Fitness, Fun and Friends through Participation in Preferred Physical Activities: Achievable for Children with Disabilities?

Nyquist, A.[1] , Moser, T.[2], Jahnsen, R.[3]
[1]SBeitostølen Health Sports Centre, Norway
[2]University College of Southeast Norway, Norway
[3] Oslo and Akershus University College; Sunnås Rehabilitation Hospital, Norway

Dette er siste forfatterversjon av artikkelen før publisering i tidsskriftet

international journal of disability development and education. 2016, 63(3) 334-356

Forlaget versjon er tilgjengelig her

doi: 10.1080/1034912X.2015.1122176

Fitness, fun and friends through participation in preferred physical activities: achievable for children with disabilities?[1]

Astrid Nyquist, Thomas Moser & Reidun Jahnsen

Abstract

This study investigates the preferences for, actual participation in and enjoyment of physical out-of-school activities in children with physical disabilities, including what particular activities they are actually participating in, how often, with whom, where, and how enjoyable they find these activities. The data are based on structured interviews with 149 children (67 girls (45%) and 82 boys (55%) from 6 to 17 years) who were attending three weeks of intensive rehabilitation at Beitostølen Healthsports Centre (BHC) in Norway. The Children's Assessment of Participation and Enjoyment (CAPE) and Preferences for Activities of Children (PAC) scales were administered at the start of their rehabilitation stays. The study reveals a quite high level of participation in physical activity and a high degree of enjoyment in participating, but the children want to be even more active than they already are. They have clear preferences for activities, and these activities are to a large extent consistent with what they actually do during their leisure time. The children are most frequently active with family members, but they would prefer to be more active with peers. A prerequisite would therefore be to acquire better basic skills and competencies in a few chosen activities rather than having some experiences in a broad range of different activities. There are more similarities than

[1] Astrid Nyquist, Thomas Moser & Reidun Jahnsen (2016): Fitness, Fun and Friends through Participation in Preferred Physical Activities: Achievable for Children with Disabilities? *International Journal of Disability Development and Education, 63*(3), 334-356. DOI:10.1080/1034912X.2015.1122176 http://dx.doi.org/10.1080/1034912X.2015.1122176

differences between boys and girls and between age groups on the parameters investigated in this study.

Keywords: children, disabilities, participation, preferences, enjoyment, physical activity

Introduction

According to the "UN Declaration of the Right of the Child", the opportunity for children to engage actively in their own lives should be strengthened by listening to their opinions and taking these into consideration in all important issues in their lives (United Nations, 1989). Focusing on participation in activity is based on a holistic understanding of the child as an actor with her/his own will and competence. The assumption is that children's active participation contributes positively to the individual child in actual situations from a long-term perspective and also from a community perspective. Within the International Classification of Functioning, Disability and Health (ICF), participation is understood as involvement in life situations (World Health Organization (WHO), 2001) and thus also includes leisure-time physical activity.

Participation does not mean immediate satisfaction of the children's wishes but rather empowerment by giving the children real opportunities to influence social settings and to be in charge of their own actions. Parents, teachers and health professionals are responsible for ensuring that all children are allowed to participate, including children with disabilities. A major assumption for making this possible should build on children's own experiences and competence and should include confidence in their expertise regarding their life situations.

Thus, asking children for and listening to their opinions become crucial for understanding their participation (Percy-Smith & Thomas, 2010).

During childhood, participation takes place in a dynamic context owing to continuously changing developmental and learning processes. Therefore, the individual understanding and experience of participation will change over time. Furthermore, different contexts, cultural backgrounds, social belonging, adaptations to the environment and life situations will have transformative influences on participation (King, Law, Hanna, King, Hurley, Rosenbaum et.al 2006). Thus, the concept of children's participation must be seen from a dynamic, multidimensional perspective in which participants' individual experiences become important factors.

Participation in day-to-day physical activities is an important prerequisite for achieving appropriate physical, cognitive, and social levels of functioning (King, Law, King, Hurley, Hanna, Kertoy, et al., 2007; Law, King, King, Kertoy, Hurley, Rosenbaum, et al., 2006). Despite methodological challenges and weaknesses in the research literature (Lubans, Plotnikoff, & Lubans, 2012), the significance of participating in physical activity for physical and psychosocial health, development, learning and well-being for all children is well documented (Best, 2010; Erwin, Fedewa, Beighle, & Ahn, 2012; Janssen & LeBlanc, 2010).

Recent studies have shown that children with disabilities participate less than their non-disabled peers in school and leisure-time physical activities (Carlon, Taylor, Dodd, & Shields, 2013; Jarus, Lourie-Gelberg, Engel-Yeger, & Bart, 2011; Solish, Perry, & Minnes, 2010), and there are also differences between certain groups of disabilities (Bart, Jarus, Erez, & Rosenberg, 2011; Masse, Miller, Shen, Schiariti, & Roxborough, 2012).

Studies in the field of rehabilitation have documented that children with disabilities participate less in decision making than do their peers without disabilities (Ullenhag, Bult,

Nyquist, Ketelaar, Jahnsen, Krumlinde-Sundholm, 2012). Children with disabilities appear to have more participation restrictions on their everyday activities than their non-disabled peers, and this gap increases with age (Bult, Verschuren, Gorter, Jongmans, Piskur, & Ketelaar, 2010; Colon, Rodriguez, Ito, & Reed, 2008; King, Petrenchik, Dewit, McDougall, Hurley & Law., 2010; Schenker, Coster, & Parush, 2005; Simeonsson, Leonardi, Lollar, Bjorck-Akesson, Hollenweger & Martinuzzi, A. 2003).

Increased participation in activities is assumed to be beneficial physically, psychologically and socially for children with disabilities and thus is a prerequisite for learning, performing activities, developing friendships, and, not least, satisfaction in everyday life (Kolle, Steene-Johannessen, Klasson-Heggebo, Andersen, & Anderssen, 2009; Davis, Shelly, Waters, Mackinnon, Reddihough, & Boyd, 2009; King, 2009; King et al., 2010; Majnemer, Shikako-Thomas, Chokron, Law, Shevell, Chilingaryan et al. 2010; Palisano, Chiarello, Orlin, Oeffinger, Polansky, Maggs et al. 2010b).

Frequency of participation in recreational and competitive physical activities has been shown to depend on the type of activity and to vary as a function of children's gender and age (King, McDougall, Dewit, Petrenchik, Hurley & Law, 2009). Participation is significantly influenced by the experience of enjoyment (Allender, Cowburn, & Foster, 2006), but enjoyment may also be influenced by the level of motor abilities (Soref, Ratzon, Rosenberg, Leitner, Jarus & Bart, 2012).

A number of studies (Bult et al., 2011; Claassen, Gorter, Stewart, Verschuren, Galuppi & Shimmell, 2011; Jahnsen, Villien, Aamodt, Stangehelle, & Holm, 2003; Palisano, Almarsi, Chiarello, Orlin, Bagley & Maggs 2010a; Ödman & Öberg, 2005) note that there is a need for more research on children’s understanding, the meaning of participation, and the conditions that can be promoted to enhance participation for those concerned. This requires a dynamic

and relational understanding of participation by which the individual's subjective opinions and experiences, as well as the interactions between the individual and the environment, are included. The knowledge obtained through this study will be relevant to professionals in the rehabilitation field, in specialist health care and in communities, to parents, and, not least, to the children themselves.

Objectives

The aim of this study was to describe the activities the children participate in, with whom and where the activities are performed, to what extent the activities are in accordance with their preferences, and how enjoyable they find the activities. The research questions are as follows: 1) Which physical activities do the children participate in? 2) With whom and where are the activities performed? 3) Is the actual participation in accordance with their preferences? 4) What are the relationships between preferences, actual participation and enjoyment of physical activities?

Method

The whole study uses a longitudinal multi-method design that follows children who are participating in a three-week intensive rehabilitation program at Beitostølen Healthsports Centre (BHC). The Children's Assessment of Participation and Enjoyment (CAPE) and Preferences for Activities of Children (PAC) were conducted at baseline, three months after their stays and one year after their stays. Qualitative interviews in a strategic sample were conducted in the last part of the rehabilitation stay, and the follow-ups were conducted in the children's local communities. This article is based on the baseline data.

Participants and setting

The participants were recruited from BHC, a rehabilitation institution for persons with primarily physical disabilities. A stay at the centre is commonly the latter part of a (total) “rehabilitation chain". The main focus is on achieving functional independence according to self-defined goals by providing a wide spectrum of adapted physical activities in which children can participate in spite of their disabilities, not because of them. There were 182 eligible children (6–17 years of age) and caregivers attending three weeks of intensive rehabilitation with a focus on adapted physical activities. Seventeen children declined to participate, and 16 were not able to fill in the questionnaires, giving a study sample of 149 children, 67 girls (45 %) and 82 boys (55 %), mean age 12 years (SD = ± 2.5). The children’s primary diagnoses are presented in table 1. Some of the children with cerebral palsy and other neurological diseases and syndromes may have comorbidities, such as epilepsy and sensory or cognitive impairments. However, in this context, the impairments are compensated for in adapted physical activities based on the children’s functional levels regardless of their diagnoses or comorbidities.

Table 1.

All participants were able to move independently 500 m on even ground with or without assistive devices. However, only a few of the participants were able to move 500 m with or without support on uneven ground, such as up and down hills or stairs. Only 39 of the 149 children used a wheelchair daily. The participants with CP were at Gross Motor Function Classification System (GMFCS) levels I–IV, with most of them having moderate impairments. Two-thirds of the children (69 %) lived with two adults. One-third (29.5 %) had assistance from a leisure time assistant in their local community. Approximately half of the mothers had university educations. Just over half of the children (52.3 %) lived in urban areas with more than 20 000 inhabitants. Because of the wide age range, the participants were

divided into three age groups: 6–9 years, 10–13 years and 14–17 years. All participants and/or their caregivers signed informed consent for participation in the study.

Measures

Two standardised methods for data collection were applied: the CAPE and the PAC (King et al., 2009; King et al., 2006; King, Law, King, Hurley, Hanna, Kertoy, et al. 2004). Both instruments are used in research as well as in clinical and educational practice in rehabilitation. Previous research has shown that the CAPE and the PAC offer suitable opportunities to assess children's and young people's participation in leisure activities outside of compulsory school during the last four months before the interview (Bult et al., 2010; Colon et al., 2008).

The instruments consist of 55 activity pictures and may be applied as either a questionnaire or an interview guide for children and youth aged 6–21 years with different levels of functioning. Ideally, the respondents answer the questions themselves, with assistance from parents or other caregivers if required. Both the CAPE and the PAC are divided into formal and informal activities, and the 55 activities are divided into five activity categories: 12 recreational, 13 physical, 10 social, 10 skill-based and 10 self-developing. The CAPE and PAC may be used separately or together; if both instruments are used, it is recommended to complete the CAPE first (King et al., 2004).

The CAPE is based on the assumption that the opportunity for activity and participation is a consequence of the interactions between the child's health and environmental and personal factors (Hammel, Magasi, Heinemann, Whiteneck, Bogner & Rodriguez, 2008; King et al., 2004; McConachie, Colver, Forsyth, Jarvis, & Parkinson, 2006; MacPhail, Gorely, Kirk & Kinchin, 2008). The number and diversity of activities are registered, along with activity

frequency and contextual factors such as with whom and where the activities are performed (Table 2) and the children's enjoyment of their participation.

The PAC registers activity preferences, that is, what activities the children or young people would genuinely like to participate in if they could pick and choose without limitations. A total score is created for each activity category by summing the scores from each activity and dividing that by the number of activities in each category. The dimensions and scales of the CAPE and PAC are presented in Table 2.

Table 2.

The CAPE and PAC manuals provide detailed descriptions of the procedures for scoring, calculating the sum of the scores, and analysing the significance of the scores (King et al., 2004). The original Canadian versions of the CAPE and the PAC were translated into Norwegian and back-translated (Fallang, Østensjø, & Øien, 2008), and their use in research was approved by the copyright holders and publishers (Harcourt Assessment).

The CAPE and the PAC have been thoroughly validated for a Canadian population, and the instruments are considered valid and recommendable for both clinical and research purposes (Imms, Reilly, Carlin, & Dodd, 2008; King et al, 2004, 2007). Bult et al (2010) and Ullenhag et al. (2012) examined the validity of the Dutch and Swedish versions of the CAPE and the PAC, respectively, and the results were in line with those from other studies and with recent literature in the field of participation of children with disabilities (Imms, 2008; Majnemer, Shevell, Law, Birnbaum, Chilingaryan, Rosenbaum et al., 2008).

In a Norwegian study, Nordtorp, Nyquist, Jahnsen, Moser, & Strand, (2012) found satisfactory internal consistency for the five categories of the PAC (Cronbach's alphas from 0.75 to 0.93). As in the Canadian sample, internal consistency was slightly lower for the Norwegian version of the CAPE, with alpha values between 0.53 and 0.87. Relative and

absolute test-retest reliability of the CAPE and PAC varied from moderate to excellent, with ICCs between 0.49 and 0.72 for the CAPE and 0.50 to 0.85 for the PAC. On both the CAPE and the PAC, skill-based activities had the highest ICCs and social activities the lowest.

As did previous studies (Imms, 2008; King et al., 2004, King et al., 2006), the Norwegian study (Nordtorp, Nyquist, Jahnsen, Moser & Strand, 2013) emphasises that the enjoyment dimension should be used with caution, especially as an outcome measurement. On the basis of the studies conducted by Bult et al. (2010), King et al. (2004) and Nordtorp et al. (2013), it can be concluded that the reliability of the diversity and frequency dimensions is satisfactory. However, the reliability of the enjoyment dimension (King et al., 2004; Nordtorp et al., 2013) is not consistently satisfactory (ibid).

Data collection procedures

The entire CAPE and PAC were administered with all 55 activities in the five activity categories. Completion of the CAPE was monitored by a sports pedagogue or a physiotherapist upon the children's arrival at BHC. The children completed the CAPE form themselves, with assistance from parents when necessary. It was emphasised that the children should have the opportunity to express their own opinions when answering the questions, especially on issues concerning their likes and dislikes. If assistance was needed, this was given by either reading the questions aloud, helping them with interpreting the pictures, or using larger response sheets when size was an issue. Professionals were present during the entire session to answer questions. Breaks were given when requested. The time spent completing the CAPE varied from 0,5 to 1,5 hours.

The PAC was also administered individually, after the CAPE and by the same professionals. They presented the 55 activity pictures, asking, "If you could do anything in the world, would you want to participate in the ...?" The response options, "I would not want to do it," "I would

probably want to do it," and, "I would very much like to do it," were supported by face symbols. The time spent completing the PAC was up to 30 minutes.

At the end of the session, the children were to prioritise the three activities that they liked the most ("I would really like to do it"). These three activities became the basis for the individual goal setting during the children's stays at BHC and for the follow-ups in their local communities at home.

Data analysis

Only the physical and skill-based activity categories of the CAPE and the PAC were analysed at the category level in the present study. Moreover, based on the purpose of the study, analysis of data at the single activity level was requested, including all activities that were considered physical activities in a Norwegian context (Table 4). Consequently, two activities from the recreational and social category were included, respectively, going for a walk or a hike and going on a full-day outing. Furthermore, six activities from the original physical and skill-based categories were excluded because they are not considered primarily physical activities in Norway (participating in school clubs; doing paid work; learning to sing; taking art lessons; taking music lessons; playing a musical instrument). Thus, at the single activity level, 19 activities that are considered physical activities in Norway were taken from four different categories on the CAPE and the PAC and analysed in the present study (Table 4). All of the CAPE and PAC dimensions of participation were applied in the analysis, at both the category and single activity levels (Table 2).

The data were processed in SPSS 17.0. After data entry, a control of the data matrix was performed by an external professional. Except for activity type (nominal scale), the data are treated as ordinal scales. Because of the mainly skewed data distribution, non-parametric tests

and procedures were applied. The two nominal variables, where and with whom the activities were performed, were treated as ordinal scales because a value-based ranking of the categories was assumed. In the first case, the instrument ranks home lower than the community. In the second case, parents and close relatives are ranked lower than friends and instructors. Enjoyment of participation is assessed by asking the children how much they like performing an activity and is scored on a five-point scale.

The PAC results follow an ordinal scale, and the 19 activities that are considered physical activities in Norway were categorised as physical or skill-based using the CAPE activity categories. The findings were considered to be statistically significant at the 5 % level ($p < 0.05$).

Results

The diversity and frequency of participation in different activities are first presented at the category level based on the original CAPE categories. Then, the results are presented at the single activity level based on the activities that are considered physical activities in Norway.

Diversity of activities and frequency of participation

During the last four months before the interviews, the children had on average participated in 3.9 (SD 1.93) physical activities and in 2,4 (SD 1,46) skill-based activities (Table 3).

Table 3.

The frequency of participation in these activity categories at the group level is calculated as a relative indicator for the total frequency of participation in the actual activities. The findings are presented as means, standard deviations (SD), medians and ranges, which gave numbers that could be used across the categories (Imms, 2008). The relative indicator of participation frequency also indicates the mean amount of time that the children spent in the different

activity categories (King et al., 2004; 2006). Participation frequency in skill-based activities was somewhat lower than participation in physical activities.

Table 4 presents an overview over the number of children who had participated in each of the 19 activities that were considered physical activities in Norway and the frequency of participation in these activities during the last four months before the interviews.

Table 4.

The most frequently reported activities were swimming and biking. Ten of the 19 activities were performed once a week, and the activities with the lowest reported frequency were going on day trips, gardening and fishing.

Participation related to gender and age

Boys participated more often and in more physical activities than girls (Mann-Whitney test, Z = -2,32, p = 0,021; Z = -2,30, p = 0,021), whereas girls participated more often and in more skill-based activities than boys (Mann-Whitney test, Z = -2,77, p = 0,006; Z = -2,67, p = 0,007).

There were no significant differences related to age between the children who participated in the different activity categories. At the single activity level, only team sports and winter sports showed significant differences in the proportions of participation between the three age groups. The youngest group had the highest proportion, 82 %, of winter sports participants, compared with 62 % in the middle group and 48% in the oldest group (Kruskal-Wallis, $\chi 2$ = 9.81, p = 0,007). The group from 10 to 13 years had the highest proportion of participation in team sports, 48 %, compared with 41% in the youngest and 25 % in the oldest group (Kruskal-Wallis, $\chi 2$ = 5.99, p = 0,05).

There were significant differences between the age groups regarding frequency of participation in physical activities (Kruskal-Wallis, $\chi 2 = 7{,}37$, $p = 0{,}025$). Participants from 14–17 years had lower frequency scores in both the physical and skill-based activity categories compared with the other two age groups.

Looking at each activity separately, only hiking and winter sports showed significant differences in participation frequency between the age groups. The oldest group had the highest scores for hiking (Kruskal-Wallis, $\chi 2 = 8{,}39$, $p = 0{,}015$), and the youngest group had the highest scores for winter sports (Kruskal-Wallis, $\chi^2 = 19{,}18$, $p = 0{,}000$).

Participation related to with whom and where the activities were performed

The contextual factors of participation were assessed by asking the following question: with whom and where did you perform this activity most often? Findings regarding the social factor of the CAPE are presented in Table 5. Higher scores indicate greater social competence/more social behaviour (King et al., 2004). Furthermore, Table 5 provides information about the environments in which the activities are performed. Higher scores indicate performing the activities outside of the close neighbourhood (King et al., 2004).

The differences between the categories were insignificant. However, five children reported doing physical activities only at home, and eight children reported doing skill-based activities only at home. One child reported doing physical activities alone, and four children reported doing skill-based activities alone.

Table 5.

There were no significant variations between the genders regarding with whom and where the activities were performed. The oldest age group reported less participation in skill-based

(Kruskal-Wallis, χ^2 = 8,65, p = 0,013) and physical (Kruskal-Wallis, χ^2 = 7,97, p = 0,019) activities at home than did the two younger groups.

Table 6 presents the most frequent of the 19 activities that are considered physical activities in Norway along with where and with whom they are performed. Different physical activities have different potentials regarding opportunities to participate in a variety of physical and social environments.

Table 6.

Contextual factors related to gender and age for the 19 single activities

More girls reported dancing than boys, and there were significant differences in with whom (Kruskal-Wallis, χ^2 = 25,18, p = 0,000) and where (Kruskal-Wallis, χ^2 = 18,76, p = 0,002) they danced. Girls danced more often and with friends, both at home and in the community, whereas boys danced with family members at home.

The youngest children went for walks with their families, whereas the children age 10 years and older walked about with friends (Kruskal-Wallis, χ^2 = 25,33, p = 0,004). Children from 10 to 13 years performed individual physical activities with friends, whereas those from14 to 17 years performed activities alone or with an instructor (Kruskal-Wallis, χ^2 =18,48, p = 0,047). There was no difference between the age groups regarding where they walked. Winter sports were primarily performed in the community by the youngest children, whereas a larger proportion of the children from 10 years of age and older performed winter sports outside of their communities (Kruskal-Wallis, χ^2 = 18,96, p = 0,041).

Preferences of activities in children

The PAC was administered to gain insight into the children's preferences for activities, the characteristics of these activities, and the relationship between their preferences and the

activities they actually participated in. Table 7 shows the medians of the children's preference scores in the physical and skill-based activity categories.

Table 7.

There were no significant differences in the preference scores for the physical and skill-based activity categories, although more boys preferred physical activities (Mann-Whitney test, Z = -3,80, p = 0,000) and more girls preferred skill-based activities (Mann-Whitney test, Z = -5,37, p = 0,000).

There were no differences in activity preferences related to age except for participation in organisations, for which the 6- to 9-year-olds had the highest preference scores (Kruskal-Wallis test, $\chi^2 = 8,20$, p = 0,017). Table 8 presents the association between the children's "top 10" preferences from among the 19 activities that were considered physical activities in Norway and the rankings of their actual participation in these activities.

Table 8.

The highest agreement regarding preferences for and actual performance of the same activities was found for swimming and winter sports. There were four activities that the children preferred to do but did not participate in to the same extent: water sports, riding, fishing and individual sports. In contrast, there were activities that many children did that were not among their most preferred: going for walks, individual physical activities, dancing and gardening. The most and least preferred activities are presented in Table 9.

Table 9.

Many more children wanted to perform water sports, riding and fishing than actually participated in these activities, and many more children went for walks than actually wanted to (Table 9).

Enjoyment of leisure activities with physical characteristics

The children's enjoyment of participating is presented in Table 10 with mean scores for the two categories of physical and skill-based activities.

Table 10.

Enjoyment was high in both activity categories, with a mean score of more than 4 on a scale of 1–5, indicating that the children liked the activities very much. More than 60% of the children enjoyed very much or loved the activities they participated in.

Boys reported higher enjoyment scores for physical activities than did girls (Mann-Whitney test, $Z = -2{,}65$, $p = 0{,}008$). In the skill-based activities, there were no gender differences regarding enjoyment, and there were no differences in enjoyment scores between the three age groups.

At the single activity level, 11 of the 19 activities that are considered physical activities in Norway had mean enjoyment scores higher than 4, indicating that the children enjoyed the activities very much (Table 11).

Table 11.

There were significant gender differences (Mann-Whitney test; $p < 0{,}05$) regarding enjoyment for five of the 19 activities. Horseback riding ($Z = -2{,}3$, $p = 0{,}22$), going on a full-day outing ($Z = -2{,}06$, $p = 0{,}039$) and learning to dance ($Z = -2{,}01$, $p = 0{,}045$) had higher enjoyment scores among girls, whereas team sports ($Z = -2{,}36$, $p = 0{,}018$) and playing games ($Z = -2{,}76$, $p = 0{,}006$) had higher enjoyment scores among boys.

There were also significant differences (Kruskal-Wallis test; $p < 0,05$) regarding enjoyment for 5 of the 19 activities between the age groups. The oldest children (14–17 years) had higher enjoyment scores for team sports ($\chi2 = -8,66$, $p = 0,013$) and winter sports ($\chi2 = -7,07$, $p = 0,029$) than did the youngest (6–9 years), whereas the youngest children had higher enjoyment scores for biking, in-line skating, and skateboarding ($\chi2 = -7,84$, $p = 0,020$), going for walks or hikes ($\chi2 = -14,38$, $p = 0,001$) and gardening ($\chi2 = -8,39$, $p = 0,015$).

Discussion

Research questions one and two are embedded in the first part of the discussion, and questions three and four are addressed in the second part. The first two research questions regard 1) in what physical activities are children participating and 2) with whom and where are they performing these activities, at both the category and single activity levels.

Diversity, frequency and contextual factors – participation profile of the activity categories

All of the children in the present study participated in at least one physical or skill-based activity. During the last four months before the interviews, the children had on average participated in four of the 13 activities in the physical activity category and in two of the 10 activities in the skill-based category. Compared with other studies, the present children participated somewhat more in physical activities, although their participation in skill-based activities was in line with other studies (Bult et al., 2010; Imms et al., 2008; King et al., 2010; Law et al., 2006). Participation frequency showed a mean score of 1.27 for the physical activities and 1.0 for skill-based activities in the present study. Compared with children without disabilities, participation frequency was lower in both activity categories, as also indicated by Raghavendra, Virgo, Olsson, Connell, Lane (2011) and Ullenhag et al. (2012).

Studies show that gender influences the participation profile regarding the diversity of activities (Bult et al., 2011; Engel-Yeger, Jarus, Anaby, & Law, 2009; Imms et al., 2008; King et al., 2007, 2010; Law et al., 2006). In the present study, boys participated somewhat more in physical activities, whereas girls participated more in skill-based activities. This difference is in line with previous research on children without disabilities that found that boys 9 and 15 years old are more physically active than female peers (Kolle et al., 2009). There were also gender differences in the participation profiles of the Dutch study by Bult et al (2010) and the Canadian study by King et al (2010), with boys having the highest scores for physical activities and girls having the highest scores for skill-based activities. The total participation frequency score, however, was somewhat higher in the present study compared with other studies (Bult, et al., 2010; Imms et al., 2008; King et al., 2009, 2010).

Participation frequency in physical activities decreased with age in the present study. King et al (2006) also found lower participation frequency with higher age. However, age has a different impact, with different profiles and development in different activity categories (King et al., 2010). Imms (2008) confirms this in her review on participation in leisure activities in children with CP, as do King et al. (2009) in their systematic review of the determinants of participation in leisure activities. However, the pattern of age's influence on participation frequency is not one-dimensional. Bult et al. (2010) found that children from 12 to 18 years had higher participation frequency in both physical (mean 1.51) and skill-based (mean 1.41) activities than did the younger children. They assessed both children with and without disabilities but found no differences in participation frequency between them (ibid.). Some of the findings in the present study support the assumption that age may have different impacts on different activity categories. Children from 10 to 13 years had the highest participation frequency in the physical activity category (mean 1,40), whereas those from 6 to 9 had the highest scores in the skill-based category (mean 1,29).

Diversity, frequency and contextual factors - participation profile for single activities

Other studies that used the CAPE have only focused on activity categories; the present study presents analyses at the single activity level in addition. Daily physical activity is thoroughly documented as an important part of children's everyday lives, both for health and for their development in general (King et al., 2009; Kolle et al., 2009). The results of the present study showed that the two most frequently chosen activities were 1) informal activities such as football, basketball, and playing with balls or ropes and 2) bicycling on all type of bicycles, roller skating and skating. Half of the children participated in such activities, 50 % of them daily, with no age or gender differences.

According to King et al. (2010), nearly all boys without disabilities ride bicycles (92,2–98,3 %), especially from 12 to 14 years (98,3 %), versus 56,5 % of boys with disabilities. There are no other comparable studies related to this informal activity. However, Bedell, Khetani, Cousins, Coster, and Law (2011) report that the parents of children with and without disabilities think that these informal activities are the most important ones to participate in because they are flexible regarding when and where they take place and they can be performed with peers.

Swimming, defined as swimming in a club or a swimming course or organised activities in a pool, was the activity that most children (69.8 %) participated in regularly in the present study. It was often performed on a weekly basis with an instructor or with friends in the local community. Other studies on children with disabilities also show similar results, with 70 % participating in swimming (Imms et al., 2008; Maher, Williams, Olds, & Lane, 2007; Law et al., 2006). Swimming in addition to dancing, riding and boccia are the activities that most Norwegian young adults (18–30 years) with disabilities report participating in (Sæbu & Sørensen, 2010).

Preferences and enjoyment

This second part of the discussion concerns the third and fourth research questions: 3) Is the children's actual participation in accordance with their preferences? and 4) What are the relationships between preferences, actual participation and enjoyment of physical activities?

The CAPE generates knowledge on contextual factors and the experience of participation, giving insight into the participation and the experience of respondents' enjoyment of their participation. In line with the results of the present study, recent international research has also noted the importance of studying the impact of participation in meaningful activities, as well as the experience of enjoyment (Eriksson & Granlund, 2004, Fereday, MacDougall, Spizzo, Darbyshire, & Schiller, 2009; Heah, Case, McGuire, & Law, 2007; Kang, Palisano, King, Chiarello, Orlin, & Polansky, 2011; King et al., 2009).

The literature appears to agree that if an activity is going to be experienced as meaningful and engaging over time, it has to be enjoyable and self-initiated (Hammel et al., 2008; Heah et al., 2007; King et al., 2009; Palisano et al., 2010b). Children's interests are of great importance for participation in leisure activities in general, and in physical activity specifically, and should be seriously considered in rehabilitation interventions. The results of the present study showed that the children experienced a great deal of joy in the activities in which they participated. A comparison of what the children wanted to do, as assessed with the PAC, with what they actually did showed strong agreement, but they wanted to do more. This is an important and surprising finding because physical impairments become especially apparent in physical activity. It is unsurprising that swimming was at the top of the list of the 10 most frequent physical activities in addition to riding given that these may compensate for motor impairments.

Even when the factors that influence participation are recognisable, it is challenging to identify unambiguous models that clarify the interactions between the different factors of participation (King et al., 2009). Martin (2006), who studied different psychosocial aspects related to youth with disabilities and their participation in sport activities, especially underlines the importance of the personal factors. Experience of enjoyment was the crucial factor for continuous participation in physical activity in his study (ibid.), confirmed by Heah et al. (2007). In a number of studies on non-disabled children's and youth's experiences with and participation in sports, enjoying the activity also stands out as the most important factor and motivation for being active (Crocker, Hoar, McDonough, Kowaski, & Niefer, 2004; Garn & Cothran, 2006).

The present study aimed to assess both enjoyment in activities and activity preferences using both the CAPE and the PAC. It is through focus on both enjoyment and preferences that meaningful participation can be identified (Delle Fave & Massimini, 2003; Palisano et al., 2010a). King et al. (2009) also showed that the experience of enjoying an activity and preferences for participating in an activity are different constructs and that enjoyment is related to the actual enjoyment of participating in the activity. Therefore, it is necessary to assess both the children's preferences and their actual experiences of enjoyment with activities because this will give important complementary information. In this way, the present assessment of children's enjoyment of different activities combined with the assessment of their preferences contributes to the understanding of participation. Palisano et al. (2010b) published a study with a structured concept model that aimed to explain the different factors that are important for participation in leisure activities for children from 6 to 12 years with CP. Although no single factor explained the large variations in participation, knowledge about enjoyment and the children's and families' preferences were noted as important for identifying participation possibilities.

King et al. (2009) found that for children with disabilities, three of the five activities with the highest enjoyment scores were going on a full-day outing (mean 4.45), riding (mean 4.42), and winter sports (mean 4.39). These physical activities had nearly identical enjoyment scores to those in the present study, 4.21, 4.42 and 4.15, respectively, and this was the case even though the study by King et al. (2009) included all types of leisure activities and not only physical or skill-based activities. These results indicate that the enjoyment scores in the present study are at the same levels as the mean total enjoyment scores for all of the leisure activities in the study by King et al (ibid.).

The gender differences related to the participation profile are also shown in the children's preferences for and experience of enjoyment in activities. Many more boys participate in team sports, and their enjoyment scores are higher, whereas many more girls participate in dance and show higher enjoyment scores than boys. There are few comparable studies on this issue, but overall, there are more similarities in the participation profiles of boys and girls than there are differences. The study by Colon, Rodriguez, Ito and Reed (2008) confirms this and finds no gender differences when using the CAPE to assess leisure activities in Latin American children with and without disabilities.

The activity performed by the most Norwegian children was walking or hiking (85,9 %, Table 4). Although this activity is not categorised as a physical leisure activity on the CAPE or the PAC, it is still relevant among physical activities in a Norwegian context because it gives a typical picture of participation in physical activity for Norwegian children. To take a walk or hike is the goal in itself, not to get from one place to another, which is defined as transportation in the assessment instrument.

However, taking walks and hikes was done regularly with families rather than with friends and instructors as with swimming, and it was the only activity that more children did than

wanted to do it (85 % versus 44 %). In other studies that used the CAPE and the PAC, the proportion of children with disabilities who took walks or hikes was also high, 91 % in the study by Law et al. (2006), 75 % in the study by Imms et al. (2008) and 65 % in the study by (Brunton & Bartlett, 2010). This is also in line with the results of Maher et al. (2007), who studied youth with and without disabilities.

In the general Norwegian adult population, 79 % of those between 20 and 85 years reported taking walks or hikes, making this truly the most common physical activity among Norway's adult population (The Norwegian Health Directorate, 2009). However, among children from 6 to 15 years, only 25 % reported taking walks or hikes during leisure time (Norwegian Statistical Central Bureau, 2004). This is in contrast to the findings of the present study, in which eight out of ten children regularly participated in walks or hikes, and this appears to be the greatest difference between the participation profiles of in the children of the present study and their Norwegian non-disabled peers. This could indicate that the high frequency of going for walks mainly reflects the choice of parents and caregivers, who consider this activity to be easy to participate in and good for the children.

Walking, hiking and swimming appeared to be what most engaged the children in the present study during their leisure time. However, many more children wanted to participate in swimming than in walking or hiking, and most children liked swimming better than walking or hiking. Further, our findings indicate that informal activities, such as bicycling, were the activities that most children participated in most often; more than 50 % participated in these activities daily, and these activities also had the highest enjoyment scores.

Recent research on youth with disabilities shows that internal motivation and the wish to participate in an activity are the crucial factors for actual participation, followed by identity and accessibility (Sæbu & Sørensen, 2010). This is also confirmed by Morris (2009, 2008),

who underlines the importance of participation in self-initiated activities influenced by enjoyment and engagement. Harding, Jamieson, Mullally, Politi, Wong-Sing, et al. (2009) studied what children with disabilities thought of their participation in leisure activities, and as in the present study, they noted that the children showed great enjoyment in a variety of activities and situations. One central factor for the experience of enjoyment was the feeling of belonging in the local community, and another was that the activity situation gave physical and social support for the children's participation (ibid.). The results of the present study indicate that these children are mostly active with their families, although they most wished to perform their activities with friends. If participation in activities with peers in the local community continues to be the biggest challenge, enjoyment may be reduced over time. Enjoying an activity entails more than having fun. It includes experiencing self-determination, being part of a team, and gaining new levels of learning and success. Thus, learning self-initiated activities in social settings with peers should be emphasised from an early age.

Strengths and limitations

The actual study aimed for a child-centred perspective, such that the children actively participated in developing the empirical material. Knowledge on how children express their enjoyment, and the characteristics of the situations in which they describe enjoying certain activities, are important for understanding the process that enhances positive development and promotes increased participation. However, the research process was controlled by the researchers and thus influenced by their previous experiences and desire to fulfil the study aims. The results should be seen and interpreted as relevant examples but only as indicators of the children's voices given the study design and the choice of outcome measures.

The study sample encompasses diverse diagnoses, which could be considered both a strength and a limitation. The inclusion criteria related to the children's need for rehabilitation rather

than to specific diagnoses. The participants participated in a three-week rehabilitation course with adapted physical activity as the main means of intervention. However, the participants had mostly mild to moderate activity limitations, and therefore, these results cannot be generalised to all types of disabilities and function levels. These limitations must be considered when discussing the implications for clinical practice and additional research.

Implications for research

There is a need for additional research to strengthen the evidence base for children's participation in meaningful activities from a child-centred perspective. It is crucial to collaborate with those concerned in developing research questions to ensure their relevance for participants' daily lives, including clinical professionals who can enhance research with clinical and practical relevance.

The following three challenges need to be addressed in future research:

1. Challenges related to the heterogeneity in the samples of children. Studies of different subgroups of children (age, gender, ethnicity, type of disability) would generate complementary knowledge.

2. Challenges related to transition phases. Longitudinal studies on the factors that are important for remaining active during all of the transition phases from childhood to adulthood would give insight into participation as a dynamic phenomenon that changes continuously.

3. Challenges related to knowledge about activity characteristics and different arenas. Future research should focus on the specific potential of different physical activities, their specific content, the organisation of the activities, and the possibilities for adapting them.

Future research that includes participants' enjoyment in activities, interpreted in a contextual frame, should be prioritised. Children's participation in research projects and a focus on the importance of the social dimension of participation will not only extend the rehabilitation field and strengthen the children's participation but will also further develop rehabilitation research methodologically.

Implications for clinical practice

Translating research results into clinical recommendations first of all demands attention to the validity and relevance of the results in specific clinical contexts.

Second, it is particularly important to emphasise the extent to which the research is meaningful in the daily lives of those concerned (Bredahl, 2007). If the research is oriented towards the real challenges in clinical practice and the unique experiences of individuals who live with different disabilities, the relevance and benefit will increase.

Therefore, it seems relevant for the understanding of this study to begin with evidence-based practice built on the following model: 1) the best available research-based knowledge, 2) experience-based knowledge such as the practitioner's judgements of the benefits or lack thereof and the research aim, and 3) user knowledge and user participation, i.e., the user's own insight and experiences (Haynes, Devereaux, & Guyatt, 2002; Hutzler, 2011; Spring, 2007). These three elements together will provide the best knowledge base for clinical decision making.

Three recommendations in sum show how the results of the present study could have implications for clinical practice:

1. Enhance the attitudes that give children the possibility to use their competence in their own situations, including any need for adaptation, so that they can use their own experiences.

This entails asking for children's opinions and strengthening the aspects that allow them to experience their competence in their own lives as important. Children's managing their own daily situations and adaptations will in turn contribute to the further use of their competence.

2. Recognise the importance of skill acquisition in meaningful activities as requirements for participation with peers.

Possessing sufficient skills in an activity is important, and the skill concept should be flexible regarding adapting the activity and its performance. Developing skills in an activity that is important in a specific context appears to be a strategy that facilitates participation in activities with peers. Peer relationships are the most important aspect of the social dimension of participation (Koster, Nakken, Pijl, & van Houten, 2009).

However, two central factors modify this fact and are important for clinical practice. First, children may not know about all of their activity possibilities. If they are going to extend their activity repertoires, arrangements and adaptations should also be made for their participation in new and unknown activities. Second, developing sufficient skills in new activities demands time and an appropriate arena, which the children note as often unavailable in the local community. In the present study, the rehabilitation course in which the children participate in activities with peers with similar disabilities appears as such an arena, embedding the possibility to explore and acquire skills in new activities.

3. Focus on enjoyment in activities

The importance of enjoying activities might be crucial from both short- and long-term perspectives. This is supported by previous research that emphasises the fact that participation

in self-initiated, enjoyable, and variable activities with peer support is important for staying active (Eriksson & Granlund, 2004; Morris, 2008). Enjoyment of and meaningful participation in physical activities as a child is a predictor for staying active as an adult (Jahnsen, Villien, Stanghelle, & Holm, 2003). Recent research also shows that there is a clear association between internal motivation and activity levels among young persons with disabilities (Sæbu & Sørensen, 2010; Sæbu, 2011).

Conclusion

The core concept of this study was to gain knowledge about children's participation in physical activity through their own experiences and preferences. The results show that the children's enjoyment is great but that they want to be more active than they actually are. In spite of their disabilities, which become especially apparent in physical activities for which the disabilities affect the possibilities of participating with peers, the children still love to participate in activities. There are more similarities than differences between boys and girls and between the age groups, and the children are mostly active with their family members.

Knowledge gained from this study notes the importance of teaching children a few self-initiated activities well enough for them to perform them with peers. The children have clear preferences for activities, and these activities are to a large extent consistent with what they actually do during their leisure time. This means that the rehabilitation field should focus on self-determination, competence, resources, preferences, and possibilities of participation with peers.

Tables

Table 1. Diagnoses of the participants.

Diagnoses	N = 149	%
Cerebral palsy	55	37,0
Other neuromuscular diseases	5	3,4
Intellectual disability	17	11,4
Visual impairment	9	6,0
Muscolo-skeletal malformations	9	6,0
Malformations/metabolic disorders, CNS	10	6,7
Genetic disorders/syndromes	6	4,0
Spina bifida	16	10,7
Neurological diseases	13	8,7
Learning- and behavioural difficulties	3	2,0
Late effects after trauma/cancer	4	2,7
Other (obesity)	2	1,3

Table 2. The dimensions and scales of CAPE and PAC

DIMENSIONS OF CAPE					PAC
Number of activities	Frequency of practicing	Social context - With whom?	Physical context - Where?	Enjoyment	Preferences
Yes/No response to the question whether activities are done in the last four months	1 = 1 time last 4 months 2 = 2 times the past 4 months 3 = Once a month 4 = 2-3 times a month 5 = Once a week 6 = 2-3 times a week 7 = Once a day or more	1 = alone 2 = with family 3 = other relatives 4 = with friends 5 = other	1 = home 2 = with a relative 3 = in the neigh-bourhood 4 = at school 5 = in the local community 6 = outside local community	1 = not at all 2 = slightly 3 = fairly well 4 = very well 5 = extremely good	1 = I have no desire to ... 2 = I would probably want to 3 = I would really like to

Table 3. Number of activities and participation frequency in physical and skill based activities during the last four months (n = 149).

	Physical activities (13)	Skill based activities (10)
Participation (number of activities)		
Mean (SD)	3,9 (1,93)	2,4 (1,46)
Median	4	2
Range	0–10	0–7
Frequency of participation*		
Relative indicator (SD)	1,27 (0,73)	1,10 (0,74)
Median	1,23	1,00
Min–Max	0,08–4,15	0,10–3,30

*Scores for frequency of participation: 1 = 1 time last 4 months, 2 = 2 times last 4 months, 3 = 1 time a month, 4 = 2–3 times/month, 5 = 1 time/week, 6 = 2–3 times/week, 7 = 1 time daily or more.

Table 4. Number of children who participated in the 19 activities that were perceived as physical activities in a Norwegian context, and frequency of participation in the actual activity during the last four months (n = 149).

Activities	Activity Category	Number of children who have participated n	%	Frequency of participation (1–7) Median*
Going for a walk or a hike	Recreational	128	85,9	4
Swimming	Skill based	104	69,8	5
Doing snow sports	Physical	93	62,4	4
Bicycling, in-line skating or skateboarding	Physical	86	57,7	5
Going on a full-day outing	Social	76	51,0	3
Playing games**	Physical	70	47,0	5
Doing individual physical activities	Physical	65	43,6	5
Doing team sports	Physical	59	39,6	5
Dancing	Skill based	56	37,6	5
Gardening	Physical	42	28,2	3
Horseback riding	Skill based	41	27,5	5
Playing non-team sports	Physical	40	26,8	4
Doing water sports	Physical	40	26,8	3,5
Fishing	Physical	32	21,5	2
Racing or track and field	Physical	18	12,1	5
Learning to dance	Skill based	16	10,7	5
Participating in community organizations***	Skill based	15	10,1	5
Doing martial arts	Physical	10	6,7	4
Doing gymnastics	Skill based	9	6,0	5

*Scores for frequency of participation: 1 = 1 time last 4 months, 2 = 2 times last 4 months, 3 = 1 time a month, 4 = 2–3 times/month, 5 = 1 time/week, 6 = 2–3 times/week, 7 = 1 time daily or more.
** Playing games include (?in a Norwegian context?) activities such as
*** Participating in community organizations include (?in a Norwegian context?) activities such as

Table 5. With whom and where did the children participate in physical and skill based activities (n = 149).

	Physical activities (13)	Skill based activities (10)
With whom?		
Mean (SD)	3,1* (0.86)	3,0 (0.90)
Median	3	3
Min–Max	1–5	1–5
Where?		
Mean (SD)	4,19** (1,16)	4,30 (1,27)
Median	4,4	4,5
Min–Max	1–6	1–6

*With whom? scores from 1 to 5, 1 = alone, 2 = with close family, 3 = with others in the family, 4 = with friends 5 = with others/instructor. Higher score indicates higher social competence/more social behaviour than lower score.
**Where? Scores from 1 to 5, 1 = at home, 2 = with family, 3 = in the neighbourhood, 4 = at school 5 = in the community, 6 = outside the community. Higher score indicates less home based activities than lower score.

Table 6. Contextual factors related to the children's participation in 19 single activities perceived as physical activities in Norway (n = 149).

Participate most often with	Where is the activity performed	Activity
Family	At home	Gardening
	In the community	Going for a walk or a hike Doing snow sports* Bicycling, in-line skating, or skateboarding Doing water sports*
	Outside the community	Going on a full-day outing Fishing
Friends	At home	Dancing**
	At school	Playing games
	In the community	Dancing** Doing team sports Playing non-team sports Participating in community organizations Doing martial arts
Others/instructor	In the community	Swimming Doing individual physical activities Horseback riding Racing or track and field Learning to dance Doing gymnastics

* Winter sport and water sport are performed equally in the extended family
** Dance is performed both at home and in the community

Table 7. The children's activity preferences (n = 149).

	Physical activities (13)	Skill based activities (10)
Median	2,4*	2,2*
SD	0,35	0,47
Min–max	1,15–3,00	1,10–3,00

*Preference Scores: 1 = would not like to do at all, 2 = would sort of like to do, 3 = would really like to do.

Table 8. "Top 10" preferences of activities and actual participation in them (n = 149).

"Top 10": Preferences of activities	"Top 10": Actual participation
1 Swimming	1 Going for a walk or a hike**
2 Going on a full-day outing	2 Swimming
3 Doing snow sports	3 Doing snow sports
4 Doing water sports *	4 Bicycling, in-line skating, or skateboarding
5 Bicycling, in-line skating, or skateboarding	5 Going on a full-day outing
6 Horseback riding*	6 Playing games
7 Playing games	7 Doing individual physical activity**
8 Playing non-team sports*	8 Doing team sports
9 Fishing*	9 Dancing**
10 Doing team sports	10 Gardening**

* "Top 10" preferences of activities that are not performed.
**Activities that are performed, but not among the "top 10" preferences of activities.

Table 9. Activities with some extent of agreement and disagreement between the children's preferences (preferred) and actual participation (performed) (n = 149).

Activity	Preferred activity n (%)	Performed activity n (%)	Those who perform the activity		
			Frequency	With whom?	Where?
Agreement					
Swimming	118 (79,2)	104 (69,8)	Once a week	Instructor/others	In the community
Going on a full-day outing	117 (78,5)	76 (51,0)	Once a month	Family	Outside the community
Doing snow sports	113 (75,8)	93 (62,4)	2–3 times a month	Family	In the community
Bicycling, in-line skating, or skateboarding	102 (68,5)	87 (58,4)	Once a week	Family	In the community
Playing games	90 (60,4)	70 (47,0)	Once a week	Friends	At school
Doing team sports	78 (52,3)	59 (39,6)	Once a week	Friends	In the community
Disagreement					
Doing water sports*	108 (72,5)	40 (26,8)	1–3 times a month	Family, relatives	In the community
Horseback riding*	*100 (67,1)*	*40 (27,5)*	Once a week	Instructor	In the community
Fishing*	*78 (52,3)*	*32 (21,5)*	2 g. last 4 month	Family	Outside the community
Going for a walk or a hike**	*66 (44,3)*	*128 (85,9)*	2–3 times a month	Family	In the community
Playing non-team sports**	*71 (47,7)*	*65 (43,6)*	Once a week	Friends	In the community
Dancing**	*66 (44,3)*	*56 (37,6)*	Once a week	Friends	Home
Gardening**	*34 (22,8)*	*42 (28,2)*	Once a month	Family	Home

* The most preferred, but not the most performed activities
** The most performed, but not the most preferred activities

Table 10. Mean enjoyment score for the two activity categories (n = 149)**.**

	Physical activities (13)	Skill based activities (10)
Mean	4,05*	4,18*
SD	0,74	0,89
Median	4,00	4,50
Min–Max	1,80–5,00	1,00–5,00

*Enjoyment scores: 1 = not at all; 2 = somewhat, sort of; 3 = pretty much; 4 = very much; 5 = love it.

References

Allender, S., Cowburn, G., & Foster, C. (2006). Understanding participation in sport and physical activity among children and adults: A review of qualitative studies. *Health Education Research, 21,* 826–835.

Bart, O., Jarus, T., Erez, Y., & Rosenberg, L. (2011). How do young children with DCD participate and enjoy daily activities? *Research in Developmental Disabilities, 32,* 1317–1322.

Bedell, G. M., Khetani, M. A., Cousins, M. A., Coster, W. J., & Law, M. (2011). Parent perspectives to inform development of measures of children's participation and environment. *Archives of Physical Medicine and Rehabilitation, 92,* 765–773.

Best, J. R. (2010). Effects of physical activity on children's executive function: Contributions of experimental research on aerobic exercise. *Developmental Review, 30,* 331–351.

Bredahl, A. M. (2007). Participation of people with disabilities in adapted physical activity research. *Journal of the Brazilian Society of Adapted Motor Activity, 12,* 74–90.

Brunton, L. K., & Bartlett, D. J. (2010). Description of exercise participation of adolescents with cerebral palsy across a 4-year period. *Pediatric Physical Therapy, 22,* 180–187. doi:10.1097/PEP.0b013e3181db8aaa

Bult, M. K., Verschuren, O., Gorter, J. W., Jongmans, M. J., Piskur, B., & Ketelaar, M. (2010). Cross-cultural validation and psychometric evaluation of the Dutch language version of the children's assessment of participation and enjoyment (CAPE) in children with and without physical disabilities. *Clinical Rehabilitation, 24,* 843–853. doi:10.1177/0269215510367545

Bult, M. K., Verschuren, O., Jongmans, M. J., Lindeman, E., & Ketelaar, M. (2011). What influences participation in leisure activities of children and youth with physical disabilities? A systematic review. *Research in Developmental Disabilities, 32,* 1521–1529. doi:10.1016/j.ridd.2011.01.045.

Carlon, S. L., Taylor, N. F., Dodd, K. J., & Shields, N. (2013). Differences in habitual physical activity levels of young people with cerebral palsy and their typically developing peers: A systematic review. *Disability & Rehabilitation, 35,* 647–655. doi:10.3109/09638288.2012.715721

Claassen, A. A., Gorter, J. W., Stewart, D., Verschuren, O., Galuppi, B. E., & Shimmell, L. J. (2011). Becoming and staying physically active in adolescents with cerebral palsy: Protocol of a qualitative study of facilitators and barriers to physical activity. *BMC Pediatrics, 11,* 1–8. doi:10.1186/1471-2431-11-1

Colón, W. I., Rodríguez, C., Ito, M., & Reed, C. N. (2008). Psychometric evaluation of the Spanish version of the children's assessment of participation and enjoyment and preferences for activities of children. *Occupational Therapy International, 15,* 100–113.

Crocker, P. R., Hoar, S. D., McDonough, M. H., Kowaski, K. C., & Niefer, C. (2004). Emotional experiences in youth sport. In M. Weiss (Ed.), *Developmental sport and exercise psychology: A lifespan perspective* (pp. 197–222). Morgantown, WV: Fitness Information Technology.

Davis, E., Shelly, A., Waters, E., Mackinnon, A., Reddihough, D., Boyd, R., & Graham, H. K. (2009). Quality of life of adolescents with cerebral palsy: Perspectives of adolescents and parents. *Developmental Medicine and Child Neurology, 51,* 193–199. doi:10.1111/j.1469-8749.2008.03194.x

Delle Fave, A., & Massimini, F. (2003). Optimal experience in work and leisure among teachers and physicians: Individual and bio-cultural implications. *Leisure Studies, 22,* 323–342.

Engel-Yeger, B., Jarus, T., Anaby, D., & Law, M. (2009). Differences in patterns of participation between youths with cerebral palsy and typically developing peers. *American Journal of Occupational Therapy, 63*, 96–104.

Eriksson, L., & Granlund, M. (2004). Conceptions of participation in students with disabilities and persons in their close environment. *Journal of Developmental and Physical Disabilities, 16*, 229–245.

Erwin, H., Fedewa, A., Beighle, A., & Ahn, S. (2012). A quantitative review of physical activity, health, and learning outcomes associated with classroom-based physical activity interventions. *Journal of Applied School Psychology, 28*, 14–36.

Fereday, J., MacDougall, C., Spizzo, M., Darbyshire, P., & Schiller, W. (2009). "There's nothing I can't do - I just put my mind to anything and I can do it": A qualitative analysis of how children with chronic disease and their parents account for and manage physical activity. *BMC.Pediatr., 9*, 1–16. doi:10.1186/1471-2431-9-1

Garn, A. C., & Cothran, D. (2006). The fun factor in physical education. *Journal of Teaching in Physical Education, 25*, 281–297.

Hammel, J., Magasi, S., Heinemann, A., Whiteneck, G., Bogner, J., & Rodriguez, E. (2008). What does participation mean? An insider perspective from people with disabilities. *Disability and Rehabilitation, 30*, 1445–1460.

Harding, J., Harding, K., Jamieson, P., Mullally, M., Politi, C., Wong-Sing, E., … Petrenchik, T. M. (2009). Children with disabilities' perceptions of activity participation and environments: A pilot study. *Canadian Journal of Occupational Therapy, 76*, 133–144.

Haynes, R. B., Devereaux, P. J., & Guyatt, G. H. (2002). Physicians' and patients' choices in evidence based practice. *British Medical Journal, 324*, 1350–1350.

Heah, T., Case, T., McGuire, B., & Law, M. (2007). Successful participation: The lived experience among children with disabilities. *Canadian Journal of Occupational Therapy, 74*, 38–47.

Hutzler, Y. S. (2011). Evidence-based practice and research: A challenge to the development of adapted physical activity. *Adapt. Phys. Activ. Q., 28*, 189–209.

Imms, C., Reilly, S., Carlin, J., & Dodd, K. (2008). Diversity of participation in children with cerebral palsy. *Developmental Medicine and Child Neurology, 50*, 363–369.

Jahnsen, R., Villien, L., Aamodt, G., Stangehelle, K., & Holm, I. (2003). Physiotherapy and physical activity - Experiences of adults with cerebral palsy, with implications for children. *Advances in Physioterapy, 5*, 21–32. Retrieved from http://informahealthcare.com/doi/abs/10.1080/14038190310005779

Jahnsen, R., Villien, L., Stanghelle, J. K., & Holm, I. (2003). Fatigue in adults with cerebral palsy in Norway compared with the general population. *Developmental Medicine and Child Neurology, 45*, 296–303.

Janssen, I., & LeBlanc, A. G. (2010). Systematic review of the health benefits of physical activity and fitness in school-aged children and youth. *International Journal of Behavioral Nutrition & Physical Activity, 7*, 40–55. doi:10.1186/1479-5868-7-40

Jarus, T., Lourie-Gelberg, Y., Engel-Yeger, B., & Bart, O. (2011). Participation patterns of school-aged children with and without DCD. *Research in Developmental Disabilities, 32*, 1323–1331.

Kang, L. J., Palisano, R. J., King, G. A., Chiarello, L. A., Orlin, M. N., & Polansky, M. (2011). Social participation of youths with cerebral palsy differed based on their self-perceived competence as a friend. *Child Care Health Development, 53*, 142–149. doi:10.1111/j.1365-2214.2011.01222.x

King, G., Law, M., King, S., Hurley, P., Hanna, S., Kertoy, M., & Rosenbaum, P. (2004). *Children's assessment of participation and enjoyment (CAPE) and preferences of activities of children (PAC)*. San Antonio, TX: Harcourt Assessment.

King, G., Law, M., Hanna, S., King, S., Hurley, P., Rosenbaum, P., … & Petrenchik, T. (2006). Predictors of the leisure and recreation participation of children with physical disabilities: A structural equation modeling analysis. *Children's Health Care, 35,* 209–234. doi:10.1207/s15326888chc3503_2

King, G., Law, M., King, S., Hurley, P., Hanna, S., Kertoy, M., & Rosenbaum, P. (2007). Measuring children's participation in recreation and leisure activities: construct validation of the CAPE and PAC. *Child: Care, Health & Development, 33,* 28–39.

King, G., McDougall, J., Dewit, D., Petrenchik, T., Hurley, P., & Law, M. (2009). Predictors of change over time in the activity participation of children and youth with physical disabilities. *Children's Health Care, 38*, 321–351. doi:10.1080/02739610903237352

King, G., Petrenchik, T., Dewit, D., McDougall, J., Hurley, P., & Law, M. (2010). Out-of-school time activity participation profiles of children with physical disabilities: A cluster analysis. *Child: Care, Health and Development, 36,* 726–741. doi:10.1111/j.1365-2214.2010.01089.x

Kolle, E., Steene-Johannessen, J., Klasson-Heggebø, L., Andersen, L. B., & Anderssen, S. A. (2009). A 5-yr change in Norwegian 9-yr-olds' objectively assessed physical activity level. *Medicine and Science in Sports and Exercise, 41,* 1368–1373. doi:10.1249/MSS.0b013e31819a5e65

Koster, M., Nakken, H., Pijl, S. J., & van Houten, E. (2009). Being part of the peer group: A literature study focusing on the social dimension of inclusion in education. *International Journal of Inclusive Education, 13,* 117–140. doi:10.1080/13603110701284680

Law, M., King, G., King, S., Kertoy, M., Hurley, P., Rosenbaum, P., & Hanna, S. (2006). Patterns of participation in recreational and leisure activities among children with complex physical disabilities. *Developmental Medicine & Child Neurology, 48,* 337–342.

Lubans, D. R., Plotnikoff, R. C., & Lubans, N. J. (2012). Review: A systematic review of the impact of physical activity programmes on social and emotional well-being in at-risk youth. *Child & Adolescent Mental Health, 17,* 2–13. doi:10.1111/j.1475-3588.2011.00623.x

MacPhail, A., Gorely, T., Kirk, D., & Kinchin, G. (2008). Children's experiences of fun and enjoyment during a season of sport education. *Research Quarterly for Exercise and Sport, 79,* 344–355.

Maher, C. A., Williams, M. T., Olds, T., & Lane, A. E. (2007). Physical and sedentary activity in adolescents with cerebral palsy. *Developmental Medicine and Child Neurology, 49,* 450–457. doi:10.1111/j.1469-8749.2007.00450.x

Majnemer, A., Shevell, M., Law, M., Birnbaum, R., Chilingaryan, G., Rosenbaum, P., & Poulin, C. (2008). Participation and enjoyment of leisure activities in school-aged children with cerebral palsy. *Developmental Medicine and Child Neurology, 50*, 751–758. doi:10.1111/j.1469-8749.2008.03068.x

Majnemer, A., Shikako-Thomas, K., Chokron, N., Law, M., Shevell, M., Chilingaryan, G., … Rosenbaum, P. (2010). Leisure activity preferences for 6- to 12-year-old children with cerebral palsy. *Developmental Medicine and Child Neurology, 52,* 167–173. doi:10.1111/j.1469-8749.2009.03393.x

Martin, J. M. (2006). Psychosocial aspects of youth disability sport. *Adapted Physical Activity Quarterly, 23,* 65–77.

Mâsse, L. C., Miller, A. R., Shen, J., Schiariti, V., & Roxborough, L. (2012). Comparing participation in activities among children with disabilities. *Research in Developmental Disabilities, 33,* 2245–2254.

McConachie, H., Colver, A. F., Forsyth, R. J., Jarvis, S. N., & Parkinson, K. N. (2006). Participation of disabled children: How should it be characterised and measured? *Disability and Rehabilitation, 28*, 1157–1164. doi:10.1080/09638280500534507

Morris, P. J. (2008). Physical activity recommendations for children and adolescents with chronic disease. *Current Sports Medicine Reports, 7*, 353–358. doi:10.1249/JSR.0b013e31818f0795

Morris, C. (2009). Measuring participation in childhood disability: How does the capability approach improve our understanding? *Developmental Medicine and Child Neurology, 51*, 92–94. doi:10.1111/j.1469-8749.2008.03248.x

Nordtorp, H., Nyquist, A., Jahnsen, R., Moser, T., & Strand, L. I. (2013). Reliabilty of the Norwegian version of the children's assessment of participation and enjoyment (CAPE) and preferences for activities of children (PAC). *Physical & Occupational Therapy in Pediatrics, 33*, 199–212.

Norwegian Statistical Central-bureau. (2004). *Training, exercise and outdoor activities (No. 13)*. Oslo-Kongsvinger: SSB.

Ödman, P. E., & Öberg, B. E. (2005). Effectiveness of intensive training for children with cerebral palsy - A comparison between child and youth rehabilitation and conductive education. *Journal of Rehabilitation Medicine, 37*, 263–270.

Palisano, R. J., Almarsi, N., Chiarello, L. A., Orlin, M. N., Bagley, A., & Maggs, J. (2010a). Family needs of parents of children and youth with cerebral palsy. *Child: Care, Health and Development, 36*, 85–92. doi:10.1111/j.1365-2214.2009.01030.x

Palisano, R. J., Chiarello, L. A., Orlin, M., Oeffinger, D., Polansky, M., Maggs, J., … Children's Activity and Participation Group (2010b). Determinants of intensity of participation in leisure and recreational activities by children with cerebral palsy. *Developmental Medicine and Child Neurology, 53*, 142–149. doi:10.1111/j.1469-8749.2010.03819.x

Percy-Smith, B., & Thomas, N. (2010). A handbook of children and young people's participation. *Perspectives from theory and practice*. London and New York, NY: Routledge, Taylor& Francis Group.

Raghavendra, P., Virgo, R., Olsson, C., Connell, T., & Lane, A. E. (2011). Activity participation of children with complex communication needs, physical disabilities and typically-developing peers. *Developmental Neurorehabilitation, 14*, 145–155. doi:10.3109/17518423.2011.568994

Saebu, M. (2011). *Physical activity and motivation in young adults with a physical disability*. Oslo: The Norwegian School of Sport Sciences.

Saebu, M., & Sørensen, M. (2010). Factors associated with physical activity among young adults with a disability. *Scandinavian Journal of Medicine and Science in Sports, 21*, 730–738. doi:10.1111/j.1600-0838.2010.01097.x

Schenker, R., Coster, W. J., & Parush, S. (2005). Neuroimpairments, activity performance, and participation in children with cerebral palsy mainstreamed in elementary schools. *Developmental Medicine and Child Neurology, 47*, 808–814.

Simeonsson, R. J., Leonardi, M., Lollar, D., Bjorck-Akesson, E., Hollenweger, J., & Martinuzzi, A. (2003). Applying the international classification of functioning, disability and health (ICF) to measure childhood disability. *Disability and Rehabilitation, 25*, 602–610.

Solish, A., Perry, A., & Minnes, P. (2010). Participation of children with and without disabilities in social, recreational and leisure activities. *Journal of Applied Research in Intellectual Disabilities, 23*, 226–236. doi:10.1111/j.1468-3148.2009.00525.x

Soref, B., Ratzon, N. Z., Rosenberg, L., Leitner, Y., Jarus, T., & Bart, O. (2012). Personal and environmental pathways to participation in young children with and without mild motor disabilities. *Child: Care,Health & Development, 38*, 561–571. doi:10.1111/j.1365-2214.2011.01295.x

Spring, B. (2007). Evidence-based practice in clinical psychology: What it is, why it matters; what you need to know. *Journal of Clinical Psychology, 63*, 611–631.

The Norwegian Health Directorate (2009). *Plan of action for rehabilitation of children and young*. Oslo: Health and Care Services.

Ullenhag, A., Bult, M. K., Nyquist, A., Ketelaar, M., Jahnsen, R., Krumlinde-Sundholm, L., … Granlund, M. (2012). An international comparison of patterns of participation in leisure activities for children with and without disabilities in Sweden, Norway and the Netherlands. *Developmental Neurorehabilitation,15*, 369–385. doi:10.3109/17518423.2012.694915

United Nations (1989). *Convention on the rights of the child*. New York, NY: United Nations General Assembly.

World Health Organization (WHO). (2001). *International classification of functioning, disability and health, ICF*. Genève: Author.