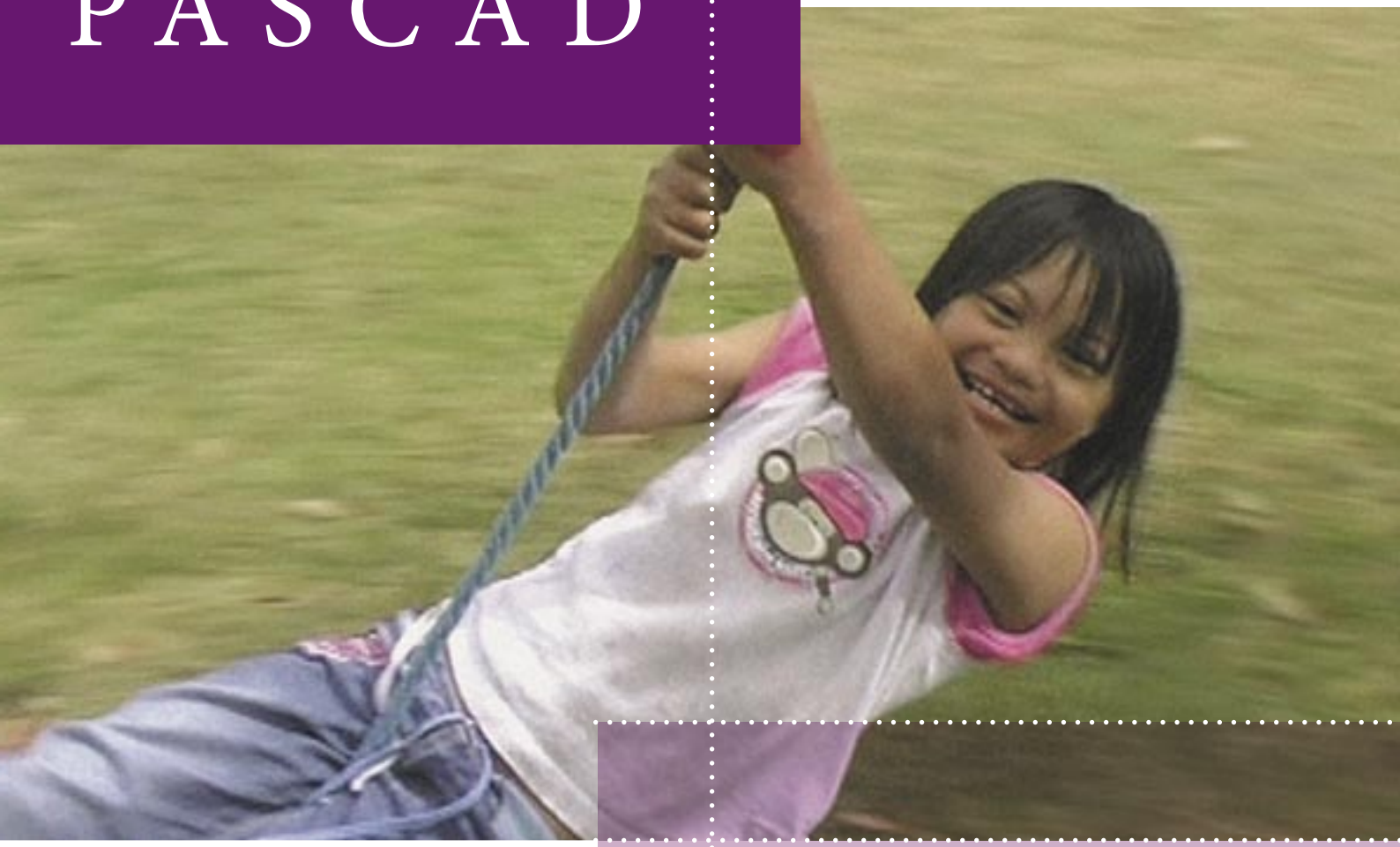
PASCAD



Physical Activity Study of Children and Adolescents with a Disability in Perth, Western Australia

lotterywest supported

Autism Association of Western Australia (Inc.)

Therapy Focus

Rocky Bay
DISCOVERING ABILITIES

Association for the Blind of WA

Curtin University of Technology

The Physical Activity Study of Children and Adolescents with a Disability (PASCAD) examined the type, frequency and duration of physical and sedentary activity performed by children and adolescents with a disability. The aims included identification of the context in which physical activity was performed (location and time of day) and investigation into the barriers to participation and beliefs about physical activity. Importantly, the experiences of children and adolescents with a disability and their families as they endeavour to access appropriate opportunities for physical activity, are described.

Acknowledgements

Funded by a Social Research Grant from Lotterywest, the study was a joint project between Therapy Focus Inc., the Association for the Blind of Western Australia, Rocky Bay Inc. and the Autism Association of Western Australia. The study was undertaken between October 2005 and April 2006. The Centre for Research into Disability and Society, Curtin University of Technology was commissioned to undertake the research and prepare a report of the findings. The team was composed of researchers from the Schools of Occupational Therapy and Physiotherapy.

The research team extends its gratitude to representatives from the Department of Education and Training, the Catholic Education Office and the Association of Independent Schools in Western Australia for their support and cooperation in the data collection phase of the study.

We would also like to thank the children and their families who participated in the survey and/or the motion sensor study for their time and contribution.

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Cover: Thaily Son on the flying fox; Thaily and Brittney Coutts on the swing.

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Foreword

Physical activity should be an essential part of life for every child and adolescent with a disability. Being physically active is not only important for physical health benefits such as weight management, but also for social health gains such as increased self-esteem, independence and quality of life. The Physical Activity Study of Children and Adolescents with a Disability (PASCAD) is a study of the level, type and barriers to activity that children and adolescents with a disability face.

As a Paralympic swimmer, I know the benefits of being active as a child with a disability. The feeling of participating with others and feeling healthy and vital is important to me. I also know there are barriers to being physically active. As is shown in this report, children and adolescents with a disability are even less active than children without, with approximately 50% of children meeting the Australian Physical Activity Guidelines compared to more than 90% of peers without a disability.

This report highlights the need for changes in the way children with a disability are perceived when it comes to being active. No matter what disability children have, they can participate in some form of physical activity.

A major finding from the study was that children with a disability rarely participate in organised sport outside school hours. Opportunities for physical activity in a community setting must be a priority, to allow children access to what is available to other community members. This involves breaking down the personal attitudes and the physiological, ecological and social barriers to make physical activity more inclusive for all.

I firmly believe that this report needs to be taken seriously. It carries a strong message to all stakeholders about children with a disability, their low levels of activity and the barriers that must be overcome to increase participation.

This study was funded by Lotterywest and commissioned by Therapy Focus Inc, the Association for the Blind of WA, the Autism Association of WA and Rocky Bay Inc. The research was conducted by the Centre for Research into Disability and Society at Curtin University and gives our community an important insight into some of the issues facing children and adolescents with a disability and their families.

PRIYA COOPER

"The regular practice of appropriate physical activity and sports provides people, male and female, of all ages and conditions, including persons with disability, with a wide range of physical, social and mental health benefits"

(World Health Organisation, 2003).

Executive Summary

INTRODUCTION

Physical activity is widely recognised as important for physical and mental health. Studies which have investigated levels of physical activity in children and adolescents have not described the situation for children/adolescents with a disability. The Physical Activity Study of Children and Adolescents with a Disability (PASCAD) was undertaken to examine the physical activity of children/adolescents with a disability in metropolitan Perth, Western Australia. The aims of the PASCAD study were to:

- provide a baseline measure of the physical activity levels of children/adolescents with a disability in Western Australia; thereby establishing a benchmark against which to measure future interventions;
- allow comparison to other studies (CAPANS 2003, CLASS 2004) of typical developing peers as well as to the Australian guidelines on physical activity for children; and
- provide information to the participating community agencies regarding the beliefs about and barriers to physical activity of children/adolescents with a disability and their families.

Executive Summary

Profile Of Participants

All children with vision impairment, physical or intellectual disability or autism spectrum disorder in Western Australia, in three age groups (5 – 7, 10 – 12 and 14 – 16 years) were eligible and recruited through the Department of Education and Training, the Association of Independent Schools and the Catholic Education Office of Western Australia. The PASCAD used three data gathering instruments:

1. a cross-sectional, self-report questionnaire surveyed the population as described above with a total of 318 usable surveys returned;
2. a sub-group of 30 volunteer children aged 10 to 12 years completed activity diaries for up to 7 days; and
3. the sub-group also wore motion sensor devices for up to 7 days.

Questionnaires were delivered to schools for distribution to eligible children/adolescents and their families. Completed questionnaires were returned to Curtin in sealed, prepaid envelopes and families and children in the 10 – 12 age group were invited to contact the researchers if they wished to participate in the motion sensor study involving activity diaries and motion sensors.

Description of Participants

- Over 60% of the children/adolescents were boys with the largest single group being boys aged from 5 – 7 years with autism spectrum disorder. This is similar to the national incidence and prevalence of children with a disability.
- Over 50% of the total sample and 76% of all children aged 5 – 7 years attended mainstream schools. This reflects the current policy of inclusive education.
- Approximately 80% of children/adolescents received classroom assistance – including those in mainstream classes.
- Adults reported that 85.7% of children/adolescents required some assistance with communication, mobility or self-care.
- Children aged 5 – 7 years were the highest users of allied health services.
- Parents of children/adolescents with autism spectrum disorder reported that their children had poor social and mental health.
- Less than a quarter of the adult respondents reported being 'sufficiently active' for health gains. This is less than half the national average.

Physical and Sedentary Activities

In this group, children and adolescents with a disability participated in less physical activity than children and adolescents without a disability with many not meeting the Australian Physical Activity Guidelines. This places them at an increased risk for poorer long term health. They also participated in a narrower range of activities with very low participation rate in community-based team/group activities being the most noticeable difference.

"We do make an effort to provide physical activity that our child enjoys such as swimming, bike-riding, walking and playing in the park. We would just love him to be able to participate in a team type activity if there was some modified version that he would be welcome to participate in and be able to learn some skills in - where are these for our children?" *(Parent, PASCAD 2006).*

Executive Summary

Key Findings

- Only 50% of children/adolescents with a disability performed sufficient physical activity to meet the Australian guidelines.
- Activities were primarily home-based, family-centred and involved unstructured free play. The exception was physical education and organised sport at school, which attracted a high rate of participation in each age group, although participation was lower than for children/adolescents without a disability. Nevertheless, this concentration of physical activity at school highlights the important role the education sector plays in the provision of opportunities for children/adolescents to be physically active. It is particularly relevant for children/adolescents with a disability who have limited community-based options. Schools also provided the only opportunity for many children/adolescents with a disability to participate in team or group physical activity. With many parents reporting that their children's/adolescents' poor social health, physical activity opportunities involving teams or school groups could be especially important.
- As children grow older, they participated in less physical activity, with the least active group being adolescent girls. This trend is the same for children without a disability and presents an ongoing challenge for families and recreation providers to improve incentives to develop an active lifestyle.
- Less than a quarter of the adult respondents reported participating in sufficient physical activity to satisfy the Australian guidelines for health benefits. While activity levels of parents are known to be an important influence on the activity levels of children (Salmon et al., 2004), the situation for families of children/adolescents with a disability may or may not be as straightforward as for other families. With over 85% of families reporting that their child/adolescent required assistance with activities of daily living and the very limited engagement of their children in out-of-school programs, these families are likely to be 'time-poor'.
- Children/adolescents with a disability spent more time than their non-disabled peers engaged in 'electronic media for entertainment' (EMFE) activities.

Barriers and beliefs

- Children/adolescents with a disability, in contrast to their parents, identified social barriers as some of the main obstacles to their physical activity. They reported that non-disabled peers and organisations did not know how to include them in physical activities. In order that these children/adolescents have greater opportunities to be included, community agencies and education sector staff need training in strategies for inclusion. Furthermore, there needs to be a range of strategies employed to cater for the individual needs of children/adolescents with different disabilities.
- The children/adolescents thought they already did sufficient activity and preferred to watch television or play electronic games.
- Adults reported that their child's disability was a major barrier and they didn't know enough about available programs.
- Although the children/adolescents held strong beliefs in the benefits of physical activity, these appeared to be out-weighed by the barriers, as the reported levels of activity were low when compared with the population without disability.

Finally, daily physical activity confers long term physical and mental health benefits for individuals of all ages and abilities. Children/adolescents with a disability and their families require multi-faceted support to achieve the recommended levels of physical activity for health.

Recommendations

The following recommendations are based on results from the PASCAD study.

Education

It is recommended that:

1. schools continue to provide all students, K – 12, with appropriate and accessible physical education to help develop skills and behaviours for an active life.
2. schools continue to develop in-house physical activity opportunities for students with a disability.
3. schools support and foster physical activity instruction and programs that meet the needs and interest of all students.
4. the built school environment continue to evolve into a safe and enjoyable setting for physical activity for all students throughout the day.
5. schools support a range of physical but non-competitive activities which can be performed and enjoyed in a group situation.

Executive Summary

6. physical education teachers have continuing professional development (CPD) about inclusive activities for young people with a disability and that the CPD be integrated with complementary planned physical activity education sector initiatives.
7. schools continue to explore innovative ways in which to involve girls in physical education sessions particularly during adolescence.
8. schools who champion inclusive physical activity for students be publicly and widely acknowledged, so that they serve as best practice models for all schools.

Governments/Community

It is recommended that:

1. community recreation facilities, in conjunction with agencies, explore opportunities to offer developmentally appropriate and inclusive sports and recreation programs to people of all ages with a disability. This includes the provision of trained assistants to support inclusion.
2. local community sporting groups offer inclusive activity programs out-of- school hours.
3. local government ensure that community facilities are physically and socially accessible to all community members.
4. funding to agencies, community organisations and sporting groups be made contingent upon inclusive practice and completed Disability Access and Inclusion Plans (DAIPS).
5. children/adolescents with a disability be included and prominent in all media campaigns to promote increased physical activity for all children/ adolescents.

Agencies

It is recommended that:

1. agencies providing services to children/adolescents with a disability actively facilitate and support inclusive, out-of-school hours physical activity programs in the community which emphasize group participation.
2. agencies continue to support community groups to identify new physical activity programs which address the child/adolescent's individual needs and circumstances.
3. agencies continue to offer specialist support to children/adolescents with a disability to enhance participation in appropriate physical activity.
4. agencies provide on their web sites or in any/all other accessible formats, information for educators and community-based sport and recreation workers on inclusion strategies for children with a disability.
5. agencies develop a series of fact sheets which families can provide to community organisations to facilitate the inclusion of a child/adolescent.
6. advice and assistance be provided to families regarding alternatives to electronic media activities for their children in order to ensure an appropriate balance of leisure activities.
7. agencies educate parents and families about the social and mental health benefits as well as the physical benefits of adequate physical activity.

Families

It is recommended that:

1. families, in conjunction with organisations, advocate for appropriate physical activity opportunities for their children in schools and local communities.
2. families aim to increase the levels of physically activity for all family members in order to achieve improved physical and mental health outcomes.
3. families and children/adolescents with a disability contact government/community, school and service agencies to identify opportunities to be more physically active as a family.

"Your questions were right on target and you will see how frustrating it has been for me trying to get my child into a team sport - even though I have a paid carer 4 hours a week. My son is a healthy boy but sometimes his behaviour stops him being able to participate in physical or social activities!! Urrrgh.... So thank you for giving me the opportunity to vent my thoughts!!"

(Parent, PASCAD 2006)

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Glossary & Abbreviations

ABS	Australian Bureau of Statistics
AIHW	Australian Institute of Health and Welfare
AISWA	Association of Independent Schools of Western Australia
ASD	Autism Spectrum Disorder
CAPANS	Child and Adolescents Physical Activity and Nutrition Survey
CLASS	Children's Leisure Activities Study
CEO	Catholic Education Office
DET	Department of Education and Training
EMFE	Electronic Media for Entertainment
ICF	International Classification of Functioning, Disability and Health
IPAQ	International Physical Activity Questionnaire
WHO	World Health Organisation

1. Introduction

1.1 The Aims of PASCAD

The aims of the PASCAD study were to:

- provide a baseline measure of the physical activity levels of children/adolescents with a disability in Western Australia; thereby establishing a benchmark against which to measure future interventions;
- allow comparison to other studies (CAPANS, 2003; CLASS, 2004) of typical developing peers as well as to the Australian guidelines on physical activity for children; and
- provide information to the participating community agencies regarding the beliefs and barriers to physical activity of children/adolescents with a disability and their families.

1.2 Background

Daily physical activity confers long-term health benefits for individuals of all ages and abilities. Consequently, there is no reason to believe that the health benefits for children and young people with a disability are any different than those for their peers without a disability. Although there has been little research investigating the effects of physical activity on children and adolescents with a disability, it is thought that the effects are similarly broad and positive across all domains (Cooper et al., 1999). For example, there is evidence to show increases in appropriate behaviour and decreases in inappropriate behaviour following periods of physical activity of children with autism spectrum disorder (Schleien, Krotee, Mustonen, Kelterborn, & Schermer, 1987). Also, adolescents (without disabilities) have reported that participation in physical activity can alleviate symptoms of depression and anxiety and that physical activity can assist with self esteem (Cavill, Biddle, & Sallis, 2001; Corbin & Pangrazi, 2003).

Lack of physical activity is closely associated with cardiovascular disease, hypertension, non-insulin dependent diabetes, some cancers, obesity and depression. These conditions represent a significant personal, social and economic cost (Stephenson et al., 2000; Bauman and Egger, 2000). The literature also suggests that social and mental health are negatively affected by low levels of physical activity (Biddle, Gorely and Stensil, 2004). For children and adolescents with a disability, the impact of low physical activity levels is of particular concern, as many are at increased risk of secondary health conditions. For example, children on anti-convulsant medication or steroids have increased risk of osteoporosis (Apkon, 2002; Farhat et al., 2002; Pack & Morrell, 2001). Children with a disability are also at risk of developing obesity-related conditions such as cardiovascular disease (Apkon, 2002; Ayyangar, 2002).

While concerted efforts have been directed toward understanding physical activity levels of children in Australia, studies have not described the situation in detail for approximately 266,400 children (10% of the population) aged between 5 and 14 years who have a reported disability. In Western Australia, the percentage is higher, with 11.5% of children in this age group (31,300 Western Australian children) having a reported disability (Australian Bureau of Statistics, 2003).

The available literature suggests that physical activities for this group are more likely to be centred around the home and family, involve fewer choices, and be performed alone. Downs and Briffa (2004) highlighted this in their literature review, reporting that children with a disability seemed to participate in less physical activity and spend more time in sedentary activities than children without a disability. A major barrier appears to be that opportunities to participate in social and recreational activities are limited (King et al., 2003).

> I sometimes worry about her going to organised group activities – mainly about her comprehension of instructions etc, as I don't want to make her a big issue with the instructor. I know she can perform the skills but often can't display that she can as she hasn't fully understood what is required of her. In the past I have sometimes waited until her younger sister (17 months) is old enough to go to the particular activity and then I feel more confident that she won't be just left sitting there not knowing what to do. *(PASCAD Parent, 2006)*

Introduction

Downs and Briffa (2004) documented the lack of rigorous studies regarding the physical activity of children/adolescents with a disability in Australia. Among the recommendations arising from this review were the following:

1. collect the following normative physical activity data using a survey and motion sensor devices in a population study of school-age children with a disability: type, frequency, duration and intensity, and settings, to enable comparison with Australian data on children without disabilities; and
2. identify enablers to and beliefs about physical activity to provide context and to contribute to a framework for successful interventions.

Based on these data, it would then be possible to describe the type of support needs of children with a disability, and to develop interventions to promote physical activity at the family, organization, community and government level. The Physical Activity Study of Children and Adolescents with a Disability (PASCAD) was commissioned to address these recommendations in Western Australia.

1.2.1 Physical Activity Guidelines

There are recommended levels of physical activity for adults and children around the world. In Australia, adults are advised to perform 30 minutes of moderate physical activity on most, if not all days. This can be achieved by several shorter episodes of activity (10 minute bouts) throughout the day. The recommendations (Table 1) for children are 1 hour (and up to several) of moderate to vigorous activity every day for 5 to 12 year olds and at least 1 hour of moderate to vigorous activity every day for 12 to 18 year olds (Department of Health and Ageing, 2004a,b). These recommendations are relatively consistent across countries.

There are no specific recommendations for children/adolescents with a disability. It has been noted, however, that children with a disability may need additional support to participate in activities at the recommended levels (Cavill et al., 2001; Sallis & Patrick, 1994).

1.2.2 Sedentary Activity Guidelines

Time spent in sedentary activity is a known risk factor for poor health (World Health Organisation, 2003), and is often seen as displacing time available for physical activity. Further, time spent engaged with Electronic Media For Entertainment (EMFE) such as computer and electronic games and television, has been singled out as a predictor of poor health. Sedentary activity guidelines set by the Australian Government and endorsed by the Australasian College of Physicians are that children and adolescents between the ages of 5 and 18 years spend no more than 2 hours per day engaged with electronic media for entertainment (Department of Health and Ageing, 2004 a,b).

TABLE 1 AUSTRALIAN PHYSICAL ACTIVITY GUIDELINES

	Adults	Children
DURATION (minutes/hours)	30 minutes	60 minutes or more
+	+	+
INTENSITY (light, moderate or vigorous)	Moderate	Moderate to vigorous
+	+	+
FREQUENCY (days / week)	Most, if not all days/week	7 days / week
↓	↓	↓
Australian Physical Activity Guidelines	**Accumulate 30 minutes of moderate physical activity preferably daily**	**At least 60 minutes moderate to vigorous physical activity daily**

"Disability is a multi-dimensional concept, relating to the body functions and structures of people, the activities they do, the life areas in which they participate and the factors in their environment that affect these experience."

(World Health Organisation, 2001).

"ASD children need fenced areas in playgrounds to ensure they don't run off. Also water/lakes are a risk because they don't understand about dangerous situations. This is the main barrier for parents with an ASD child. And for adults trying to keep fit with a disabled child."

(PASCAD Parent, 2006)

2. The PASCAD Methodology

2.1 Design

The PASCAD design consisted of two parts. First a self-report questionnaire was used to survey the population of children and adolescents in three age groups (ages 5 – 7, 10 – 12 and 14 – 16 years). One adult in each home also participated. Distribution took place through the schools. Because the population was school-aged, the chances of identifying and inviting the entire population of eligible participants were increased.

The second part of the PASCAD followed the population study and comprised a motion sensor study involving daily activity diaries and motion sensor recording of physical activity for seven days conducted on a sub-sample of children in the 10 – 12 year age group.

2.2 Recruitment

Participants for the survey and motion sensor study were recruited through the Department of Education and Training (DET), the Catholic Education Office of Western Australia (CEO) and the Association of Independent Schools WA (AISWA). Children/adolescents attending Education Support Schools, Education Support Centres, Education Support Units or mainstream schools were eligible. All schools in metropolitan Perth were included using boundaries identified by the DET.

Children and adolescents were eligible if they were 5 –7, 10 – 12, or 14 – 16 years of age, and had one of the following diagnoses - autistic spectrum disorder, intellectual disability, physical disability, or vision impairment or blindness - as their main disability.

The DET, the CEO and AISWA identified 2956 children attending over 500 schools in metropolitan Perth. The number attending each school was provided to the research team who subsequently delivered the required number of questionnaires to the principal of each school. Schools were responsible for distributing them to children/adolescents and their families. No identifying information about eligible participants was forwarded to the researchers. A reminder notice to parents was issued via school newsletters four weeks after the initial distribution.

Families and children in the age 10-12 group who were ambulatory (with or without aids) were invited to contact the researchers if they wished to participate in the motion sensor study.

2.3 Ethics Approval and Informed Consent

Approval for the PASCAD was obtained from the Curtin University Human Research Ethics Committee (HR 57/2005). All participants signed and returned consent forms separately from the questionnaires.

Questionnaires and consent forms were returned directly to the research team at Curtin in pre-paid envelopes. By using this recruitment method, the schools were unaware which families participated.

2.4 Measurement Tools

2.4.1 Survey

Four questionnaires were designed with reference to the literature on physical activity and disability and also to recently published studies, such as the Child and Adolescent Physical Activity and Nutrition Study – CAPANS (Hands et al., 2004) in Western Australia and the Children's Leisure Activities Study – CLASS (Salmon, Telford, & Crawford, 2004) in Victoria. One questionnaire was completed by each child/adolescent and one was completed by an adult living with the child/adolescent. A separate questionnaire was designed for each age group. An example of a PASCAD children's questionnaire is included as Appendix 2. All sources for items were identified in the questionnaires.

Prior to the main study, a small pilot study with ten (10) children/adolescents and their families tested the utility, language and response time of the PASCAD questionnaires. Alternative formats (Braille, interview) were available upon request.

2.4.1.1 Questionnaire 1: Children age 5-7

Self-report is considered unreliable for this age group (Baranowski, 1984). Hence, all questionnaires were completed on behalf of the child by an adult (proxy response), and included questions about:

1. the child, his/her family and school; and
2. physical and sedentary activities in the last 7 days.

2.4.1.2 Questionnaire 2: Children age 10-12

Children/adolescents aged from 10 – 12 were invited to complete the questionnaire themselves. Recognizing that some children may not be able to complete it independently, two additional options were provided: completion with assistance (for example physical assistance) or proxy response by an adult. The respondent

The PASCAD Methodology

(self, with assistance or proxy) was recorded. This tool included questions about:

1. the child, his/her family and school;
2. physical and sedentary activities in the last 7 days; and
3. barriers to and beliefs about physical activity.

2.4.1.3 Questionnaire 3: Children age 14-16

This was exactly the same as Questionnaire 2.

2.4.1.4 Questionnaire 4: Adult Survey

Questionnaire 4 was completed by a parent (or an adult in the home) of each participating child and adolescent. This questionnaire captured data about the child, family, and the adult completing the questionnaire and included questions about:

1. the adult and the child in the home;
2. the adult's level of physical activity in the previous 7 days using the short version of the International Physical Activity Questionnaire (IPAQ) (International Consensus Group, 1998); and
3. the barriers faced in assisting the child to be physically active.

2.4.2 Motion Sensor Study

Children age 10-12, who nominated to participate in the motion sensor study completed an activity diary and wore a motion sensor (MTI Actigraph) for a period of up to 7 days. Information from this study provided an objective measure of the duration and intensity of physical activity.

2.4.2.1 Activity Diary

Participants completed a diary, recording the main daily activities over the same seven-day period. Each day was divided into 30-minute periods between 6am and 10pm. For each 30-minute period, participants were asked to provide information regarding:

1. the main task performed;
2. the purpose of the task (self-care, leisure, school, chores);
3. where the task was performed;
4. with whom the task was performed; and
5. the postures used to perform the task.

2.4.2.2 Motion Sensor

The MTI Actigraph (a uniaxial accelerometer measuring frequency and amplitude of movement in the vertical direction) is a small, matchbox-sized, light-weight monitor worn on a belt at the waist. It has no removable parts and cannot cause any harm. Accelerometry is increasingly preferred as the most objective measure of a child's physical activity (Welk, Corbin, & Dale, 2000) although little is known about its utility among children with a disability.

Participating children were visited at home and use of the Actigraph was demonstrated. They were asked to wear the Actigraph during waking hours, except for water activities, over a seven day period.

2.5 Timing of the Study

PASCAD was conducted during term 4, 2005 in order to make valid comparisons with the CAPANS data which was also collected during term 4. This minimised the effect of seasonal differences in the physical activities in which children/adolescents participate. Surveys were distributed to schools early in term 4, 2005 and families were asked to return completed surveys to Curtin by the end of the school year.

2.6 Study Limitations

Four limitations of the study were identified. Firstly, there was a modest response rate; approximately 10% of all children/adolescents with a disability in Western Australia participated. Secondly, the study was limited to four pre-specified disabilities. Thirdly, data were collected using child/proxy self-report. As with all surveys self-selection bias is possible and self-reporting and proxy responses may have resulted in socially desirable responses rather than true estimates of physical activity. Finally, recall bias may have led to over- or underreporting.

"Basically a lack of time. My household chores take most of my time and my son does not seek me out as does my daughter to play. He prefers to be left alone playing on his computer."

(PASCAD Parent, 2006)

3. Profile of Participants

3.1 Profile of Survey Participants

The total number of children/adolescents attending schools was 2956 which generated 379 returned questionnaires. Sixty-one surveys were unusable due to missing/unsigned consent forms, ineligibility (age and/or disability) or late return of questionnaires. The remaining 318 questionnaires represented over 10% of all eligible children with the named disabilities in the three age groups in Western Australia.

For children aged 5 – 7 years, 125 adults completed questionnaires on behalf of 88 boys and 36 girls (1 did not report the child's gender).

For children aged 10 – 12 years, 67% of the questionnaires were completed by proxy and 95% of the children who self-reported required assistance. The total group included 91 respondents - 58 boys and 31 girls (2 did not report the child's gender).

On the adolescent questionnaire, 48% were completed by proxy, and 66% of those who self-reported required assistance. The total group included 102 respondents - 55 boys and 46 girls (1 did not report the adolescent's gender).

The child/adolescent's mother completed 84% of the adult questionnaires, while fathers completed approximately 9.5%. Less than 1% of the adult questionnaires were completed by other adults in the home. Approximately 5% of respondents did not complete this question.

Of the total number of respondents in the 10 - 12 age group (n= 91), 40 children and their parents expressed interest in participating in the motion sensor study. Of these 40, 30 children were eligible and/or available for the study.

Most of the participants in the motion sensor study were boys with intellectual disability and/or autism spectrum disorder, and all were ambulatory.

TABLE 2 PROFILE OF SURVEY PARTICIPANTS BY GENDER AND DISABILITY

	Boys	Girls	Gender not reported	Total	Percentage of total sample (%)
Vision Impairment	6	6		12	4
Physical Disability	39	36	1	76	24
Intellectual Disability	76	53	2	131	41
Autism Spectrum Disorder	71	14	1	86	27
Disability not reported	9	4		13	4
Total	201	113	4	318	**100**

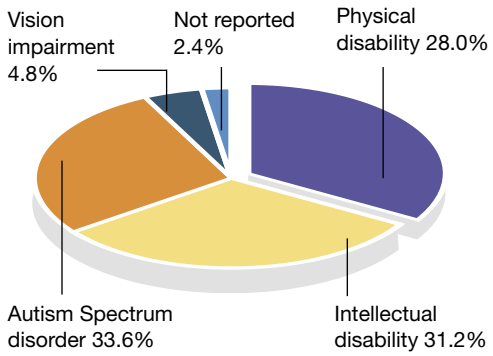
Profile of Participants

3.2 Detailed Profile by Age Group: Survey

3.2.1 Children age 5 – 7

A breakdown of disability is outlined in Figure 1 below

FIG. 1 PERCENTAGE OF 5-7 YEAR OLD RESPONDENTS IN EACH DISABILITY GROUP



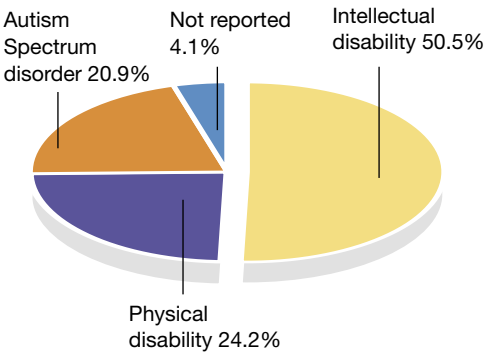
Findings

- The most common disability for boys was autism spectrum disorder (42% of boys and 29.6% of the whole age group).
- The most common disability for girls was physical disability.
- Twice as many boys as girls were represented in this group (70.4% boys, 28.8% girls).

3.2.2 Children age 10 – 12

A breakdown of disability distribution is outlined in Figure 2 below

FIG. 2 PERCENTAGE OF 10-12 YEAR OLD RESPONDENTS IN EACH DISABILITY GROUP



Findings

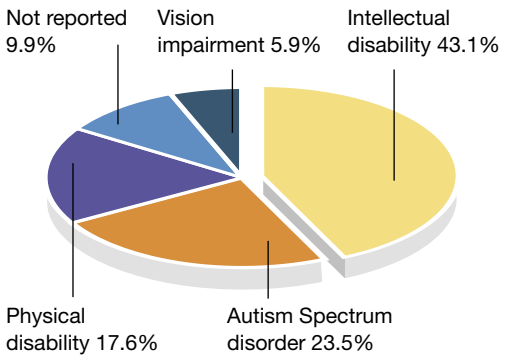
- Half (50.5%) of all respondents reported having an intellectual disability, the most common disability for both boys and girls.
- There were no children with vision impairment reported in this age group.
- There were nearly twice as many boys as girls represented (64% vs. 35%).

Profile of Participants

3.2.3 Adolescents age 14 - 16

Details of the disability distribution are reported in Figure 3.

FIG. 3 PERCENTAGE OF 14-16 YEAR OLD RESPONDENTS IN EACH DISABILITY GROUP



Findings

- Slightly more boys responded to the survey than girls.
- Intellectual disability continued to be the most common disability (43.1%).
- More than twice as many boys than girls reported autism spectrum disorder.

3.3 Profile of Total Group

3.3.1 Severity of Disability

No agreed upon universal measurement tool, suitable for self-report is available to quantify severity of disability across ages, genders and disability type. Hence, parents were asked to describe their child's need for assistance in activities of daily living using descriptions from the Australian Institute of Health and Welfare (Australian Institute of Health and Welfare, 2003)

TABLE 3 PARENT'S DESCRIPTION OF CHILD/ADOLESCENT'S NEED FOR ASSISTANCE IN AREAS OF DAILY LIFE

Assistance	(%) **	(%) **
Has no difficulty with self care, mobility or communication but sometimes uses equipment	14.2	14.2%
Does not need assistance, but has difficulty with self care, mobility or communication	14.9	**85.7%**
Sometimes needs assistance with self care, mobility or communication	49.8	
Unable to perform self care, mobility, and/or communication tasks, or always needs assistance with these task	21.0	

** numbers rounded to nearest tenth

Findings

- Parents' reports indicated that the vast majority of children (85.7%) who participated in this study required assistance in some area of daily life at least some of the time.

Profile of Participants

3.3.2 Type of School Attended

In Western Australia, there is increasing emphasis being placed on children with a disability attending mainstream schools. Alternatives to mainstream schools include Education Support Schools, Education Support Units, and Education Support Centres. Some children spend time in more than one setting (shared settings).

TABLE 4 CATEGORY OF SCHOOL ATTENDED BY PARTICIPANTS IN EACH AGE GROUP

School	% 5–7 yrs	% 10–12 yrs	% 14–16 yrs	% of total
Mainstream	68.0	45.1	36.3	51.3
Education support school	8.8	16.5	23.5	15.7
Education support unit	6.4	7.7	10.8	8.2
Education support centre	7.2	20.9	23.5	16.4
Shared setting	8.0	6.6	3.9	6.3

Findings

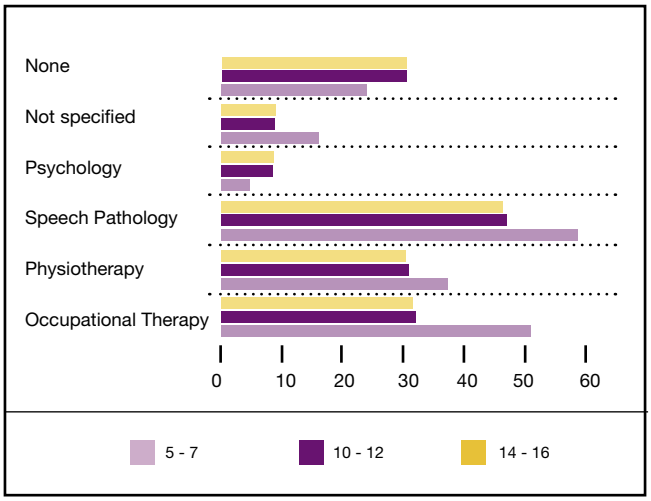
- Just over 50% of the total participants attended mainstream schools. Of the remainder, 40% attended an education support facility all day and 6.3% split their time between the mainstream and education support systems. Approximately 2% did not specify a school setting.
- Consistent with reported trends and State policies, the younger the child, the more likely that he/she was to attend a mainstream school all day or split time between mainstream and education support facilities.
- Over 80% received assistance from an education support worker or a carer/attendant, independent of school setting (Appendix 1).

3.3.3 Allied Health Services Accessed

Use of allied health services can be a strong indicator of the burden of care for families (Floyd & Gallagher, 1997). In addition, the requirement to access therapy and to carry out therapy programs at home contributes to families being 'time-poor'; thus affecting the opportunity for physical activity, unless the therapy involves activity.

Figure 4 describes the percentage of participants in each age group who were receiving allied health services.

FIG. 4 PERCENTAGE OF PARTICIPANTS CURRENTLY RECEIVING ALLIED HEALTH SERVICES



Findings

- Between 25 and 30% of all children were receiving no form of therapy.
- Children age 5-7 were receiving more speech, physiotherapy and occupational therapy than older groups. Older groups were receiving more psychological services than 5 – 7 year old children.
- At least 30% of all children/ adolescents were receiving occupational therapy, physiotherapy or speech pathology.

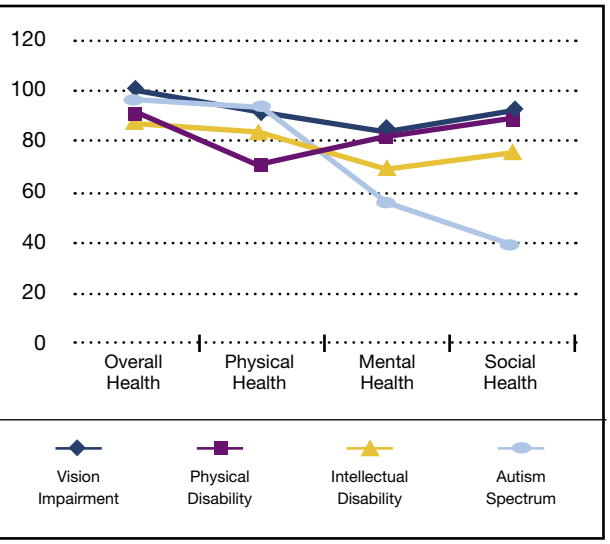
Profile of Participants

3.3.4 Adult Rating of Child/adolescent Health

Physical activity is believed to confer positive physical, social and emotional health benefits for all people including those with a disability. This view is consistent with the International Classification of Functioning, Disability and Health (ICF) which has a participation-in-life focus (World Health Organization, 2002).

Using a 5 point rating scale, with categories ranging from excellent to poor, adults were asked to describe their child's health in the dimensions of overall health, physical health (the health of his/her body), mental health (whether they get angry, sad or worry a lot), and social health (his/her relationships with family and friends).

FIG. 5 PERCENTAGE OF ADULTS RATING CHILD HEALTH AS 'GOOD TO EXCELLENT'



Findings

- Most adults (range 70 - 100%) considered that their child/adolescent enjoyed good to excellent overall and physical health. There was little difference for each disability group, with the exception that adults rated 30% of children/adolescents with physical disabilities as having fair to poor physical health.
- Social health and emotional health were more variably rated than overall and physical health. Children/adolescents with physical disabilities and vision impairment were considered by adults to enjoy good to excellent social and mental health.
- Adults of children/adolescents with autism spectrum disorder rated 60% of their children/adolescents as having fair to poor social health and 44% as having fair to poor mental health.

Profile of Participants

3.4 Activity Levels of Adults Living With Children/Adolescents in This Study

Parental activity level is an important factor in the level of physical activity of children (Salmon, et al., 2004). One adult living in each home completed the IPAQ (Short, last 7 days self-administered version). Almost all (96%) of usable adult surveys included a completed IPAQ.

The Australian physical activity guidelines for adults (Bauman et al., 2001) recommend that adults should do at least 30 minutes of moderate-intensity activity on most, preferably all days of the week. Alternatively, adults involved in 150 minutes of moderate physical activity per week are described as 'sufficiently active' to derive a health benefit.

Findings

- Over 37% of respondents engaged in no moderate or vigorous activity.
- Only 24.5% reported doing 150 minutes or more during the week, the level sufficient to derive a health benefit. This finding is less than half that of the general adult population in Australia. The Australian Institute of Health and Welfare (AIHW) estimated that 57% of the adult population in Australia was performing 'sufficient' physical activity to obtain a health benefit (Armstrong, Bauman and Davies, 2000).

3.5 Profile of Participants: Key Findings Summarized

- Over 60% of the children/adolescents were boys with the largest single group being boys aged from 5 – 7 years with autism spectrum disorder. This is similar to the national incidence and prevalence of children with a disability.
- Over 50% of the total sample and 76% of all children aged 5 – 7 years attended mainstream schools. This reflects the current policy of inclusive education.
- Approximately 80% of children/adolescents received classroom assistance, including those in mainstream classes.
- Adults reported that 85.7% of children/adolescents required some assistance with communication, mobility or self-care.
- Children aged 5 – 7 years were the highest users of allied health services.
- Parents of children/adolescents with autism spectrum disorder reported that their children had poor social and mental health.
- Less than a quarter of the adult respondents reported being 'sufficiently active' for health gains. This is less than half the national average.

4. Physical and Sedentary Activities

4.1 Introduction

Examination of the physical and sedentary pastimes of children and adolescents with a disability was an integral part of PASCAD. The type, level and context of physical and sedentary activities for the children and adolescents in the study were described and analysis allowed comparisons to be made with the Australian guidelines and previous surveys of children without disabilities. Physical activity includes unstructured free play, household chores, active transport and organised games/sport.

Likewise, the concept of physical inactivity or sedentary activity is important in any discussion of health and well-being. Very light activity may fall into this category. It has been suggested that studying physical inactivity levels of children as well as understanding the determinants for this inactivity may give better insights into long term activity choices (Kohl & Hobbs, 1998).

To review, PASCAD used three methods to ascertain the physical and sedentary activity levels of children/adolescents with a disability: questionnaires completed by all participants and a motion sensor study in which a sub-set of 10 - 12 year olds kept activity diaries and wore accelerometers for up to 7 days. The results are integrated in this section of the report.

4.2 Physical Activity

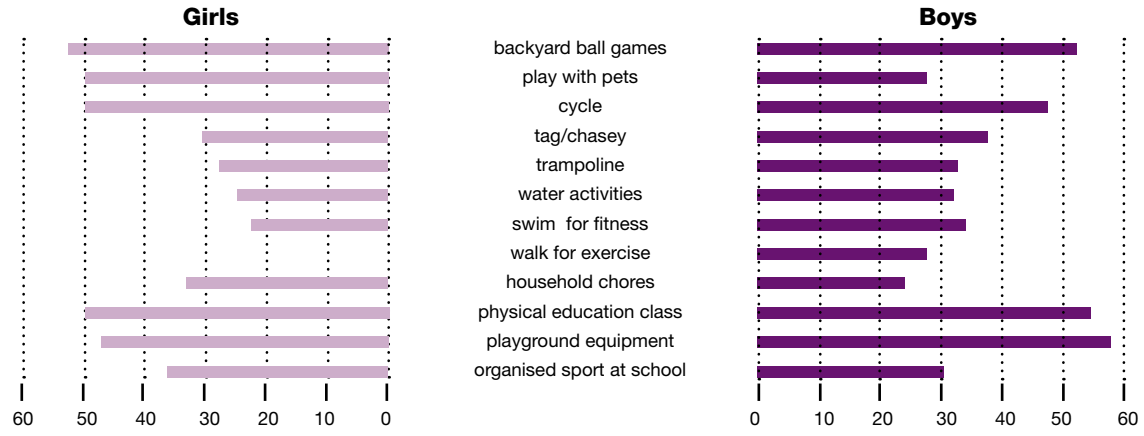
Physical activity can be defined as "any bodily movements produced by skeletal muscles that result in caloric expenditure" (Caspersen, Powell, & Christenson, 1985). Physical activity is performed every day in normal daily living but the intensity, frequency and duration of that activity varies between people and over time (Sallis & Patrick, 1994).

4.2.1 What Do Children/Adolescents With a Disability Do?

Participants were asked to report on their participation in 42 physical activities over the previous 7 days and to add activities not included. The listed activities included organised sport and team games, unstructured free play with or without equipment, household chores and active travel to and from school.

The most common activities are displayed in Figures 6, 7 and 8 and are reported for each gender in each age group. Only those activities with a participation rate of 20% or greater have been included in the Figures.

FIG. 6 PERCENTAGE PARTICIPATION IN THE MOST COMMON PHYSICAL ACTIVITIES FOR 5 – 7 YEAR OLD BOYS AND GIRLS

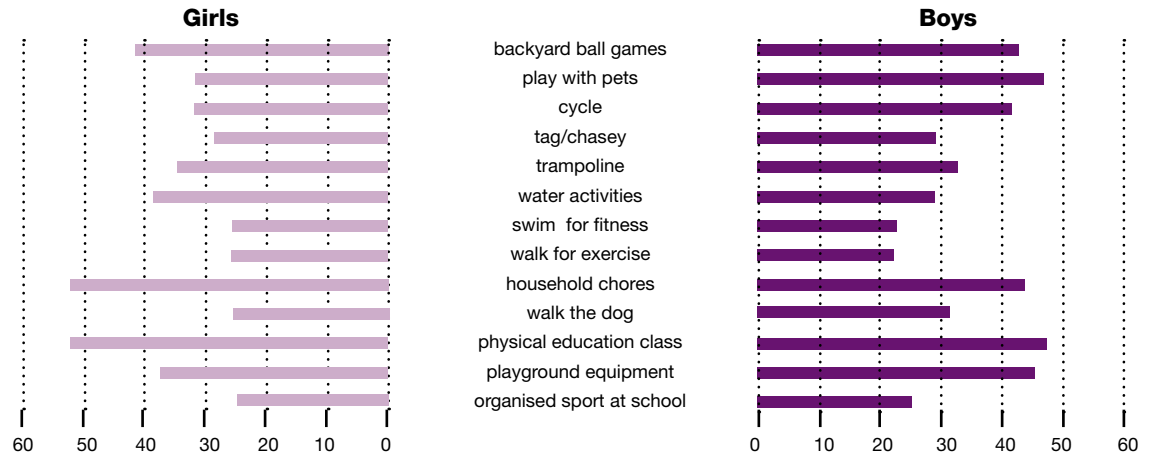


Findings

- Playing on playground equipment and participating in physical education class were the most commonly reported activities for boys and within the top four most common activities for girls.
- Other than at school, no team games and/or organized sport attracted more than 20% participation.
- The majority of activities were unstructured and performed alone.

Physical and Sedentary Actvities

FIG. 7 PERCENTAGE PARTICIPATION IN THE MOST COMMON PHYSICAL ACTIVITIES FOR 10 – 12 YEAR OLD BOYS AND GIRLS



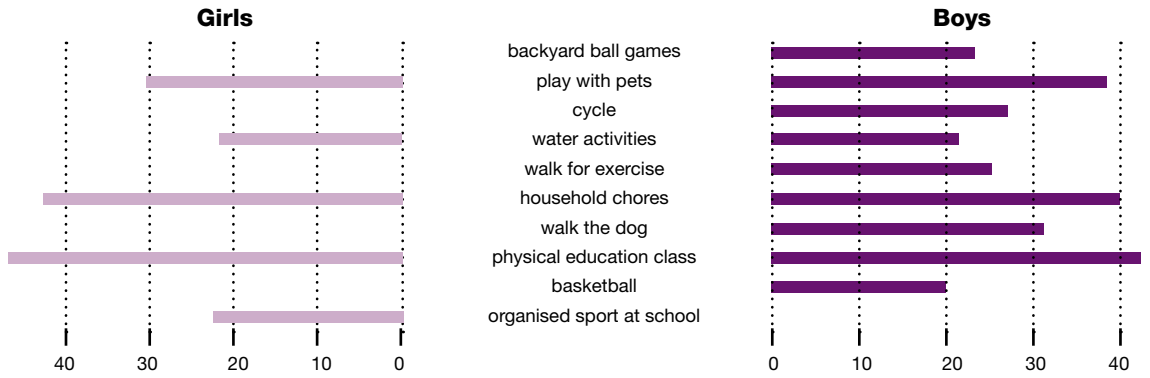
Findings

- The percentage of children engaging in each physical activity was less for 10-12 year olds than for 5 – 7 year olds.
- Physical education class continued to be a common form of physical activity for both boys and girls.
- Between 40 and 50% of both boys and girls did household chores.

"I find that caring for my child and his disability is at times quite overwhelming and it is difficult to participate in physical activities. The amount of planning that goes into a simple trip to the park and also his inappropriate behaviour when leaving the park makes physical activities extremely stressful and often physically dangerous. My whole life is planned around what I can physically do - 1 adult with 2 small children. Thank you for asking for my thoughts."
(Parent, PASCAD 2006)

Physical and Sedentary Actvities

FIG. 8 PERCENTAGE PARTICIPATION IN THE MOST COMMON PHYSICAL ACTIVITIES FOR 14 – 16 YEAR OLD BOYS AND GIRLS



Findings

- The number and types of physical activities reported by 14-16 year olds was less than for the younger age groups.
- Only 5 physical activities were done by 20% of girls of this age, while 9 activities were done by 20% of the boys.
- Physical education class was the single most common activity for either gender, followed by household chores.

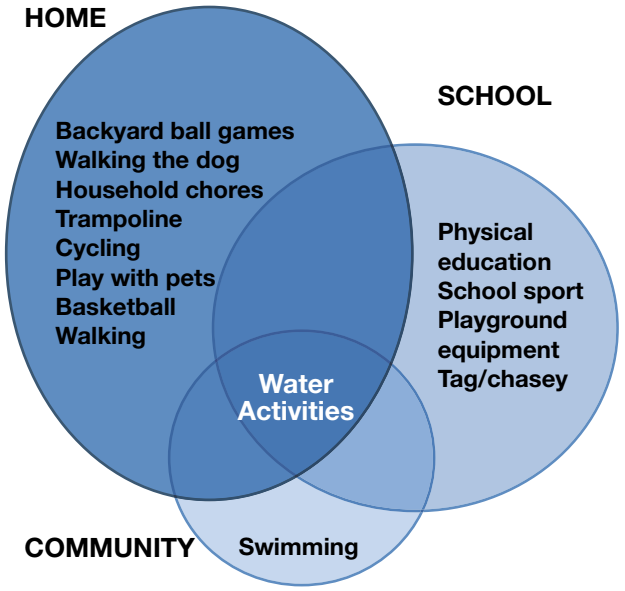
Because my child's behaviour can be erratic it can be a little hard to encourage him as he can be awkward, however I still encourage and it takes a long time compared to a "normal kid" to complete/ do well/pass a course eg. swimming, soccer. I personally find as physically/mentally he can be draining on me I do not appear to have a lot of time for me!! But I do love him!!
(Parent, PASCAD 2006)

Physical and Sedentary Actvities

4.2.2 Where and When are Children/Adolescents Physically Active?

The location of physical activity for children and adolescents with a disability is an important factor in describing the experiences of children and families. It gives an indication of the ability of community and school to provide opportunities for participation in physical activities. Figure 9 shows the principal locations for the most common physical activities.

FIG. 9 PRINCIPAL LOCATIONS FOR MOST COMMON PHYSICAL ACTIVITIES



Findings

- Most physical activities performed by children/adolescents with a disability were home-based.
- Structured physical activities principally occurred at school.
- Swimming/water activities were the only community-based activities. Water activities occurred in each setting.

These findings were reinforced by the data arising from the activity diaries in the motion sensor study which also found that physical activities were primarily home and school based.

4.2.3 When and What do Children/Adolescents do at School?

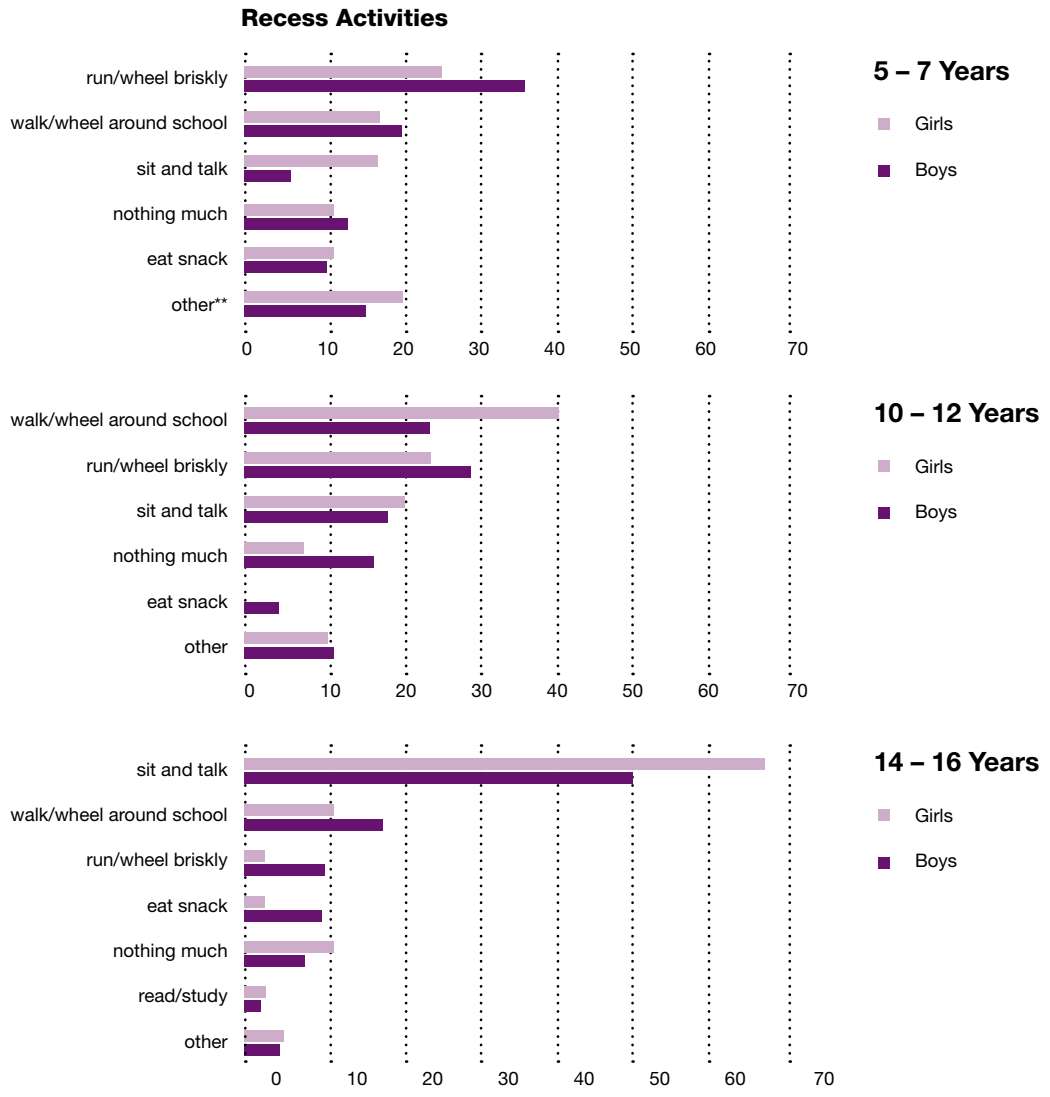
Opportunities to be physically active at school occurred during physical education classes, organised sport and at recess and lunchtimes. The data in Table 5 describe the percentage of children / adolescents, for each age and gender, participating in physical activity at different times of the day. Figures 10, 11 and 12 provide a detailed breakdown of participation reported for each age group and gender for recess, lunchtime, and physical education classes, respectively.

TABLE 5 SUMMARY – PERCENTAGE OF CHILDREN/ADOLESCENTS ENGAGED IN SCHOOL-BASED PHYSICAL ACTIVITY

	5 – 7 yrs		10 – 12 yrs		14 – 16 yrs	
	Boys	Girls	Boys	Girls	Boys	Girls
PE Class (%)	80.7	72.3	85.7	86.6	75.9	66.6
Recess (%)	56.3	41.7	51.8	63.3	26.9	13.3
Lunch (%)	67.0	63.9	75.8	76.7	30.9	18.1

Physical and Sedentary Activities

FIG. 10 PERCENTAGE PARTICIPATION IN DIFFERENT ACTIVITIES DURING RECESS FOR GIRLS AND BOYS IN EACH AGE GROUP



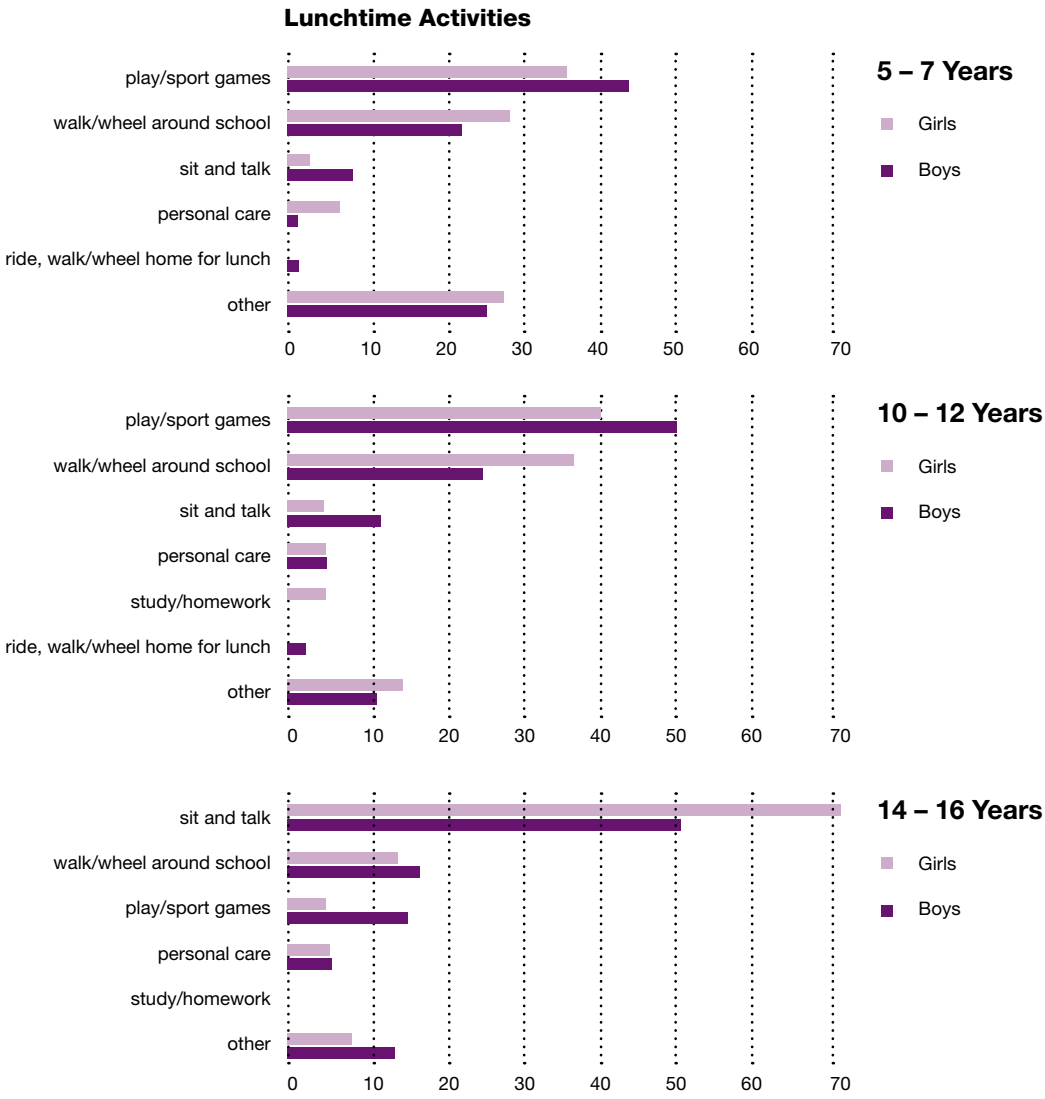
**Other Mainly playing alone or on swings and playground equipment

Findings

- The percentage of children who were active at recess was less than 40% across all ages and genders. By age 14-16 years, less than 20% of respondents did any physical activity at recess.
- These patterns are similar to children/adolescents without disabilities (Hands et al., 2004).

Physical and Sedentary Activities

FIG. 11 PERCENTAGE PARTICIPATION IN DIFFERENT ACTIVITIES DURING LUNCHTIME FOR GIRLS AND BOYS IN EACH AGE GROUP



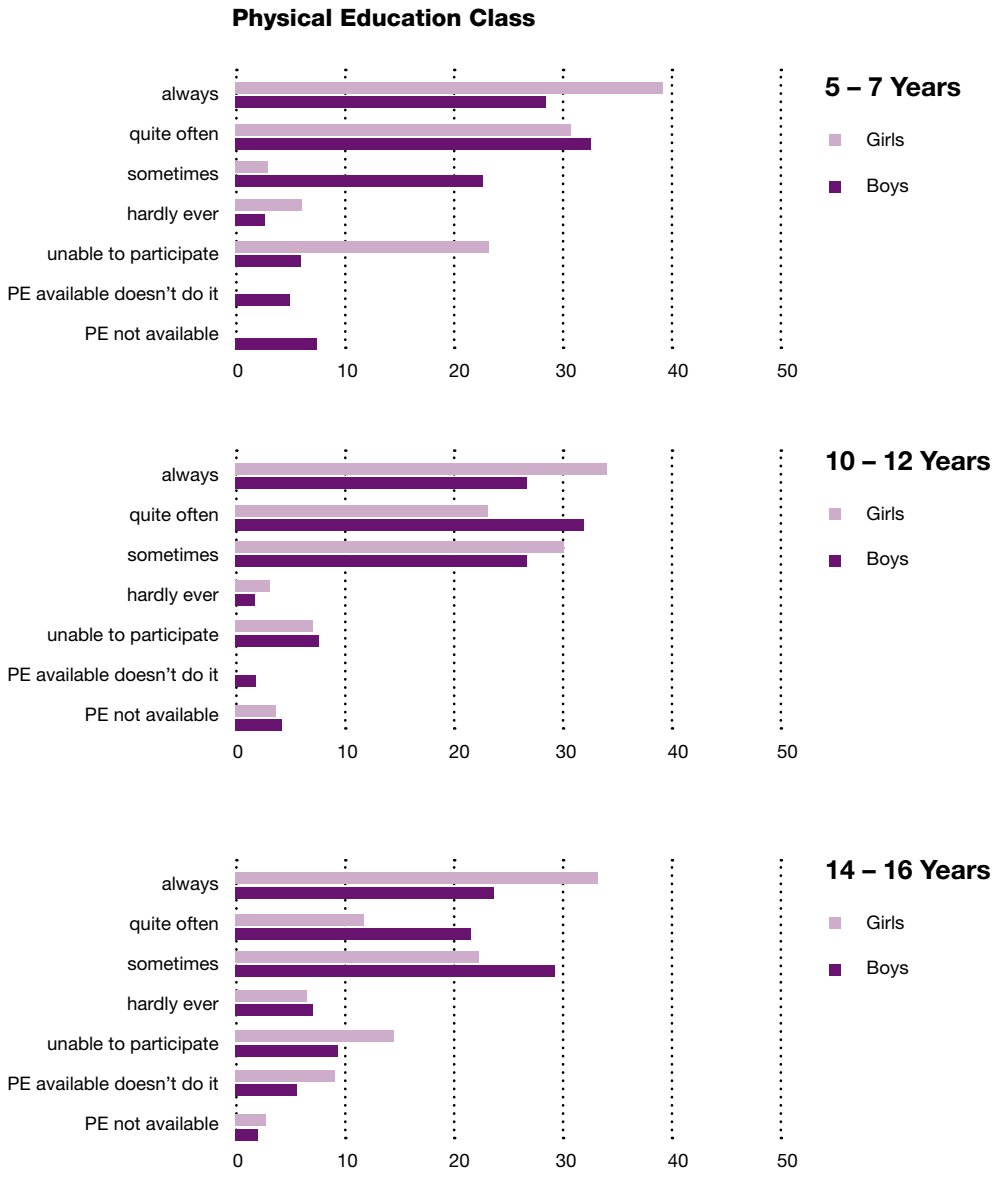
**Other Mainly playing alone or on swings and playground equipment

Findings

- Over 40% of both boys and girls in the younger two age groups were active at lunch.
- Adolescents were more likely to "sit and talk", with few engaging in physical activity during lunch.

Physical and Sedentary Activities

FIG. 12 PERCENTAGE PARTICIPATION IN DIFFERENT ACTIVITIES DURING PHYSICAL EDUCATION CLASSES FOR GIRLS AND BOYS IN EACH AGE GROUP



Findings

- Children in the age group aged 10 – 12 years were the most active during physical education class.
- Structured physical activity achieved higher participation rates than unstructured activities at recess and lunch (see Figures 10 & 11).

Physical and Sedentary Activities

4.2.4 When are Children/Adolescents Active at Home?

Questions were asked to determine the timing and frequency of "very active" participation for home-based activities (Table 6).

TABLE 6 PERCENTAGE OF CHILDREN/ADOLESCENTS WHO PARTICIPATED IN VERY ACTIVE HOME-BASED ACTIVITIES

"In the last 7 days, on how many days before and after school and before tea, did you do sports, dance or play games in which you were very active?"						
	5 – 7years		10 – 12 years		14 – 16 years	
# times	Boys	Girls	Boys	Girls	Boys	Girls
0 - 1	33.0	32.4	43.9	56.7	58.2	64.4
>2	67.0	67.6	56.1	43.3	41.8	35.6

"In the last 7 days, on how many evenings after tea did you do sports, dance or play games in which you were very active?"						
	5 – 7 years		10 – 12 years		14 – 16 years	
# times	Boys	Girls	Boys	Girls	Boys	Girls
0 - 1	74.7	86.1	73.2	82.1	87.0	91.3
>2	25.3	13.9	26.8	17.9	13.0	8.7

"On the last weekend, how many times did you do sports, dance or play games in which you were very active?"						
	5 – 7 years		10 – 12 years		14 – 16 years	
# times	Boys	Girls	Boys	Girls	Boys	Girls
0 - 1	42.5	42.9	59.6	53.6	69.8	71.1
>2	57.5	57.1	40.4	46.4	30.2	28.9

Findings

- Activity levels declined with age.
- The most active time for children/adolescents was before and after school and before the evening meal closely followed by weekends.
- Few children /adolescents were active following the evening meal.

Physical and Sedentary Activities

4.2.5 How Much Time Do Children/Adolescents Spend in Moderate to Vigorous Activity?

Questionnaire data (Table 7), the diaries (Table 9) and the actigraph data described the amount children / adolescents participated in moderate to vigorous activity

4.2.5.1 Questionnaire Data

TABLE 7 PERCENTAGE OF CHILDREN/ADOLESCENTS ENGAGED IN MODERATE TO VIGOROUS ACTIVITY PER WEEK

BOYS			
Participation (hours/week)	5 – 7 years (%)	10 – 12 years (%)	14 -16 years (%)
< 1	1.2	8.2	7.0
1 to 3	21.4	16.3	18.6
3 to 5	15.5	12.2	14.0
5 to 7	14.3	6.1	9.3
7 to 9	20.2	22.4	14.0
> 10	27.4	34.7	37.2
Total (%) complying with Australian recommendations	47.6	57.1	51.2
GIRLS			
Participation (hours/week)	5 – 7 years (%)	10 – 12 years (%)	14 -16 years (%)
< 1	3.2	0.0	2.5
1 to 3	19.4	28.0	20.0
3 to 5	22.6	12.0	22.5
5 to 7	22.6	8.0	10.0
7 to 9	9.7	16.0	7.5
> 10	22.6	36.0	37.5
Total (%) complying with Australian recommendations	32.3	52.0	45.0

Findings

- From 32.3 % to 57.1% of the participants in the PASCAD study met the Australian guidelines for physical activity. This is approximately half of the number (95%) of children without a disability who met the guidelines in the CLASS study (Salmon et al., 2004).
- Boys were more likely to meet the guidelines than girls.

Physical and Sedentary Activities

4.2.5.2 Comparison of Children/adolescents With and Without a Disability

Table 8 below shows the percentage of PASCAD children aged 5 – 7 and 10 -12 years who reported more than 1 hour a day of moderate /vigorous activity. These are compared to the results from the Children's Leisure Activities Study (CLASS) although it is noted that CLASS examined children aged 5 – 6 years rather than 5 – 7 years.

TABLE 8 COMPARISON OF PERCENTAGE PARTICIPATION FOR BOYS AND GIRLS IN 5 – 7 AND 10 – 12 AGE GROUPS

	PASCAD children/adolescents engaging in 1 hour or more of physical activity per day. (%)		CLASS children/adolescents without disabilities (CLASS) (%)	
	boys	girls	boys	girls
5 – 7 years	47.6	32.3	95*	98*
10–12 years	57.1	52	99*	95*

* denotes estimates from CLASS Summary report

Findings

- In this sample, approximately half as many Western Australian children with a disability performed sufficient physical activity to satisfy Australian Government recommendations as compared with their non-disabled peers in Victoria.

Physical and Sedentary Activities

4.2.5.3 Diary Data

Based on the type of activity and postures described, all activities were coded as sedentary, moderate or vigorous intensity. For example, postures such as lying, sitting and standing were rated as sedentary; walking outside and throwing/catching a ball were rated as moderate intensity; and running, jumping, skipping and swimming were rated as vigorous intensity. The total time per day that each participant recorded either moderate or vigorous physical activity was calculated and is shown in Table 9.

TABLE 9 PERCENTAGE OF CHILDREN (10-12YRS) WHO REPORTED PARTICIPATION IN MODERATE OR VIGOROUS PHYSICAL ACTIVITY OVER THE LAST 7 DAYS

	No participation in any moderate or vigorous daily physical activity (%)	Moderate or vigorous activity <1 hour/day (%)	Moderate or vigorous activity >1 hours/day (%)
Monday	30	7	63
Tuesday	17	16	67
Wednesday	27	6	67
Thursday	27	6	67
Friday	27	10	63
Saturday	13	14	73
Sunday	10	20	70

Findings

- Over 60% of children/adolescents were moderately or vigorously active for one or more hours per day, meeting the Australian recommendations for children's physical activity. The percentage was slightly higher on weekends.
- Up to 30% of children reported no participation in any moderate or vigorous activity during school days. In contrast, only 10-13% of children reported not participating in any physical activity on the weekends.
- These findings are consistent with the questionnaire data for 10 – 12 year olds where 57% of boys and 52% of girls met the Australian recommendations.

4.2.5.4 Actigraph Data

Twenty-nine of the original 30 children provided 148 days of accelerometry data, with 18 of these children providing 5 or more days of data. Twenty of the participants were boys and 9 were girls. One child withdrew as a result of illness. While the intention was for children to monitor their activities for seven consecutive days, many children, as a result of their disability, were not able to tolerate wearing the motion sensor for this period.

On average, children who wore the accelerometers were at least moderately active for 2.26 hours each day (range .09 – 4.6 hours; median 2.3 hours).

The activity levels of this highly selective group of ambulatory children were consistent with Commonwealth recommendations for physical activity for 5 – 12 year olds of at least 1 hour moderate to vigorous physical activity daily.

The CLASS study in Victoria used activity monitors to gain an objective measure of the time spent in moderate to vigorous activity by 10 – 12 year old children without a disability. The study reported that the average daily time spent was 2.4 hours for boys and 2 hours for girls (Salmon et al., 2004). These findings are similar to PASCAD, although care should be taken with interpretation as the sample size and recruitment procedures were very different.

Physical and Sedentary Activities

4.2.7 Physical Activity: Key Findings Summarized

What, When And Where

- The most common activities for all three age groups included water activities, cycling, playing with pets and physical education classes.
- Some activities were age dependent; for example 10 –12 and 14 –16 year olds frequently did household chores, and 5-7 year olds participated in trampoline activity.
- Most activities were unstructured activities involving free play.
- Physical education class was in the top ten activities for all age groups and was the only organised activity for many children.
- The most active time for children/adolescents was before and after school and before the evening meal, closely followed by weekends.
- Children aged 10 – 12 years old were the most likely to be very active at school recess and lunchtimes.
- While many activities could be done with peers, most were performed alone and were not dependent on peers for participation.
- Most activities were performed at home including basketball, the only team sport to achieve greater than 20% participation.

Amount

- Only about half of Western Australian children with a disability performed sufficient physical activity to satisfy Australian Government recommendations when compared with Victorian children/adolescents without a disability.

Physical and Sedentary Activities

4.2.8 Discussion: Physical Activity

The activity choices of children/adolescents with a disability were similar to the choices children without a disability make, with one notable exception – children/adolescents with a disability apparently do not engage in team games and sport outside of the school setting. The ABS reported that in the 12 month period from 2002 to 2003, 61.6% of children aged 5 – 14 years participated in sport outside of school (Australian Bureau of Statistics, 2004). In PASCAD, the only team sport to attract greater than 20% participation, was basketball and only by adolescent boys. While direct comparisons cannot be made between a 12 month and a 7 day reporting period for PASCAD participants, the difference is nevertheless striking. Outside school, few children/adolescents with a disability participated in any team or organized sport.

Of all the activities surveyed, only two activities (playing with pets and water activities) outside of school, plus household chores, were engaged in by 20% or more of girls between the ages of 14 and 16 years. Twenty percent of boys in this age group engaged in a greater number of activities. However, compared with the younger age groups, the percentage participation and the number of activities were lower.

Physical education classes were the only physical activity in which 40% or more of the children/adolescents of all ages participated. For the younger age groups, playing on playground equipment and organized sport at school were other key activities which occurred at school. These results, suggest the important role school programs have in providing physical activity opportunities for children/adolescents.

Participation in physical activities by children/adolescents with a disability occurred principally at home and was largely unstructured. Few study participants reported involvement in community physical activity, either in the surveys or the activity diaries.

Fewer children/adolescents with a disability than those without were performing sufficient physical activity to satisfy the Australian recommendations. With between 30% and 57% meeting the guidelines (survey responses) children/adolescents with a disability are at serious risk of poorer health outcomes as they age.

The motion sensor study returned higher percentages of children who met the Australian guidelines for physical activity. This group of children were a very selective group who volunteered to be part of the sub-study. They were mostly ambulant boys and, according to the survey responses, these were the most active group of participants.

> "All kids need encouragement to be active. Restricting access to TV, electronic games and encouraging activity is a rule for all my kids not just the one with a disability." *(Parent , PASCAD 2006)*

4.3 Sedentary Activity

Sedentary activities include light activities such as reading, playing board games, watching television, playing electronic games and travelling in a car. Time spent in sedentary activities is a known risk factor for poor health. There is evidence that television watching and other screen-based activities are associated with a higher risk of obesity in children and adolescents. There are now specific recommendations for time spent engaged in 'electronic media for entertainment' (EMFE) activities. The Australian guidelines state that children and adolescents between 5 and 18 years should spend no more than 2 hours per day engaged with 'electronic media for entertainment' (Department of Health and Ageing, 2004). In this regard, children and adolescents with a disability are at a greater risk of becoming obese (Bauman & Egger, 2000) and of developing osteoporosis (Apkon, 2002).

Physical and Sedentary Activities

4.3.1 What do Children/Adolescents do?

Participants were asked to report the amount of time in the previous 7 days they spent involved in a list of 19 sedentary pastimes. They were also given the opportunity to add activities not included. The listed activities included electronic leisure activities, hobbies, reading, listening to and playing music, going to church and performing stretches for therapy. Items were generated from previous surveys of children without disabilities such as CAPANS and CLASS.

The ten most common sedentary activities as described by boys and girls in each age group are shown in Table 10.

TABLE 10 PERCENTAGE PARTICIPATION IN THE MOST COMMON SEDENTARY ACTIVITIES FOR GIRLS AND BOYS IN EACH AGE GROUP

	Participation %					
	5 – 7 years		10 – 12 years		14 – 16 years	
	boys	girls	boys	girls	boys	girls
Watch television	84.1	83.3	82.5	65.5	87.3	78.3
Travel	73.9	63.9	61.4	58.6	60.0	67.4
Watch videos	71.6	66.7	56.1	69.0	45.5	37.0
Sit & talk	60.2	63.9	47.4	62.1	40.0	52.2
Use computer (not for school)	46.6	58.3	50.9	37.9	52.7	39.1
Listen to music	45.5	58.3	57.9	55.2	47.3	60.9
Study/homework	44.3	38.9	47.4	41.1	30.9	34.8
Play indoors	78.4	83.3	40.4	48.3	*	*
Read for pleasure	45.5	47.2	38.6		29.1	*
Play electronic games	*	*	50.9	37.9	56.4	30.4
Imaginary play	53.4	55.6	*	*	*	*
Hang out at home	*	*	*	37.9	34.5	39.1
Talk on the phone	*	*	*	*	*	43.5

* not in top ten for this gender or age group

Findings

- Watching television was the most common activity for all ages, except 10-12 year old girls who reported watching videos as the most common sedentary activity.
- Participation in indoor play ranked equally as the most common activity for 5 – 7 year old girls.
- More girls than boys "sit and talk".
- Sedentary activities reflect the developmental process; e.g., talking on the phone was more common for the 14-16 year olds while more 5-7 year olds reported "playing indoors" and "imaginary play".

Physical and Sedentary Activities

4.3.2 How Much Time do Children/Adolescents Spend in Sedentary Activities?

Participants reported hours of sedentary activity during weekdays and over the weekend. The total hours of sedentary activity over the seven days is shown for boys and girls in each age group in table 11.

TABLE 11 PERCENTAGE OF BOYS AND GIRLS IN EACH AGE GROUP PARTICIPATING IN DIFFERENT DURATIONS OF SEDENTARY ACTIVITY

Participation (hrs/week)	Age groups					
	5 – 7years		10 – 12 years		14 – 16 years	
	Boys %	Girls %	Boys %	Girls %	Boys %	Girls %
0 to 10	8.0	2.9	13.5	3.7	13.5	11.9
10 to 30	40.2	50.0	36.5	51.9	34.6	33.3
30 to 50	26.4	26.5	30.8	14.8	26.9	33.3
50 to 70	17.2	14.7	15.4	18.5	13.5	14.3
>70	8.0	5.9	3.8	11.1	11.5	7.1

Findings

- Approximately 35% – 50% of children/adolescents spent 10-30 hours per week engaged in sedentary activities.
- In the two younger age groups, more girls than boys fell into the 10 – 30 hours per week category.
- Approximately 20% of all three age groups spent 50 or more hours per week in sedentary activities.

Because my child expends a lot of energy just walking I try to incorporate a lot of incidental physical activity - walking around large shopping centres, dancing around to music in the loungeroom - this is improving her fitness. Keeping a track of food input also helps. I often access "other" types of physical activity NOT included in your survey - swimming and horseriding. You seem to have concentrated on parks, play equipment and organised sport.*(Parent , PASCAD 2006)*

Physical and Sedentary Activities

4.3.3 How Much EMFE do Children/Adolescents Engage in Each Week?

Activities such as television watching, non-school computer use and playing electronic games have been singled out as strong predictors of childhood obesity (Amisola & Jacobson, 2003; Andersen, Crespo, Bartlett, Cheskin, & Pratt, 1998; Salmon et al., 2006). Commonwealth guidelines for time spent engaged with EMFE for children and adolescents are no more than 2 hours per day. Time spent per week in EMFE by children/adolescents in the PASCAD study is reported in Table 12. Those who exceeded 14 hours per week were engaged in more EMFE than the recommended amount.

TABLE 12 PERCENTAGE PARTICIPATION IN EMFE FOR BOYS AND GIRLS IN EACH AGE GROUP

Time spent in EMFE activity (hours per week)	5 -7 years		10 – 12 years		14 – 16 years	
	Boys %	Girls %	Boys %	Girls %	Boys %	Girls %
<14 hours	57	68	48	64	41	50
> 14 hours	43	32	52	36	59	50

Findings

- Boys in all age groups spent more time engaged in EMFE activities than girls.
- Older children and adolescents spent more time in EMFE activities than younger children.

TABLE 13 AVERAGE TIME (HRS/WEEK) SPENT ENGAGED IN EMFE FOR BOYS AND GIRLS IN EACH AGE GROUP

Time spent in EMFE (hours per week)	5 – 7 years		10 – 12 years		14 – 16 years	
	Boys	Girls	Boys	Girls	Boys	Girls
	16.0	13.5	17.2	16.0	21.5	15.3

Findings

- The average time spent in EMFE for all groups except girls aged 5 – 7 years exceeded the weekly recommendations.
- Only boys aged 14-16 years grossly exceeded the weekly recommendation by more than 5 hours per week.

Physical and Sedentary Activities

4.3.4 Comparison of Children/Adolescents With and Without a Disability

EMFE activities were compared in children/adolescents with a disability and children/adolescents in the CAPANS study in 2004. In both studies, children/adolescents were asked to report the amount of time spent watching television/videos and playing electronic/computer games.

TABLE 14 MEAN HOURS PER WEEK PARTICIPATING IN EMFE

	Children/adolescents with disabilities PASCAD		Children/adolescents without disabilities CAPANS, 2004	
	boys	girls	boys	girls
5 – 7	16.0	13.5	*	*
10 - 12	17.2	16.0	15.7	13.6
14 - 16	21.5	15.3	18.1	14.5

* not available

Findings

- Boys engaged in EMFE for longer durations than girls in both studies.
- Boys in both studies exceeded the recommendations for duration of sedentary activities as well as girls with a disability aged 10 – 12 and 14 – 16 years and adolescent girls without disabilities.
- Adolescents with a disability appeared to spend more time engaged with electronic media for entertainment than adolescents without disabilities.

Children with autism often have a social problem and I believe that my child(at the moment) would be unable to work effectively as part of a team - so does not play "organised" team sports. He is active outside though - bike-riding, playing with peers in playgrounds etc. *(Parent , PASCAD 2006)*

Physical and Sedentary Activities

4.3.5 Sedentary Activity: Key Findings Summarised

What Do Children Do?

- EMFE represented between 43% (5 – 7 age group) and 54% (14 – 16 age group) of the sedentary behaviour choices for children and adolescents with a disability.
- Seven sedentary activities were common to all age groups. These are watching television, travelling, watching videos, sitting and talking, using a computer (not for school), listening to music and studying/doing homework.
- The most common sedentary pastimes in the two younger age groups were watching television/videos and travel.
- As children grow older, playing indoors and imaginary play were replaced by electronic games, 'hanging out at home' and 'talking on the phone'.

Amount: How Much Do They Do?

- 43% to 59% of boys exceeded the recommendations for EMFE. A third of girls aged from 5 to 7 years and half of boys and girls in the older age groups also exceeded the recommendations.
- There was little gender difference in the 5 – 7 year age group. However, the 10 – 12 year old boys were more likely to engage in electronic media activities while girls were more likely to 'play indoors', 'sit and talk' and 'hang out'.
- Similarly, more adolescent boys engaged in electronic media more than adolescent girls.

4.3.6 Discussion

Time spent in sedentary activity displaces time available for physical activity. For children/adolescents with a disability, the limited opportunities to engage in physical activity may have contributed to more time being available for sedentary pastimes.

Children/adolescents with a disability spent more time engaged with EMFE activities than children/adolescents without a disability and the limited opportunities for participation in group or team physical activities may have contributed to this.

5. Barriers & Beliefs

5.1 Introduction

The previous section suggests that children and adolescents with a disability participate in less physical activity than their peers without disabilities. Examination of the barriers and enablers/beliefs can provide reasons for this reduced participation and can assist in the formulation of appropriate strategies to increase participation levels.

In order to investigate the influences on children's/adolescents' physical activity behaviours, adults and children/adolescents were asked to indicate their agreement with a series of statements regarding participation in physical activity. The first group of statements were potential barriers to physical activity. The statements were grouped using the following domains based on current literature (King et al. 2003; Lindquist, Reynolds, & Goran, 1999).

- The physiological domain encompassed barriers which describe physical or health issues such as "my child has a disability" and "my child has poor health". PASCAD included 4 statements in this domain.
- Personal attitudes/barriers refer to those items which reflect knowledge or perceptions about the child's ability or desire to engage in physical activity. This domain included items such as "there are other things my child enjoys more" and "my child already does a lot of physical activity". There were 10 statements included in this domain.
- The ecological domain included ten (10) barriers relating to physical access, cost, weather and safety. An example is "the local play areas are not accessible for my child".
- Social barriers were those which described the child's feelings and ability to participate with other children and to be included in activities. For example, "my child feels uncomfortable with groups of children" and "my child doesn't have anyone to be physically active with ". Eleven (11) statements were included in the child/adolescent questionnaire and 7 in the adult version.

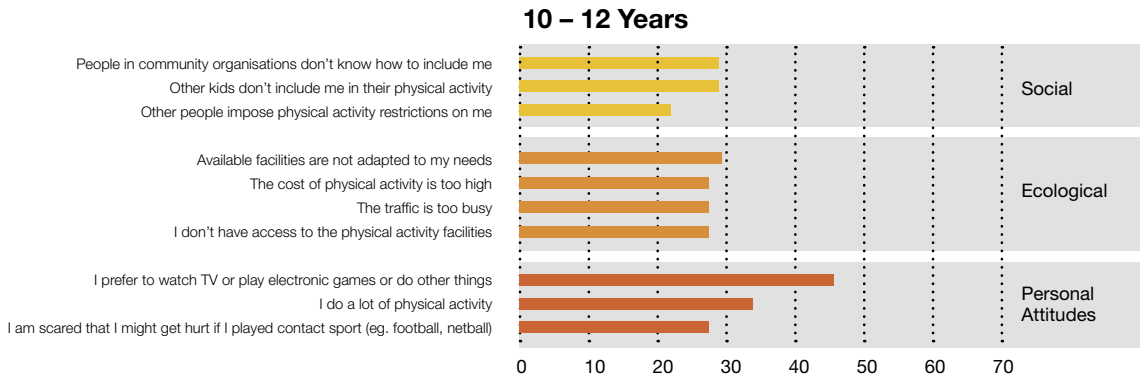
The second group of statements related to the beliefs children/adolescents and parents held about physical activity. The same statements were used in the CAPANS study. Inclusion in the PASCAD allowed a comparison between the views of children with and without a disability.

5.2 What Barriers do Families Face?

For 10 – 12 year olds and adolescents there was a high percentage of proxy responses. To give voice to the children/adolescents, only data obtained through self report were used for this analysis. In the 10 – 12 year age group, nineteen (19) children self reported and in the 14 – 16 year age group, forty-four (44) adolescents self reported. Due to the small number of responses, data is reported for each age group only. For the children aged 5 – 7 years, an adult completed all children's surveys on behalf of children. Thus, barriers for this age group are reported in the adult survey data.

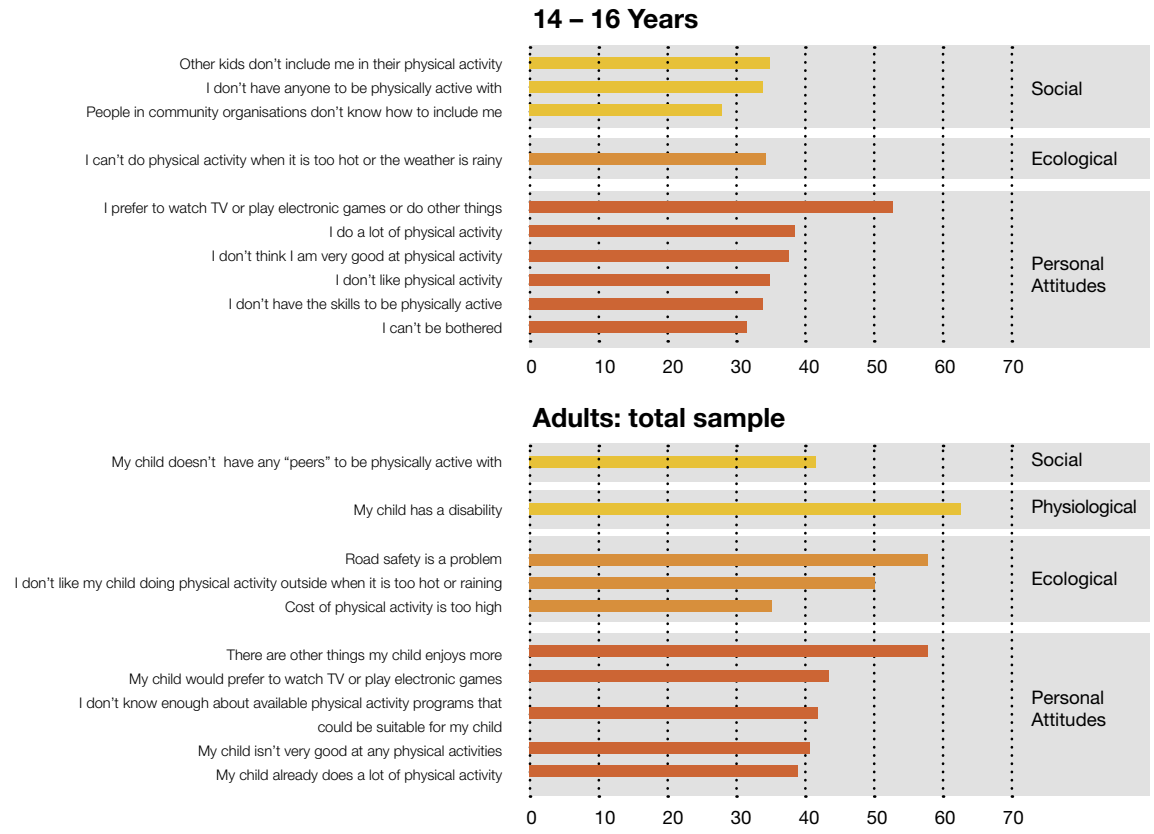
The ten most common responses with the highest frequency of agreement are reported in Figure 13.

FIG. 13 PERCENTAGE AGREEMENT WITH THE TEN MOST FREQUENTLY ENCOUNTERED BARRIERS FOR EACH AGE GROUP



Barriers & Beliefs

FIG. 13 CONTINUED



Findings

- Social barriers were more important to 10 -12 year olds and 14 – 16 year olds than to adults.
- My child has a disability" was identified by over 60% of parents as being the main barrier to their child doing more physical activity.
- Over 40% of parents reported that they didn't know enough about suitable physical activity programs for their child.
- 30% to 40% of children aged 10 – 12 years and adolescents with a disability agreed that they already do a lot of physical activity. By comparison, CAPANS reported 80% of primary students and 60% to 80% secondary students said they already did a lot of physical activity.
- "A higher percentage of children and adolescents with a disability reported that they would prefer to watch TV or play electronic games (45% and 52%) than children without disabilities (CAPANS, 15%-30% primary and 20% secondary).

Barriers & Beliefs

5.3 What do Children/Adolescents Believe About Physical Activity?

Children's and adolescents' beliefs about physical activity can be motivational factors affecting the amount of physical activity undertaken. Participants were asked how much they agreed with a series of statements about physical activity using a 5-point Likert scale, with responses ranging from "strongly agree" to "strongly disagree".

Statistical analysis showed no significant differences between the proxy and self-report responses or responses by age group. Therefore, the total sample was analysed and results reported for boys and girls of all ages together in Table 15.

TABLE 15 PERCENTAGE AGREEMENT WITH STATEMENTS ABOUT PHYSICAL ACTIVITY

Beliefs about physical activity	Boys	Girls
Keep me healthy	97.1	94.2
Help me study and learn better	74.8	76.8
Improve my appearance	73.8	69.6
Make me feel good about myself	84.5	75.4
Make or keep me fit	92.1	89.7
Prevent me from doing things I like more	27.5	26.1
Help me lose weight	52.9	58.0
Let me have a lot of fun	88.1	73.9
Make my parents or carers happy	87.0	72.5
Help me spend time with my friends	76.8	69.6
Help me make new friends	79.4	85.3

Item Source: CAPANS, 2004.

Findings

- There was little difference by gender for most of the statements, although boys were slightly more likely to report that physical activity was "fun", "helped them spend time with friends", "made them feel good about themselves" and "made their parents happy".
- Girls were slightly more likely to agree that physical activity would help them "lose weight" and "make new friends".
- When compared with children/adolescents without a disability (CAPANS & CLASS), PASCAD participants were more likely to agree that physical activity would "help them study and learn better", "make their parents happy" and "help them make new friends".
- More girls than boys, those with and without a disability agreed that physical activity would help them lose or control their weight but the percentage agreement from girls with a disability was lower than for their non-disabled peers (CAPANS, 58% vs ~82%).

Barriers & Beliefs

5.4 Barriers & Beliefs: Key Findings Summarised

- For parents of children/adolescents in all four disability groups, the highest level of agreement was with the statement "my child has a disability."
- Between 51% and 67% of parents (based on disability) stated that "there are things my child enjoys more".
- Over 40% of adults reported that they didn't know enough about available programs for their child/adolescent.
- More children and adolescents with a disability than adults identified social barriers as important barriers.
- Boys were more likely to agree that physical activity would be fun compared with girls.

5.5 Discussion: Barriers & Beliefs

The statements by adults such as "my child has a disability" (63%) and "I don't know enough about physical activity programs" (42%), suggest areas for future intervention. Families require more information regarding opportunities for appropriate physical activities for their children.

A higher percentage of children/adolescents with a disability than those without reported that they would prefer to watch television or play electronic games. Viewed together with the higher number of social barriers reported by children/adolescents, it may be that their perceptions and experiences of social barriers cause them to choose activities where these are less likely to occur; that is, home based and sedentary activities.

Only 30% – 40% of children/adolescents with a disability agreed that they already do a lot of physical activity and this is consistent with the findings in the previous sections that only half the children were participating in physical activity at the recommended levels.

Despite strong agreement with the beliefs regarding the benefits of physical activity, PASCAD respondents did not have high levels of participation in physical activity. Agreement with statements about the positive effects of physical activity was seemingly outweighed by the barriers children/adolescents and their families face in accessing and participating in physical activity opportunities.

6. Discussion by Disability Group

6.1 Introduction

The type and amount of physical and sedentary activity performed by children and adolescents with a disability is governed to some extent by the type and severity of their disability and the possible presence of co-morbidities. Similarly, some of the barriers perceived and experienced by families vary according to diagnosis.

Longmuir and Bar-Or (2000) reported that children may have different perceptions of the limitations to their participation according to their disability. For example, children with vision impairment and physical disability see themselves as more limited in participation than children with other disabilities.

Below are the most common physical activities and barriers (from highest to lowest reported percentage participation) listed by each disability group. Many activities and barriers were common to all disability groups.

Activities in the top ten common to all disability groups were:

- Physical education classes
- Cycling
- Household chores
- Play on playground equipment
- Water activities
- Backyard ball games
- Playing with pets
- Playing tag/chasey

Barriers in the top ten common to all disability groups were:

- My child has a disability
- Road safety is a problem
- There are other things my child enjoys more
- I don't like my child doing physical activity when it is too hot or raining
- My child isn't good at physical activity

The breakdown of children's/adolescents' main disability as reported by families, is represented below. Four percent of families who participated in the PASCAD did not report their child's main disability.

- vision impairment/blindness – 3.8%;
- physical disability – 23.9%;
- intellectual disability – 41.2% and
- autism spectrum disorders – 27.0%
- not reported – 4.1%

A brief description of the four disability groups is included below.

6.2 Intellectual Disability

Children and adolescents with intellectual disability represented 41% of the total respondents in the PASCAD, with more boys than girls taking part. Most (67%) attended an education support facility full time and an additional 9% attended these facilities on a part-time basis. School played an important role in providing opportunities for physical activity, particularly as children moved into late primary years and adolescence. Qualitative feedback from parents suggested the need for training in inclusion strategies for coaches of community sporting teams and also for teachers in mainstream schools.

6.3 Physical Disability

Children and adolescents with physical disabilities comprised 24% of the PASCAD respondents. Conditions included cerebral palsy, neuromuscular conditions, osteogenesis imperfecta, spina bifida, genetic diseases, neurological, congenital amputation and achondroplasia.

Less than 16% were unable to participate in physical education at school as a result of their disability and nearly 70% participated at least 'sometimes' at school. Over 70% of these children/adolescents attended mainstream schools. School provided opportunities for these children to be physically active. This is particularly important as few were involved in structured physical activity out-of-school hours.

Not surprisingly, parents of children/adolescents with physical disabilities identified more access barriers than other parents, reflecting their difficulties with physical access to facilities and local play areas. Accessible community and school facilities should be the right of all community members. This barrier should be addressed by all sectors of the community.

Discussion by Disability Group

6.4 Autism Spectrum Disorder

Twenty-seven percent of the respondents reported autism spectrum disorder as their main disability. The vast majority were boys (82%) and 65% attended mainstream schools.

The characteristics of autism spectrum disorder often interfere with the child's/adolescent's ability to successfully participate in a physical activity program. Dislike of group situations, low tolerance for noise, impaired ability to interact with others and inappropriate behaviours all restricted the number and type of opportunities available.

Qualitative feedback from parents highlighted the particular barriers faced. Many parents reported that their child was never still and that they engaged in sufficient unstructured activity for physical health benefits. However, parents described their children/adolescents as having poor social and mental health. While there is evidence that structured physical activity can increase the levels of appropriate play and interactions for children/adolescents with autism (Schleien et al., 1987), impaired ability to participate in group and team activities limits the opportunities available. It is therefore imperative that these children/adolescents are provided with the opportunities and support to be physically active with their peers in a variety of settings.

6.5 Vision Impairment

The low number of respondents reporting vision impairment as the main disability (3.9%) means that analysis of this group was undertaken with caution. Most of the group attended mainstream schools (83%) and there were an equal number of boys and girls.

Approximately 20% of participants reported that they were unable to participate in physical education classes due to their disability. Only 10% reported that they were active at recess and 30% reported that they were active during lunch times. These participation rates are generally lower than those for the whole sample and correspond with results from the Longmuir and Bar-Or (1994; 2000) study, that children with vision impairment were less likely to be "sufficiently active".

Appropriate support to participate in activities at school and adaptation of the activities offered to all students would facilitate higher participation rates for children/adolescents with vision impairment.

7. Summary & Recommendations

Children and adolescents with a disability participate in less physical activity than children and adolescents without a disability. Many do not meet the Australian physical activity guidelines. This places them at an increased risk for poorer long term health. They also participate in a narrower range of activities with very small participation rates in community-based team/group activities.

Activities were primarily home-based and family-centred. The exception is physical education and organised sport at school, which attracted a high rate of participation in each age group, although participation was lower than for children/adolescents without a disability. Nevertheless, this concentration of physical activity at school highlights the important role the education sector plays in the provision of opportunities for children/adolescents to be physically active. It is particularly relevant for children/adolescents with a disability who have limited community-based options. Schools also provided the only opportunity for many children/adolescents with a disability to participate in team or group physical activity. With many parents reporting their children's/adolescents' poor social health, physical activity opportunities involving teams or school groups could be especially important.

As children grow older, they participate in less physical activity, with the least active group being adolescent girls. This trend is the same for children without a disability and presents an ongoing challenge for families and recreation providers to improve the incentive to develop and maintain an active lifestyle.

Less than a quarter of the adults reported participating in sufficient physical activity to satisfy the Australian guidelines for health benefits. While activity levels of parents are known to be an important influence on the activity levels of children (Salmon et al., 2004), the situation for families of children/adolescents with a disability may or may not be as straightforward as for other families. With over 84% of families reporting that their child/adolescent required assistance with activities of daily living and the very limited engagement of their children in out-of-school programs, these families are likely to be 'time-poor'.

Interestingly, more children/adolescents with a disability than their parents identified social barriers to their physical activity. They reported that non-disabled peers and organisations did not know how to include them in physical activities. In order that these children/adolescents have greater opportunities to be included, community agencies and education sector staff need training in strategies for inclusion. Furthermore, there needs to be a range of strategies employed to cater for the individual needs of children/adolescents with different disabilities.

Summary & Recommendations

Daily physical activity confers long term physical and mental health benefits for individuals of all ages and abilities. Children/ adolescents with a disability and their families require multi-faceted support to achieve the recommended levels of physical activity for health.

The following recommendations are based on results from the PASCAD study.

Education

It is recommended that:

1. schools continue to provide all students, K – 12, with appropriate and accessible physical education to help develop skills and behaviours for an active life.
2. schools continue to develop in-house physical activity opportunities for students with a disability.
3. schools support and foster physical activity instruction and programs that meet the needs and interest of all students.
4. the built school environment continue to evolve into a safe and enjoyable setting for physical activity for all students throughout the day.
5. schools support a range of non-competitive physical activities which can be performed and enjoyed in a group situation.
6. physical education teachers have continuing professional development (CPD) about inclusive activities for young people with a disability and that the CPD be integrated with complementary planned physical activity Education Department initiatives.
7. schools continue to explore innovative ways in which to involve girls in physical education sessions, particularly during adolescence.
8. schools who champion inclusive physical activity for students be publicly and widely acknowledged so that they serve as best practice models for all schools.

Governments/Community

It is recommended that:

1. community recreation facilities, in conjunction with agencies explore opportunities to offer developmentally appropriate and inclusive sports and recreation programs to people of all ages with a disability, including trained assistants to support inclusion.
2. local community sporting groups offer inclusive activity programs out-of-school hours.
3. local government continue to ensure that community facilities are physically and socially accessible to all community members.
4. funding to agencies, community organisations and sporting groups be made contingent upon inclusive practice and completed Disability Access and Inclusion Plans (DAIPS).
5. children/adolescents with a disability be included and prominent in all media campaigns to promote increased physical activity for all children/ adolescents.

Summary & Recommendations

Agencies

It is recommended that:

1. agencies providing services to children/adolescents with a disability actively facilitate and support inclusive, out-of-school hours physical activity programs in the community which emphasize group participation.
2. agencies continue to support community groups and identify new community physical activity programs which address the child's/adolescent's individual needs and circumstances.
3. agencies continue to offer specialist support to children/adolescents with a disability to enhance participation in appropriate physical activity.
4. agencies provide on their web sites or in any/all other accessible formats, information for educators and community-based sport and recreation workers on inclusion strategies for children with a disability.
5. a series of fact sheets be developed which families can provide to community organisations to facilitate the inclusion of a child/adolescent .
6. advice and assistance be provided to families regarding alternatives to electronic media activities for their children in order to ensure an appropriate balance of leisure activities.
7. agencies educate parents and families about the social and mental health benefits as well as the physical benefits of adequate physical activity.

Families

It is recommended that:

1. families, in conjunction with organisations, advocate for appropriate physical activity opportunities for their children in schools and local communities.
2. families aim to increase the levels of physically activity for all family members in order to achieve improved physical and mental health outcomes.
3. families of children/adolescents with a disability contact government/community, school and service agencies to identify opportunities to be more physically active as a family.

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Appendix 1

Characteristics	Number (n)	Percentage (%) of total participants	Western Australian Population (%)
Age Group			
5 to 7 years	125	39.3	Not readily available
10 to 12 years	91	28.6	
14 to 16 years	102	32.1	
Total	318	100	
Gender			
Boys	201	63.2	51.3
Girls	113	35.5	48.7 (ABS, WA 2001)
Not specified	4	1.2	
Country of Birth			
Australia	287	92.3	67.8
England	7	2.3	11.0 (UK)
New Zealand	2	.6	2.5
Other	10	3.2	(ABS ,WA 2001)
Not specified	7		
Language spoken at home			
English	300	95.9	84.0
Chinese	2	.6	1.9
Vietnamese	4	1.3	
Other	7	2.2	(ABS, WA 2001)
Not specified	5		
Aboriginality			
Yes	8	2.6	3.5 (WA 2001 Census)
Gross weekly family income -$			
1 - 299	21	7.4	37.1
300 - 599	68	22.9	
600 - 999	62	20.9	37.9
1000 - 1399	56	18.9	
1400 - 1999	41	13.8	>1000 = 25.0 (ABS, WA 2001)
2000 - 2499	15	5.1	
> 2500	25	8.4	
Type of school attended			
Regular School	163	52.6	
Education Support School –all day	50	16.0	
Education Support Unit – all day	26	8.3	
Education Support Centre – all day	52	16.7	
Other	20	6.4	
Classroom assistance			
None	55	17.3	
Education support worker	225	70.8	
Care-giver or attendant	30	9.4	
Not specified	8	2.5	
Main form of mobility			
Walk unassisted		83.5	
Manual wheelchair – Attendant propel		5.5	
Electric wheelchair		3.9	
Manual wheelchair – self propel		2.6	
Other		4.4	
Main Disability			
Intellectual Disability	131	41.2	
Autism Spectrum Disorders	86	27.0	
Physical Disability	76	23.9	
Vision Impairment	12	3.8	
Not specified	13	4.1	

Appendix 2

Physical Activity Study of Children and Adolescents
PASCAD
Children/Adolescents age 10 - 12 years

Physical Activity Study of Children and Adolescents

This survey is to be completed by the child or adolescent (with assistance if required).
However, parents or guardians may choose to complete the survey on the child's behalf if, in their opinion, the child is not able to understand and respond to the questions.

Thank you for being involved in this study.
We would like to know something about you and what types of physical and sedentary (sitting down) activities you do.

Physical activity is any activity where you are moving around, like playing sport for school or a club, playing ball games or running around with friends, doing chores around the house, water activities, or dancing to music, walking/wheeling to school. It covers organised sport, transportation to school, non-organised physical activity (eg free play, unstructured games participation).

Sedentary activities are sitting down activities, like working on a computer, reading a book or watching TV.

The questionnaire is divided into three sections.

Section 1: Questions about **you, your family** and **your school**.
Section 2: Questions about **physical activities** and **sitting down activity** that you have done in the last 7 days.
Section 3: Questions about **your beliefs** about physical activity and any **problems or barriers** you face.

Please give answers that best show your experiences and feelings. You can choose to write your own answers or get a parent or carer to help you with the writing. There is a question at the end for you to tell us if anyone helped you to complete the questionnaire.

This study has been approved by the Curtin University Human Research Ethics Committee. If needed, verification can be obtained either by writing to the Curtin University Human Research Ethics Committee, C/- Office of Research and Development, Curtin University of Technology, GPO Box U1987, Perth 6845 or by telephoning 9266 2784.

SECTION 1: About you

Please tick one box only

Q1. Are you a boy or girl?

☐ 1 Boy ☐ 2 Girl

Q2. When were you born?

Day ☐☐ Month ☐☐ Year ☐☐☐☐

Q3. In which country were you born?

☐ 1 Australia

☐ 2 England

☐ 3 New Zealand

☐ 4 South Africa

☐ 5 Scotland

☐ 6 Other _____

Q4. What is the language spoken most commonly in your home?

☐ 1 English

☐ 2 Chinese

☐ 3 Italian

☐ 4 Vietnamese

☐ 6 Other _____

Q5. Are you an Aboriginal or Torres Strait Islander?

☐ 1 Yes

☐ 2 No

Q6. What year are you in at school? ☐ Year

Q7. What kind of school do you go to?

- ☐ 1 regular school (mainstream inclusive classroom)
- ☐ 2 education support school – all day
- ☐ 3 education support unit - all day
- ☐ 4 educational support centre – all day
- ☐ 5 other _____

Q8. Do you have someone (not your teacher) who helps you when you are in the classroom?

- ☐ 1 No
- ☐ 2 An education support worker
- ☐ 3 A care-giver or attendant

Q9. How do you move around **most** of the time?

- ☐ 1 Walk unassisted
- ☐ 2 Push myself in a manual chair
- ☐ 3 Use a power wheelchair
- ☐ 4 Use a scooter
- ☐ 5 Use crutches
- ☐ 6 Use a cane
- ☐ 7 Use a walker frame
- ☐ 8 Use a white cane
- ☐ 9 Use a sighted guide
- ☐ 10 Other_____

Q10. How many children (younger that 18 years) live in your home (either full-time or part-time)?

❑$_1$ None ❑$_2$ One ❑$_3$ Two ❑$_4$ Three ❑$_5$ Four or more

Q11. How many adults (18 years or older) live in your home?

❑$_1$ None ❑$_2$ One ❑$_3$ Two ❑$_4$ Three ❑$_5$ Four or more

Q12. What types of therapy do you currently receive?

Please tick all that apply

❑$_1$ None ❑$_2$ Occupational Therapy ❑$_3$ Physiotherapy

❑$_4$ Speech Pathology ❑$_5$ Psychology ❑$_6$ Other _____

Q13. How confident (sure) are you that you could do activities such as games, sport and general play… (Tick just one box for each line)	1 Not at all sure	2 A bit sure	3 Fairly sure	4 Very sure	5 Extremely sure
a. No matter how busy my day is					
b. When it is very hot, very cold or very wet					
c. When I have a lot of homework					
d. When I feel I do not have time					
e. If others make fun of me					
f. If there is no-one to be active with					
g. If I don't have the energy to be active					
h. If I am not good at it					
i. If I have no-one to take me					
j. If my friends don't take part					

[Items A-C adapted from the barriers subscale of the Self-Efficacy Scale (Saunders et al 1997) and items E-J from the CLASS survey]

SECTION 2: About your physical activities

[Adapted from the CAPANS survey, 2003]

We are interested in the physical activity that you did in the **last 7 days** at school, before and after school, in the evenings and on the weekend.

Q1. In the **last 7 days**, during your **physical education** (PE) classes, how often were you very active (playing hard, running, jumping, throwing)?

	Tick one only	
PE is not available at my school	☐	1
PE is available but I don't do it	☐	2
Hardly ever	☐	3
Sometimes	☐	4
Quite often	☐	5
Always	☐	6
I am unable to participate in physical activity due to my disability	☐	7

Q2. In the **last 7 days**, what did you usually do at **recess** (besides eating food)?

Sit and talk to friends	☐	1
Walk/wheel around the school	☐	2
Run/wheel briskly around playing sports/games	☐	3
Read/study for the next class	☐	4
Nothing much	☐	5
It takes the entire recess for me to eat my snack	☐	6

Other (please print) _____

Q3. In the **last 7 days**, what did you usually do at **lunchtime** (besides eating lunch)?

Tick one only

Sit and talk to friends	1
Walk/wheel around the school	2
Ride, walk or wheel home for lunch	3
Train for school sport's team	4
Play sport/games on the oval or in the school grounds	5
Study or do homework	6
Lunch is used to complete personal care activities	7

Other (please print) _____

Q4. In the **last 7 days,** on how many days **before and after school and before tea**, did you do sports, dance or play games in which you were **very active?**

Tick one only

None	1
1 time last week	2
2 or 3 times last week	3
4 times last week	4
5 times last week	5

Q5. In the **last 7 days,** on how **many evenings after tea**, did you do sports, dance or play games in which you were **very active?**
Tick one only

None	1
1 time last week	2
2 or 3 times last week	3
4 or 5 times last week	4
6 or 7 times last week	5

Q6. On the **last weekend**, how many times did you do sports, dance or play games in which you were **very active**?

	Tick one only	
None	☐	1
1 time last weekend	☐	2
2 or 3 times last weekend	☐	3
4 or 5 times last weekend	☐	4
6 or more times last weekend	☐	5

Q7. Do your answers to questions 2-7 represent the level of physical activity you would usually perform over a one-week period?

	Tick one only	
yes	☐	1
no	☐	2

If **no**, what was different?

_____

_____

Listed below are **some** typical physical activities of children and adolescents

Q8. In the **last 7 days**, which of the following physical activities, including adapted physical activities, did you do and where did you do each one?

Activity	I did this activity in the last 7 days (circle one)		Where (Home, School, Community, Disability facility) may list > 1 site	Monday-Friday		Saturday-Sunday	
				Number of times	Total hours/minutes	Number of times	Total hours/minutes
Example: Cycling	**No$_1$**	**Yes$_2$**	**C, S**	**2**	**25 min**	**1**	**30 min**
a. Cycling	No	Yes					
b. Swim for fitness	No	Yes					
c. Water activities (other than laps)	No	Yes					
d. Tag/Chasey	No	Yes					
e. Play backyard ball games	No	Yes					
f. Calisthenics/Gymnastics	No	Yes					
g. Dance classes	No	Yes					
h. Play on playground equipment	No	Yes					
i. Bounce on the trampoline	No	Yes					
j. Football (eg .Aussie Rules, rugby)	No	Yes					
k. Basketball	No	Yes					
l. Cricket	No	Yes					
m. Netball	No	Yes					
n. Baseball/softball/rounders	No	Yes					
o. 4 square/Downball	No	Yes					
p. Horse or pony riding	No	Yes					

Activity	I did this activity in the last 7 days (circle one)		Where (Home, School, Community, Disability facility) may list > 1 site	Monday-Friday		Saturday-Sunday	
				Number of times	Total hours/minutes	Number of times	Total hours/minutes
q. Hockey	No	Yes					
r. Soccer	No	Yes					
s. Tennis, table tennis/totem-tennis	No	Yes					
t. Bowling(skittles,10pin,lawn, bocce)	No	Yes					
u. Rope skipping	No	Yes					
v. Badminton	No	Yes					
w. Volleyball	No	Yes					
x. Aerobics	No	Yes					
y. Skateboarding, Roller skating, inline skating	No	Yes					
z. Sailing	No	Yes					
aa. Archery	No	Yes					
bb. Golf	No	Yes					
cc. Physical Education class	No	Yes					
dd. Martial arts	No	Yes					
ee. Paddling or rowing	No	Yes					
ff. Walk/wheel the dog	No	Yes					
gg. Walk/wheel for exercise	No	Yes					
hh. Cross country jog, run	No	Yes					
ii. Organised sport class at school	No	Yes					

Activity	I did this activity in the last 7 days (circle one)		Where (Home, School, Community, Disability facility) may list > 1 site	Monday-Friday		Saturday-Sunday	
				Number of times	Total hours/minutes	Number of times	Total hours/minutes
jj. Play with pets	No	Yes					
kk. Household chores	No	Yes					
ll. Walk/wheel to school (to and from school = 2 times)	No	Yes					
mm. Water polo	No	Yes					
nn. Cycle to school (to and from school = 2 times)	No	Yes					
oo. Platform diving	No	Yes					
pp. Underwater diving							
qq. Other (please state) _____ _____	No	Yes					

Q9. In the last 7 days, how long did you spend doing the following activities before and after school and until you went to sleep. Please consider SCHOOL DAYS and the WEEKEND.
(Think about what you did while awake and outside school hours. This is usually about 6-7 hours)

	Did you do this activity? (circle No or Yes)		**MONDAY - FRIDAY** Total hours/ minutes	**SATURDAY-SUNDAY** Total hours/ minutes
a. Watch TV	No_1	Yes_2		
b. Watch videos	No	Yes		
c. Play video/electronic games	No	Yes		

	Did you do this activity? (circle No or Yes)		MONDAY - FRIDAY Total hours/ minutes	SATURDAY-SUNDAY Total hours/ minutes
d. Play indoors with toys (eg. With blocks/ Lego, dolls)	No	Yes		
e. Sit and talk (face to face)	No	Yes		
f. Talk on the phone	No	Yes		
g. Imaginary play	No	Yes		
h. Read for pleasure	No	Yes		
i. Do hobbies and craft (eg painting, sewing, make models)	No	Yes		
j. Listen to music	No	Yes		
k. Play board games/cards	No	Yes		
l. Study, homework or extra tutoring	No	Yes		
m. Use a computer (not for school work)	No	Yes		
n. Take music lessons and practise	No	Yes		
o. 'Hang out' at home, park or shopping centre	No	Yes		
p. Travel in a car, train, bus or boat/ferry	No	Yes		
q. Go to church	No	Yes		
r. Stretches	No	Yes		
s. Others (please state) _____	No	Yes		

[tems a,b,c,f,h,i,l,m,n,o,p,q adapted from CAPANS survey; items a,e,g,j,k adapted from CLASS survey]

Q10. In the last 7 days, did you participate in physical activity as part of treatment provided by a therapist?

	Did you do this treatment activity? (circle one)		MONDAY-FRIDAY *Total hours/ minutes*	SATURDAY-SUNDAY Total hours/ minutes
a. A physiotherapist	No_1	Yes_2		
b. An occupational therapist	No	Yes		
c. An assistant therapist	No	Yes		
d. A paid carer	No	Yes		
e. Other (please state) _____	No	Yes		

SECTION 3: About your beliefs and barriers (problems) around physical activity

Q1. How much do you agree with the following things? There are no right or wrong answers for each question - please give the answer that best shows your feelings. Please tick <u>one</u> box per line.

	Strongly Agree	Agree	Neither	Disagree	Strongly Disagree	Don't Know
a. I don't have anyone to be physically active with						
b. I can't be bothered						
c. The neighbourhood isn't safe						
d. There are no adults at home to supervise my play outside						
e. Other kids make fun of me when I am physically active						
f. I don't have access to the physical activity facilities						

	Strongly Agree	Agree	Neither	Disagree	Strongly Disagree	Don't Know
g. My parents don't care about physical activity						
h. I have an injury that prevents me from being physically active						
i. I don't have the proper clothing or shoes to play sport						
j. The traffic is too busy						
k. There is inadequate transportation for me						
l. Available facilities are not adapted to my needs						
m. The people at the sports organisations were not welcoming						
n. People in community organisations don't know how to include me						
o. My parents don't participate in physical activity						
p. I can't do physical activity when it is too hot or the weather is rainy						
q. I don't have enough time for physical activity						
r. The local parks and physical activity facilities are badly looked after						
s. I prefer to watch TV or play electronic games or do other things						
t. There are no parks, sports grounds or sports facilities near where I live						
u. My parents don't encourage me to be physically active						
v. The cost of physical activity is too high						
w. I don't have the skills to be physically active						
x. I am scared that I might get hurt if I played contact sport (eg. football, netball)						

	Strongly Agree	Agree	Neither	Disagree	Strongly Disagree	Don't Know
y. I do a lot of physical activity						
z. I don't like physical activity						
aa. I have a health problem that prevents me from being physically active						
bb. I don't think I am very good at physical activity						
cc. Other kids don't include me in their physical activity						
dd. I don't have enough energy for physical activity						
ee. Other people impose physical activity restrictions on me						
ff. I don't like how being active physically makes me feel (eg. hot, sweaty, out of breath)						
gg. There is no coach who can give me the specialised assistance that I need						
hh. I am self-conscious about my looks when physically active						
ii. Another reason (please state) _____						

Items a,eh,i,p,r,s,w,x,y,z,aa,ee and gg adapted from CAPANS and CLASS surveys]

Do you have any other comments to make about the problems or barriers to physical activity that you experience?

Please turn the page.

Q2. How much do you agree with the following things? Please tick <u>one</u> box per line.
Being physically active over the next year might:

	Strongly Agree	Agree	Neither	Disagree	Strongly Disagree	Don't Know
a. Keep me healthy						
b. Help me study and learn better						
c. Improve my appearance						
d. Make me feel good about myself						
e. Make or keep me fit						
f. Prevent me doing things I like doing more						
g. Help me lose weight						
h. Let me have a lot of fun						
i. Make my parents/carer happy						
j. Help me spend time with my friends						
k. Help me make new friends						

[items from CAPANS]

Q3. Has someone helped you to complete your questionnaire?

- ☐ 1 No
- ☐ 2 Yes, my Mum
- ☐ 3 Yes, my Dad
- ☐ 4 Yes, my older brother or sister
- ☐ 5 Yes, my teacher
- ☐ 6 Other _____

Q4. Was this questionnaire completed **by an adult** on the child's behalf? Yes ☐ 1 No ☐ 2

Please tick one box

Thank you for taking the time to complete this questionnaire.