestically and cognitively movements within skills (quick/slow release the ball) and also the movement sequence or motor skill (throwing or kicking) within the game or activity context. Games have etiquette, strategies, tactics and rules, and opportunities to learn them are part of this knowledge-based approach. An understanding of these will enable young people with Down syndrome not only to play, but to be more informed about their play and, as a spectator, to appreciate the skills of elite performers who may also be their 'heroes'.

The development of self-perception about their motor skill abilities and an understanding of the concepts within games such as winning and losing and 'doing your best' are related to this type of knowledge and a young persons' understanding of it. Therefore, these aspects should be an essential aspect of any physical education program.

Fifthly, do the programs provide opportunities to learn to value physical activity as part of their life?

The affective domain should also be considered in quality physical education programs. Young people with Down syndrome need opportunities to learn to cherish activities, gain enjoyment from them and thus to remain active throughout their lives. In order to do this, young persons with Down syndrome need not only the skills to play but also the ability to be able to relate physical activity to other aspects of life. They need to feel good about themselves, to gain from their personal achievements and to have fun times with family and friends.

The motivation to remain active for people with intellectual disabilities has often been seen as a major problem facing those who teach them. Both Scanlan (1990) and Czikszentmihalyi (1985 & 1990), view enjoyment as a prime motivator in the person's continuing involvement in activity. Czikszentmihalyi (1985) considers that when an individual's skills and the challenges of the activity are held in 'balance' an effect which he calls 'flow' is produced. This feeling of 'flow' about the activity enables the person to continue to participate without personal boredom or anxiety. The activity becomes enjoyable, repeatable and valued for its own sake.

Conclusion

It has been asserted here that there are five aspects in the planning of learning opportunities that are vital to the quality physical education program for children, adolescents and adults with Down syndrome. They should not be considered as separate aspects or content areas, but be interwoven throughout the programs from kindergarten to adulthood. For some persons with Down syndrome, development and the learning of skills and concepts may take longer than for others. Each child's needs are different and progress may be slow. But no matter how limited the potential of the person with Down syndrome may seem or how burdened school resources in physical education are, to be 'physically educated' is essential. Modification in the rate of progress and in the instructional steps as well as in some equipment items may be necessary, however opportunities should be given.

Aspects of programming should not be discarded because children with Down syndrome are considered too slow or the task is perceived as too difficult. All the five presented opportunities to learn must be addressed in a continuing program that enhances success. Physical education programs that provide only fitness routines, or games experiences or remedial-type instruction can be developmentally limiting for the child and adolescent with Down syndrome. Such programs neglect the aspects in physical education that are vital to the young person's continued understanding and enjoyment of physical activity. Therefore, in terms not only of physical development but also in terms of the young person's social, emotional and cognitive growth, the quality physical education curricula needs to address the interweaving of its 'physical' expressions with opportunities that help the individual to develop an understanding of activity and its value to health and self-worth across the lifespan. This gives children, adolescents and adults with Down syndrome an opportunity to become a "physically educated person".

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Christine Hamilton
Chief Speech and Language Therapist
Child Development Centre, Portsmouth
Language development (0-5 and 5-10 years)

Evelyn Houghton
Portage Teacher
Fareham and Gosport Portage Service
Portage teaching activities (0-5 years)

Pat Le Prevost
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Horton General Hospital, Oxford
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Accommodation
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