

Research – Recreational Supports: Barriers to participation

Brief	<p>Statistics and research to support the development of an NDIS funding position or at least an advice position on Recreational Supports.</p> <p>TAB Advisors are seeking evidence base around Recreational Supports to understand how to apply the legislation consistently for our participants.</p> <p>Is there any research on the benefits of solo recreational activities (eg. knitting, crocheting, exercising)</p> <p>What is the typical number of recreational activities engaged by the average Australian (both adult and child)</p> <p>There is some research done into participation of people with a disability in recreation, what does this tell us about types of recreation and the barriers to participation (i.e. is AT or lack of it a barrier?)"</p>
Date	November 13, 2020
Requester(s)	Tiffany ^{s22(1)(a)(ii)} (Senior Technical Advisor – TAB) Jane ^{s22(1)(a)(ii) - info} (Assistant Director – TAB)
Researcher	Craig ^{s22(1)(a)(ii)} (Tactical Research Advisor – TAB/AAT)
Cleared	Jane ^{s22(1)(a)(ii) - info} (Research Team Leader)

Please note:

The research and literature reviews collated by our TAB Research Team are not to be shared external to the Branch. These are for internal TAB use only and are intended to assist our advisors with their reasonable and necessary decision-making.

Delegates have access to a wide variety of comprehensive guidance material. If Delegates require further information on access or planning matters they are to call the TAPS line for advice.

The Research Team are unable to ensure that the information listed below provides an accurate & up-to-date snapshot of these matters.

Contents

Summary	2
Benefits of solo recreational activities.....	3
Overview	3
Adults with chronic health conditions	5
Adults with Psychological Distress.....	6
Recreational activities engaged by the average Australian.....	6
Overview	7
Participation by type of sport and recreation.....	7
Adults	7

Children	9
Frequency of Participation (Adults & Children)	10
Activity and Sedentary Behaviour Guidelines.....	11
Guidelines for Adults (18-64 years)	11
Guidelines for Children and Young people (5-7 years)	12
People with a disability (Types of recreational participation and barriers to participation).....	12
Overview	12
Australian Bureau of Statistics (ABS) Data.....	13
Participation by Gender	13
Participation by Age	14
Disability Type	15
Disability Condition	15
AusPlay Survey	16
Barriers to participation.....	16
Overview	17
Barrier themes and sub themes in the research.....	17
References	19

Summary

- Academic research investigating the benefits of solo recreational activities is limited. Studies mainly focus on exercise and fitness within various cohorts (mainly older adults). The limited research indicates that group based activities are more beneficial than solo activities.
- Statistical data on the number of recreational activities engaged by the average Australian could not be sourced, however frequency of participation in sporting activities and the types of activities could be.
 - Australia’s Physical Activity and Sedentary Behaviour Guidelines provides an indication of broad time and frequency data of activity per week for adults and children.
 - Recent Australian Bureau of Statistics (ABS) data shows that overall, two thirds of people with a disability participated in sport and physical recreation activities in the 12 months prior to ABS interview.
- There is plentiful research available regarding participation in recreation and sport for people with a disability. The majority of the research appears to be around the early 2000’s.

However there are some relatively recent systematic reviews available. From these a general overview of identified barriers can be gleaned. Research investigating barriers associated with assistive technology is limited.

Benefits of solo recreational activities

Overview

There is a variety of popular internet and open source literature which asserts the pros and cons of individual or group activities, however there is little academic research on the benefits of solo recreational activities as opposed to participating in activities in a group environment. The research available mainly focuses on exercise and fitness within various cohorts and more so in adults. ***Of the limited research on the subject there was a trend towards group based activities having greater health benefits than solo activities, however, there was no consensus around preference for individual versus group exercise across studies.***

Adults and exercise

Three studies were sourced which suggested that exercise intervention for older adults be directed at an individual level:

- A 1999 study examined preferences for exercising individually with some instruction compared to a class environment in 1,820 middle-aged and 1,485 older adults. The study identified subgroups, 5 of middle-aged and 6 of older adults, whose preferences for exercising on their own with some instruction ranged from 33–85%. Less educated women under 56 years of age, healthy women 65–71, and older men reporting higher stress levels were more likely to prefer classes. All other men and most women preferred exercising on their own. Overall, 69% of middle-aged and 67% of older adults preferred to exercise on their own with some instruction rather than in an exercise class. [1]
- A large-scale, cross-sectional survey, set out to explore personal, program based and environmental barriers to physical activity among a U.S. population-derived sample of 2,912 women 40 years of age and older. Factors significantly associated with inactivity included American Indian ethnicity, older age, less education, lack of energy, lack of hills in one's neighbourhood, absence of enjoyable scenery, and infrequent observation of others exercising in one's neighbourhood. For all ethnic subgroups, caregiving duties and lacking energy to exercise ranked among the top 4 most frequently reported barriers. Approximately 62% of respondents rated exercise on one's own with instruction as more appealing than undertaking exercise in an instructor-led group, regardless of ethnicity or current physical activity levels. The study suggested that the results underscore the importance of a multifaceted approach to understanding physical activity determinants in this understudied, high-risk population. [2]
- A survey by King, Taylor [3] focused on worksite exercise programs, and noted that while worksite exercise programs offer a number of potential advantages with respect to

increasing physical activity levels in American adults, typical participation rates remain relatively low. The purpose of the study was to explore employee preferences and needs related to physical activity programming in a major work setting in northern California. Male and female employees reporting no regular aerobic activity over the previous two years, more strongly endorsed a number of erroneous beliefs concerning exercise, reported less support for engaging in exercise both at home and at work, and avoided even routine types of activity to a greater extent than more active individuals. Current exercisers reported use of a greater number and variety of motivational strategies as part of their exercise program than past exercisers who were not currently active. Respondents, regardless of exercise status and age, reported preferences for moderate-intensity activity occurring away from the workplace which could be performed on one's own rather than in a group or class. [3]

In contrast, several studies have found that group based interventions are more beneficial. A large scale questionnaire performed by Beauchamp, Carron [4] examined the exercise preferences of 947 adults for involvement in standard exercise classes populated by participants from various categories across age groups. The results revealed that when faced with the prospect of exercising with considerably older or younger exercisers, participants found such an exercise context to be largely unappealing. However, in accordance with the basic tenets of self-categorization theory, the results revealed that older and younger adults alike express a positive preference for exercising in standard exercise classes comprised of similarly aged participants. Self-categorization is the process used to place the self and others into different social categories based on underlying attributes (e.g., age, gender, race, education).

The study suggested that group related intervention strategies may indeed be attractive to older exercisers. In summary:

- Older and younger adults alike reported a positive preference for exercising in standard exercise classes comprised of others of a similar age.
- Participants reported that the prospect of exercising in standard exercise groups comprised of exercisers dissimilar in age to themselves (older or younger) is largely unappealing.
- There were no significant differences across the age categories sampled in this study in their preferences to exercise alone.
- Older adults did not show a greater preference to exercise alone as opposed to exercising in age-matched group-based settings.

Furthermore, a 2016 cohort study [5] focused on whether the association of regular exercise to subjective health status differs according to whether people exercise alone and/or with others, adjusting for frequency of exercise. The study was based on the Japan Gerontological Evaluation Study (JAGES) Cohort Study data. A total of 21,684 subjects aged 65 or older participated in the study.

Multivariable logistic regression models were used to examine the association between variables. The adjusted odds ratios (ORs) for poor self-rated health were significantly lower for people who exercised compared to non-exercisers.

Analysis of regular exercisers showed that the ORs for poor health were:

- 0.69 (95% confidence intervals: 0.60–0.79) for individuals exercising alone more often than with others
- 0.74 (0.64–0.84) for people who were equally likely to exercise alone as with others
- 0.57 (0.43–0.75) for individuals exercising with others more frequently than alone
- 0.79 (0.64–0.97) for individuals only exercising with others compared to individuals only exercising alone

In summary the study suggested that:

- Although exercising alone and exercising with others both seem to have health benefits, increased frequency of exercise with others has important health benefits regardless of the total frequency of exercise.

Adults with chronic health conditions

A 2017 Australian randomised control trial (RCT) [6] looked at the effectiveness of gym-based exercise versus home-based exercise with telephone follow-up amongst adults with chronic conditions. The participants were recruited following a 6-week exercise program at a community health service. One group of participants received a gym-based exercise program for 12 months (gym group). The other group received a home-based exercise program for 12 months with telephone follow-up for the first 10 weeks.

Participants allocated to the gym-based intervention were given a 12-month, individualised, exercise program. An exercise physiologist from the community health service supervised this at the gym from Monday to Friday for 2 hours per day. Participants were encouraged to attend during the times the exercise physiologist attended the gym.

Participants allocated to the home-based intervention were also given a 12-month, individualised, exercise program. Each participant was encouraged to complete a 1-hour exercise session, three sessions per week, at home. The home-based exercise program was supervised via five telephone calls over the first 10 weeks, approximately 25 to 30 minutes in duration. The total time in minutes to complete the five phone calls for each participant was comparable to that spent supervising each participant in the gym over a 12-month intervention period.

The study concluded that:

- Adults with a chronic disease who have recently completed a supervised exercise program achieve similar outcomes and maintain similar exercise adherence a year later with either a gym-based maintenance exercise program or a home-based maintenance exercise program with telephone support.
- The gym-based program may improve mental health outcomes more, but the finding requires further investigation.

Adults with Psychological Distress

A 2017 thesis [7] investigated the effectiveness of group versus solo physical activity in the reduction of psychological distress (including stress, depression and anxiety) and factors involved in participation to promote greater engagement in physical activity. ***The thesis found that group physical activity may be associated with reduced psychological distress and be more beneficial in protecting against psychological distress than solo physical activity.*** Three studies were carried out:

- The first study issued questionnaires to members of the general population and university students. Inverse correlations were found between group physical activity and psychological distress in both samples. However, a single positive correlation was found between anxiety and solo physical activity in the student sample, which suggests that group physical activity may be more effective in the reduction of psychological distress than solo physical activity. Low active individuals appeared to prefer solo physical activity to group, which may be due to lower perceived barriers. More active participants either preferred group activity or had no preferences between group and solo activity, despite also perceiving greater barriers to group than solo activity.
- The second study allocated university students to a group versus solo jogging condition intervention and found that psychological distress increased for those allocated to solo jogging, but did not increase amongst those allocated to group jogging, suggesting that group physical activity may protect against university related distress. Those allocated to group jogging engaged in (non-significantly) more jogging and engaged in significantly more moderately intensive physical activity throughout the intervention than those allocated to solo jogging.
- The final study compared group and solo physical activity using the Theory of Planned Behaviour and structural equation modelling. The model explained more variance in group physical activity than variance in solo physical activity. When the model was expanded, self-efficacy made a significantly greater contribution to intention in the solo physical activity model than it did in the group activity model, therefore promotion of group physical activity may not be as dependent on self-efficacy as solo physical activity.

Recreational activities engaged by the average Australian

Overview

The number of recreational activities engaged by the average Australian could not be sourced. However the most recent Australian Sports Commission's AusPlay survey [8] gives the frequency with which Australians participate in sporting activities per week, fortnight, month and year.

The AusPlay survey is performed annually to track the sporting behaviours and activities of the Australian population. All Australian residents are in scope of the survey which is conducted by computer assisted telephone interviewing. The annual target sample size is 20,000 adults aged 15 years and over, and approximately 3,600 children aged 0-14, spread evenly across the year.

Data from the Australian Bureau of Statistics (ABS) provides statistics on the top sport and physical recreation activities participated in by Australians broken into gender and participation percentages.

Participation by type of sport and recreation

Adults

The table below gives the top 55 sport and physical recreation activities participated in by Australian adults (15 years and over) according to the most recent data from the ABS "Participation in Sport and Physical Recreation, Australia, 2013-14". [9]

Of the Australian population aged 15 years and over, an estimated 60% (11.1 million people) reported that they had participated in sport and physical recreation at least once during the 12 months prior to the interview in 2013–14, compared with 65% in 2011-12.

Participation generally decreased with increasing age. People aged 15–17 years reported the highest participation rate in sport and physical recreation (74%), while people aged 65 years and over had the lowest (47%). Male and female participation rates were similar, except in the 25-34 age group where participation rates were higher for males (67%) than females (61%).

Walking for exercise was the most popular physical recreational activity, with 19% of people aged 15 years and over walking for exercise at least once in the 12 months prior to interview. Females were more likely to walk for exercise than males (25% and 14% respectively). Fitness and gym were the next most popular activity (17%) again with more females than males participating (19% and 16% respectively). Males were more likely than females to play golf (6.6% and 1.4% respectively) or participate in cycling and BMXing (8.5% and 4.0% respectively).

ADULTS PARTICIPATING IN SPORT AND PHYSICAL RECREATION, Top 55 activities, By sex						
	ESTIMATE ('000)			PARTICIPATION RATE (%)		
	Males	Females	Persons	Males	Females	Persons
Walking for exercise	1,233.1	2,319.7	3,544.9	13.6	24.7	19.2
Fitness / Gym	1,442.7	1,769.7	3,214.0	15.9	18.9	17.4
Jogging / Running	740.5	624.0	1,363.1	8.1	6.7	7.4
Swimming / Diving	457.3	716.4	1,174.8	5.0	7.6	6.4
Cycling / BMXing	777.4	378.7	1,151.9	8.5	4.0	6.2

ADULTS PARTICIPATING IN SPORT AND PHYSICAL RECREATION, Top 55 activities, By sex						
	ESTIMATE ('000)			PARTICIPATION RATE (%)		
	Males	Females	Persons	Males	Females	Persons
Golf	603.5	127.4	732.0	6.6	1.4	4.0
Tennis (indoor and outdoor)	305.0	255.5	563.1	3.4	2.7	3.0
Outdoor soccer	321.3	118.7	438.8	3.5	1.3	2.4
Netball (Indoor and outdoor)	25.5	387.1	413.8	0.3	4.1	2.2
Basketball (indoor & outdoor)	281.9	123.5	406.1	3.1	1.3	2.2
Yoga	38.9	282.7	317.5	0.4	3.0	1.7
Football sports (excluding, rugby, soccer, Australian Rules football)	167.9	124.4	297.7	1.8	1.3	1.6
Bush walking	126.3	161.4	285.6	1.4	1.7	1.5
Dancing / Ballet	30.7	202.9	237.2	0.3	2.2	1.3
Australian Rules football	205.8	12.7	224.0	2.3	0.1	1.2
Martial arts	105.6	110.2	220.4	1.2	1.2	1.2
Outdoor cricket	205.3	9.7	219.7	2.3	0.1	1.2
Indoor soccer	178.2	42.0	218.8	2.0	0.4	1.2
Pilates	10.6	184.9	197.8	0.1	2.0	1.1
Surf sports	151.4	36.4	196.0	1.7	0.4	1.1
Lawn bowls	129.4	53.2	181.3	1.4	0.6	1.0
Fishing	169.3	12.9	177.1	1.9	0.1	1.0
Horse riding / Equestrian activities / Polo	17.2	116.2	142.0	0.2	1.2	0.8
Canoeing / Kayaking / Dragon boat racing	76.9	49.4	129.7	0.8	0.5	0.7
Hockey (indoor and outdoor)	64.4	58.4	121.4	0.7	0.6	0.7
Squash / Racquetball	83.8	19.0	104.5	0.9	0.2	0.6
Athletics, track and field	67.7	44.5	103.4	0.7	0.5	0.6
Boxing	62.0	40.3	99.8	0.7	0.4	0.5
Aerobics	10.6	88.8	99.6	0.1	0.9	0.5
Ice / snow sports	56.4	44.0	99.5	0.6	0.5	0.5
Badminton	63.8	45.3	97.8	0.7	0.5	0.5
Rugby union	97.6	0.0	96.3	1.1	0.0	0.5
Volleyball (indoor and outdoor)	45.3	54.6	91.9	0.5	0.6	0.5
Aqua aerobics	11.8	77.0	90.8	0.1	0.8	0.5
Water skiing / Powerboating	66.1	15.6	88.7	0.7	0.2	0.5
Rugby league	81.2	2.4	88.1	0.9	0.0	0.5
Sailing	52.4	23.5	71.5	0.6	0.3	0.4
Cross country running	29.4	38.3	70.6	0.3	0.4	0.4
Triathlons	38.2	15.9	58.8	0.4	0.2	0.3
Shooting sports	47.8	2.1	56.6	0.5	0.0	0.3
Skateboarding / Inline hockey / Roller sports	30.7	21.7	54.9	0.3	0.2	0.3
Indoor cricket	51.4	1.3	54.4	0.6	0.0	0.3
Weight lifting / Powerlifting / Body building	37.7	15.1	52.8	0.4	0.2	0.3
Motor sports	48.4	1.1	49.1	0.5	0.0	0.3
Tenpin bowling	28.1	16.7	49.0	0.3	0.2	0.3
Scuba diving / Snorkelling	42.2	9.0	45.7	0.5	0.1	0.2
Rowing	40.3	7.4	44.8	0.4	0.1	0.2
Trail bike riding	34.7	2.1	41.5	0.4	0.0	0.2
Table tennis	27.8	8.8	41.3	0.3	0.1	0.2
Softball / Tee ball	22.1	15.7	40.7	0.2	0.2	0.2
Gymnastics	18.0	19.2	38.0	0.2	0.2	0.2
Rock climbing / Abseiling / Caving	21.6	8.7	32.4	0.2	0.1	0.2

ADULTS PARTICIPATING IN SPORT AND PHYSICAL RECREATION, Top 55 activities, By sex						
	ESTIMATE ('000)			PARTICIPATION RATE (%)		
	Males	Females	Persons	Males	Females	Persons
Lifesaving	12.5	19.0	28.1	0.1	0.2	0.2
Water volleyball / Rafting / Other water sports	14.6	9.9	27.5	0.2	0.1	0.1
Water polo	6.9	12.3	24.9	0.1	0.1	0.1

Children

The table below provides the top sporting activities participated in by Australian children (5 to 14 years) according to the most recent 2012 data from the ABS.[10]

The three most popular organised sports for boys in the year ending April 2012 were outdoor soccer, swimming/diving and Australian Rules football with participation rates of 22%, 16% and 15% respectively. For girls, two sports were predominant - swimming/diving with 19% and netball with 16% of girls participating. The level of participation by girls in both of these sports was double the level of participation in gymnastics, which was the next placed sport with an 8% participation rate.

Although boys had higher participation rates in organised sport, girls had a much higher participation rate than boys in another form of organised physical activity - dancing. During the 12 months ending April 2012, over one quarter (27%) of girls participated in organised dancing outside of school hours, compared with 4% for boys. Participation was similar to the level recorded for both girls and boys in 2009 (26% and 3% respectively) but has increased from 2006 (23% of girls and 2% of boys). [10]

CHILDREN PARTICIPATING IN TOP 10 ORGANISED SPORTS AND DANCING(a), By sex - 2006, 2009 and 2012						
	2006		2009		2012	
	Number '000	Participation Rate %	Number '000	Participation Rate %	Number '000	Participation Rate %
MALES						
Soccer (outdoor)	268.5	19.6	277.8	19.9	309.7	21.7
Swimming/Diving	225.7	16.5	240.1	17.2	235.2	16.5
Australian Rules football	188.5	13.8	223.7	16.0	212.7	14.9
Basketball	101.7	7.4	118.7	8.5	131.3	9.2
Cricket (outdoor)	137.8	10.1	135.7	9.7	123.1	8.6
Tennis	109.3	8.0	131.6	9.4	119.6	8.4
Martial arts	83.4	6.1	105.2	7.5	111.2	7.8
Rugby League	107.6	7.9	97.2	7.0	107.4	7.5
Rugby Union	53.5	3.9	53.7	3.8	57.9	4.0
Dancing	32.5	2.4	41.9	3.0	50.7	3.5
Athletics, track and field	36.0	2.6	42.4	3.0	45.9	3.2
FEMALES						
Dancing	300.1	23.1	348.5	26.3	367.4	27.1

CHILDREN PARTICIPATING IN TOP 10 ORGANISED SPORTS AND DANCING(a), By sex - 2006, 2009 and 2012						
Swimming/Diving	236.8	18.2	262.8	19.8	256.9	18.9
Netball	224.1	17.3	225.0	17.0	220.4	16.2
Gymnastics(b)	109.8	8.1
Basketball	74.6	5.7	83.2	6.3	88.9	6.6
Soccer (outdoor)	82.6	6.4	82.7	6.2	87.8	6.5
Tennis	85.8	6.6	83.2	6.3	85.6	6.3
Martial arts	37.0	2.9	49.5	3.7	49.8	3.7
Athletics, track and field	41.5	3.2	47.0	3.5	42.7	3.1
Horse riding/Equestrian/Polo	36.1	2.8	31.5	2.4	27.5	2.0
Hockey	28.9	2.2	31.8	2.4	26.6	2.0
.. not applicable						
(a) Children aged 5 to 14 years who participated in organised sport (excluding dancing) outside of school hours during the 12 months prior to interview in April of the survey year.						
(b) In 2009, callisthenics was included in the Gymnastics category. In 2012, callisthenics was excluded from organised sport altogether, and cheerleading was included in the Gymnastics category. Therefore the data are not comparable.						
Source: Children's Participation in Cultural and Leisure Activities, Australia, April 2012 (cat. no. 4901.0).						

Frequency of Participation (Adults & Children)

The table below has been taken from the AusPlay 2019 survey [8] giving an indication of how many times per week, fortnight, month and year, the average Australian participates in sporting activities, together with the participation rate percentage.

	1+per year	1+ per month	1+ per f/t	1+ per week	2+per week	3+ per week	4+ per week	5+ per week	6+ per week	7+ per week
Adults	18,760.6	18,312.2	17,886.6	17,124.0	15,361.4	13,206.7	10,767.9	8,676.1	6,616.0	5,272.3
	90.5%	88.3%	86.3%	82.6%	74.1%	63.7%	51.9%	41.8%	31.9%	25.4%
Children	3,688.7	3,482.5	3,296.4	2,852.7	1,795.7	1,088.1	646.3	410.2	258.5	147.8
	76.1%	71.9%	68.0%	58.9%	37.1%	22.5%	13.3%	8.5%	5.3%	3.1%

Below are the AusPlay results for the top 10 sport and physical activities for both adults and children giving the percentage participation rate. [11]

	Children Organised sport & physical activities		Adults All sport & physical activities	
1	Swimming	30%	Walking	43%
2	Football	22%	Fitness/Gym	33%
3	Dancing (recreational)	9%	Swimming	16%
4	Gymnastics	8%	Athletics, track and field	16%

	Children Organised sport & physical activities		Adults All sport & physical activities	
5	Cricket	6%	Cycling	10%
6	Netball	5%	Football/soccer	7%
7	Tennis	4%	Bush walking	7%
8	Athletics, track and field	4%	Golf	6%
9	Basketball	4%	Tennis	5%
10	Rugby league	4%	Yoga	5%

Activity and Sedentary Behaviour Guidelines

Australia's Department of Health Physical Activity and Sedentary Behaviour Guidelines [12] outline the minimum levels of physical activity required for health benefits and include ways to incorporate physical activity and minimise sedentary behaviour in everyday life. The guidelines are supported by an evidence review process and have been considered through a stakeholder and expert consensus process which considered [13]:

- the relationship between physical activity (including the amount, frequency, intensity and type of physical activity) and health outcome indicators, including the risk of chronic disease and obesity
- the relationship between sedentary behaviour/sitting time and health outcome indicators, including the risk of chronic disease and obesity

Guidelines for Adults (18-64 years)

PHYSICAL ACTIVITY

- Doing any physical activity is better than doing none. If you currently do not perform any physical activity, start by doing some, and gradually build up to the recommended amount.
- Be active on most, preferably every day of the week.
- Accumulate 150 to 300 minutes (2 ½ to 5 hours) of moderate intensity physical activity or 75 to 150 minutes (1 ¼ to 2 ½ hours) of vigorous intensity physical activity, or an equivalent combination of both moderate and vigorous activities, each week.
- Perform muscle strengthening activities at least 2 days a week.

SEDENTARY BEHAVIOUR

- Minimise the amount of prolonged sitting time.
- Break up long periods of sitting as often as possible.

Guidelines for Children and Young people (5-7 years)

PHYSICAL ACTIVITY

- Accumulating 60 minutes or more of moderate to vigorous physical activity per day involving mainly aerobic activities.
- Several hours of a variety of light physical activities;
- Activities that are vigorous, as well as those that strengthen muscles and bones should be incorporated at least 3 days per week.
- To achieve greater health benefits, replace sedentary time with additional moderate to vigorous physical activity, while preserving sufficient sleep.

SEDENTARY BEHAVIOUR

- Break up long periods of sitting as often as possible.
- Limit sedentary recreational screen time to no more than 2 hours per day.
- When using screen-based electronic media, positive social interactions and experiences are encouraged.

People with a disability (Types of recreational participation and barriers to participation)

Overview

Data from the ABS provides participation rates for people with a disability, although not across all age groups. This is a limiting factor as it has been suggested that participation declines with age. The current data shows that overall, over two thirds of people with a disability participated in sport and physical recreation activities. ABS data was also able to give some indication of participation by gender, disability type and disability condition.

The AusPlay survey data was able to give an indication of frequency of participation by gender.

Academic research investigating the barriers to participation is plentiful although recent research is limited. Five systematic reviews were sourced to give a general overview of the barriers to participation categorised by Personal, Social, Environmental, and Policy & Program.

Whilst clarity on the barriers to participation can be gleaned from the research, the focus on assistive technology or a lack of it as a barrier is minimal.

Australian Bureau of Statistics (ABS) Data

A comparison of ABS surveys conducted in 2003 and 2009 do not show much change in the participation rate for persons with a disability. The overall participation rate in sport among adults (i.e. persons age 15 years and older) with a disability was 25% in 2003 and 24% in 2009. This compares to an overall participation rate among able bodied adults of 64%. Within the able bodied population the participation rate in sport is greatest at ages 15-17 years (74%) and declines with age to 48% for people over the age of 65 years. Although specific statistics are not available across all age groups for persons with disability, a similar trend of declining participation with age exists. [9, 14]

Comparative figures from the General Social Survey conducted by the ABS estimates that people with disability are 15% less likely to participate in sport and active recreation than the general population. It is reasonable to assume that this under-representation in sport participation among persons with disability exists and is due to disadvantages or barriers encountered. [9, 14]

In 2010 compared with the whole population, people with a disability participate less than those without a disability. However, the data shows that over two thirds of people with a disability participated in sport and physical recreation activities in the 12 months prior to interview. [15]

Significant Difference

Any differences highlighted below are statistically significant unless otherwise noted.

Participation by Gender

In 2010, 68% of people with a disability (PWD) (4.6 million) participated in sport, lower than the 79% of people without a disability (7.9 million). Both males and females with a disability had lower participation rates (68% and 67% respectively) than those without a disability (82% and 76%). [15]

PWD PARTICIPATION IN SPORT AND PHYSICAL RECREATION ACTIVITIES, By sex – 2010 [15]						
	With a disability			Without a disability		
	Participated	Did not participate	Total	Participated	Did not participate	Total
Number (000's)						
Males	2 306.0	1 077.6	3 383.5	3 994.6	903.7	4 898.3
Females	2 279.0	1 108.6	3 387.6	3 879.1	1 239.5	5 118.7
Persons	4 585.0	2 186.2	6 771.2	7 873.7	2 143.3	10 017.0
Participation Rate (%)						

PWD PARTICIPATION IN SPORT AND PHYSICAL RECREATION ACTIVITIES, By sex – 2010 [15]						
	With a disability			Without a disability		
	Participated	Did not participate	Total	Participated	Did not participate	Total
Males	68.2	31.8	100.0	81.6	18.4	100.0
Females	67.3	32.7	100.0	75.8	24.2	100.0
Persons	67.7	32.3	100.0	78.6	21.4	100.0

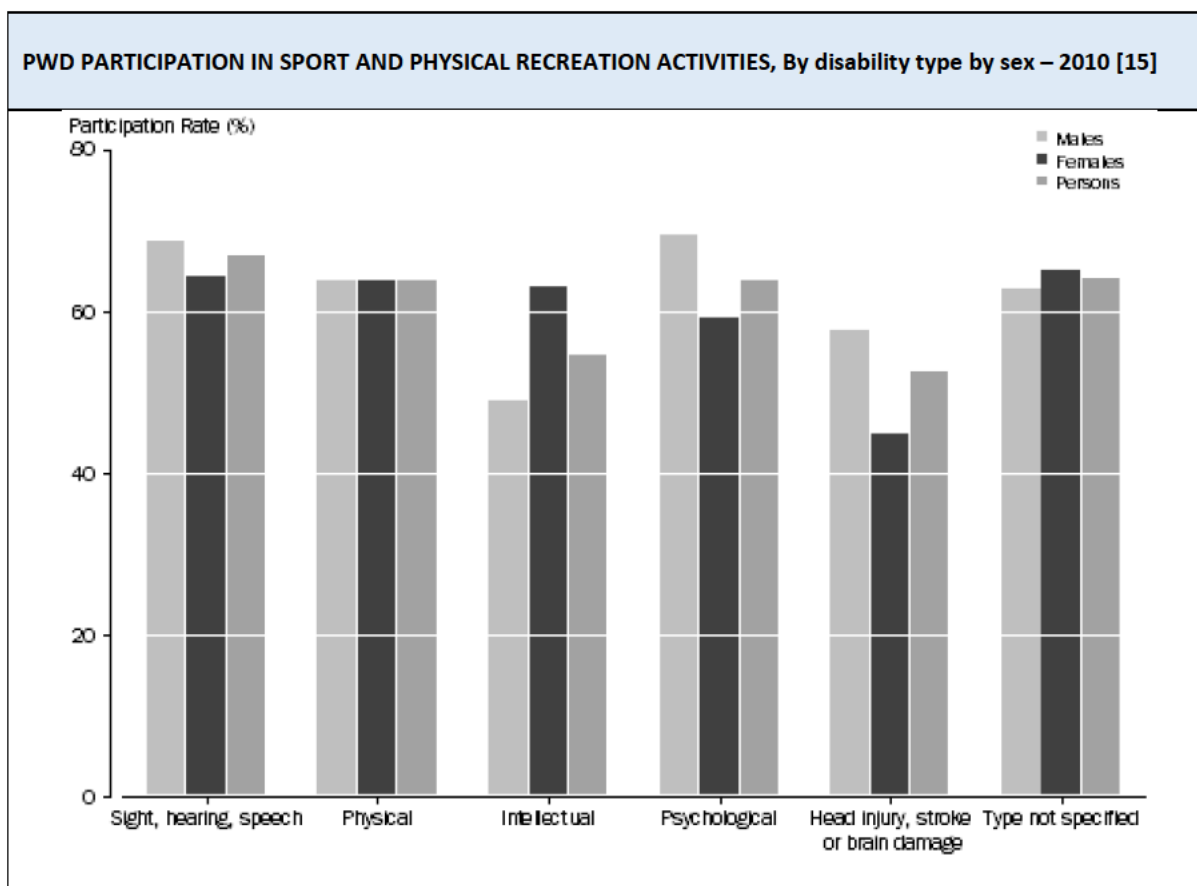
Participation by Age

The data shows no significant difference in participation for the younger age groups (less than 45 years of age) of both the disabled and non-disabled population. For people with a disability, there was a significant drop in participation (9 percentage points) between the age of 45-54 and 55-64 years. People aged 45-54 years and 55-64 years of age with a disability showed lower participation rates (71% and 62% respectively) than people in the same age groups who reported no disability (80% and 76%). [15]

PWD PARTICIPATION IN SPORT AND PHYSICAL RECREATION ACTIVITIES, By age – 2010 [15]						
	With a disability			No disability		
	Participated	Did not participate	Total	Participated	Did not participate	Total
Number (000's)						
Age groups (years)						
18-24	350.7	67.6	418.3	1 400.8	372.2	1 773.1
25-34	599.6	182.8	782.4	1 899.4	463.1	2 362.5
35-44	769.9	232.9	1 002.8	1 713.2	403.4	2 116.6
45-54	875.3	353.6	1 228.9	1 423.1	352.4	1 775.5
55-64	816.9	503.1	1 320.0	906.5	288.4	1 194.9
65 and over	1 172.6	846.1	2 018.7	530.7	263.8	794.5
Total	4 585.0	2 186.2	6 771.2	7 873.7	2 143.3	10 017.0
Participation rate (%)						
Age groups (years)						
18-24	83.8	16.2	100.0	79.0	21.0	100.0
25-34	76.6	23.4	100.0	80.4	19.6	100.0
35-44	76.8	23.2	100.0	80.9	19.1	100.0
45-54	71.2	28.8	100.0	80.2	19.8	100.0
55-64	61.9	38.1	100.0	75.9	24.1	100.0
65 and over	58.1	41.9	100.0	66.8	33.2	100.0
Total	67.7	32.3	100.0	78.6	21.4	100.0

Disability Type

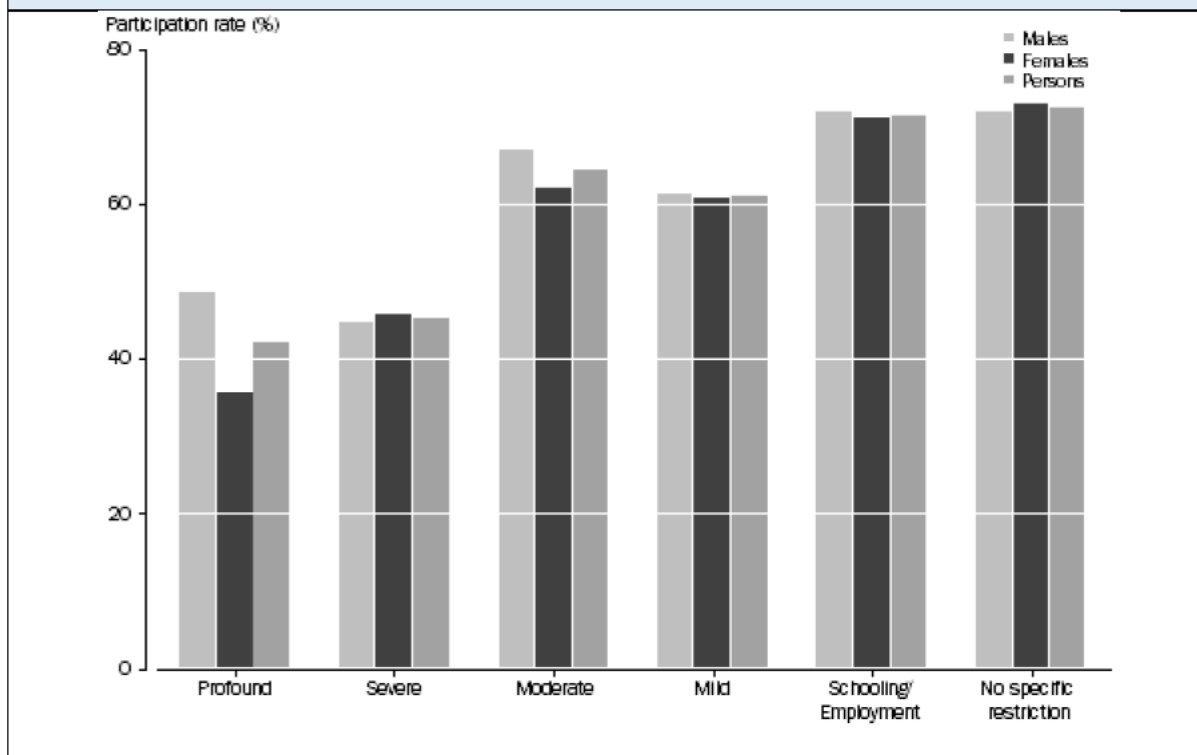
There were no significant differences between participation rates across disability types, except for those people with an intellectual or head injury (including stroke or brain damage). People with these disability types had lower participation rates of 55% and 53% respectively. Just under half (49%) of males with an intellectual disability and over half (58%) with a head injury, stroke or brain damage participated in sport and physical recreation activities. Females reported participation rates of 63% for those with an intellectual disability and 45% for those with a disability associated with a head injury, stroke or brain damage. [15]



Disability Condition

People with a disability that had no specific restriction had the highest participation rate of 73%, compared with almost all other disability conditions. The exception was for those with a schooling or employment restriction (72%). More than six in every ten people with a mild (61%) or moderate (65%) restriction associated with their disability participated in sport and physical recreation activities. The data shows a significant difference in participation for people experiencing a profound or severe restriction, with the lowest participation rates of 42% and 45% respectively. [15]

PWD PARTICIPATION IN SPORT AND PHYSICAL RECREATION ACTIVITIES, By disability condition by sex – 2010 [15]



AusPlay Survey

The AusPlay Survey [16] also provides information relating to participation in sport and physical activity by people who have a disability of physical condition that restricts their life in some way.

The data indicates that a total of 77.8% (78.6% male; 77% female) of people surveyed who have a disability or physical condition that restricts their life in some way participated in sport or physical activity at least once in the previous 12 months. Overall, 68.9% (68.5% male; 69.3% female) participated at least once per week, and 51.9% (52.8% male; 51.1% female) participated at least three times per week. These figures were lower than for those people surveyed who did not have a disability or physical condition that restricts their life in some way: At least once per year (total: 90.7%; male: 90.6%; female: 90.7%); at least once per week (total: 83.3%; male: 81.8%; female: 84.8%); at least three times per week (total: 63.7%; male: 61.6%; female: 66.1%). Interestingly, for those without disability women are more likely to participate regularly, however, for those with disability men are slightly more active than women on an annual and minimum three times per week basis.

Barriers to participation

Overview

Although research into the barriers to participation in recreation of people with a disability is plentiful, the majority of the research appears to be around the early 2000's. However, there are some relatively recent systematic reviews available. This paper sourced five systematic reviews, three focusing on adults and children and two focusing on children only. One review [17] combined adults and children within its results, whilst the others separated age groups.

The research clearly identifies the overall barriers to participation, however, there is minimal work which focuses on whether AT, or lack thereof it acts as a barrier.

Barrier themes and sub themes in the research

All reviews sourced broke down their findings into barrier categories, and although the categories differ between the reviews, their content is common. For the purpose of this paper the following barriers categories will be used to accommodate the common barriers found in the reviews (***Personal, Social, Environmental, and Policy & Program***) and divided into Children, and Adults and Children.

Following is a general overview of the barriers identified within the research sourced.

Personal Barriers

CHILDREN

- Lack of skills (physical and social) [18, 19]
- Lack of time [19, 20]
- Preference for activities other than physical activities [18]
- Fear and a lack of knowledge about exercise [18]
- Children with disability also disliked having to deal with negative perceptions of disability (referred to as the "stigma of disability") or of attracting unwanted attention [18]
- Physical activities and sports are not fun [19]
- Lack of interest, motivation and enjoyment [19]
- Preference for sedentary behaviour [19]
- Increasing age (causes fear and lack of motivation) [19]
- Financial restrictions [19]
- Children and adolescents with different types of disabilities mentioned each disability itself as a personal barrier [20]
- Unequal time distribution of the parents between the disabled child and their siblings [20]

CHILDREN AND ADULTS

- Psychological affect and emotion, attitudes/beliefs/perceived benefits and self-perceptions [17]
- Body functions [17]

- Negative mood, depression, anxieties, fears, and embarrassment related to activity [17]
- Health symptoms and conditions, pain, fatigue, energy, and strength [17]
- Lack of energy and fatigue with different types of disabilities [20]
- Employment status [17]
- knowledge about the benefits of physical activity and how to exercise [17]
- Financial costs [17]

Social Barriers

CHILDREN

- Parental actions (time constraints, travel, lack of knowledge) [18, 19]
- Behaviour or concerns (safety, child's behaviours) [18, 19]
- A lack of friends to participate with or unsupportive peers and negative societal attitudes to disability [18, 19]
- Parents of children with spina bifida reported that they believed recreation was more important for children without disability [18]
- Mothers of school-aged children with Down syndrome reported their child's interest in physical activity waned as the gap between their motor skills and the motor skills of their peers with typical development widened [18]
- Some children with disability chose not to participate in activity because they believed their peers viewed them as helpless or the parents of their peers without disability were unfriendly and had misconceptions about their ability [18]

CHILDREN AND ADULTS

- Support from family, friends, peers, health-care and other professionals for facilitating physical activity [17]
- Other people's negative attitudes [17]

Environmental Barriers

CHILDREN

- Inadequate, inaccessible or inconvenient facilities [18, 19]
- Lack of transport [18, 19]
- Almost 80% of parents of children with disability (mean age 7 years) reported that a lack of facilities was a major barrier [18]

CHILDREN AND ADULTS

- Building/facility accessibility and location [17]
- Design, construction and building products and technology of buildings for public use [17]
- Lack of Equipment/ Accessibility of adaptive equipment [17, 21]

- Suitability of climate [17]
- Lack of transportation [17, 20, 21]
- Financial costs [20, 21]
- Lack of information about sports [20]
- Lack of sports possibilities [20]

Policy & Program Barriers

CHILDREN

- Lack of appropriate physical activity programmes [18]
- Lack of staff capacity, negative staff attitudes towards working with children with disability and cost [18, 19]
- Between 25% and 60% of parents in four studies identified a lack of appropriate programmes or a deficiency in available programmes as a barrier [18]
- Forty per cent of children with disability also felt they had a lack of opportunities to be physically active and 35% believed there was a lack of transition programmes from the rehabilitation setting to a community setting or that there was a lack of 'learn to exercise' programmes [18]
- Some children were excluded from formal programmes because of specified rules and regulations, for example, motorised wheelchairs were not allowed in a wheelchair basketball competition [18]

CHILDREN AND ADULTS

- Knowledge of people within institutions/organisations, rehabilitation processes, building design and construction [17]
- Education and training of professionals in the areas of accessibility and appropriate interactions [21]
- Knowledge among health-care professionals and other service providers [17]
- Physical activity information, counselling, and encouragement from rehabilitation professionals [17]
- Need for training of staff/professionals within the organisations [17]
- Restrictive policies and bureaucracy [17]
- Perceptions and attitudes of both professionals and nondisabled individuals toward accessibility and persons with disabilities [21]

References

1. Wilcox S, King A, Brassington G, Ahn D. Physical Activity Preferences of Middle-Aged and Older Adults: A Community Analysis. *Journal of Aging and Physical Activity*. 1999;7(4):386-99.
2. King AC, Castro C, Wilcox S, Eyster AA, Sallis JF, Brownson RC. Personal and Environmental Factors Associated With Physical Inactivity Among Different Racial–Ethnic Groups of U.S. Middle-Aged and Older-Aged Women. *Health Psychology*. 2000;19(4):354-64.

3. King AC, Taylor CB, Haskell WL, DeBusk RF. Identifying strategies for increasing employee physical activity levels: findings from the Stanford/Lockheed Exercise Survey. *Health Educ Q.* 1990;17(3):269-85.
4. Beauchamp MR, Carron AV, McCutcheon S, Harper O. Older adults' preferences for exercising alone versus in groups: Considering contextual congruence. *Annals of behavioral medicine.* 2007;Vol.33(2):200-6.
5. Satoru K, Tomoko T, Shigeru I, Yuko K, Ichiro K, Katsunori K. Exercising alone versus with others and associations with subjective health status in older Japanese: The JAGES Cohort Study. *Scientific Reports.* 2016;6(1).
6. Jansons P, Robins L, O'Brien L, Haines T. Gym-based exercise and home-based exercise with telephone support have similar outcomes when used as maintenance programs in adults with chronic health conditions: a randomised trial. *Journal of physiotherapy.* 2017;63(3):154-60.
7. Port J. Group versus solo physical activity in the reduction of stress, anxiety and depression. ProQuest Dissertations Publishing; 2017.
8. Australian Sports Commission. AusPlay survey results January 2019 - December 2019 2020 [Available from: <https://www.clearinghouseforsport.gov.au/research/ausplay/results>].
9. Australian Bureau of Statistics. Participation in Sport and Physical Recreation, Australia 2014 [02/11/20]. Available from: <https://www.abs.gov.au/statistics/people/people-and-communities/participation-sport-and-physical-recreation-australia/latest-release>.
10. Australian Bureau of Statistics. Sports and Physical Recreation: A Statistical Overview, Australia, 2012 2012 [10/11/20]. Available from: <https://www.abs.gov.au/ausstats/abs@.nsf/Products/76DF25542EE96D12CA257AD9000E2685>.
11. Sport NGOo. Participation in sport and active recreation 2020 [Available from: <https://www.sport.nsw.gov.au/sectordevelopment/participation#:~:text=Children%E2%80%99s%20participation%20in%20organised%20sport%20or%20physical%20activity,%20%20%2A%20%20%20more%20rows%20>].
12. Australian Government | Department of Health. Australia's Physical Activity and Sedentary Behaviour Guidelines and the Australian 24-Hour Movement Guidelines 2020 [Available from: <https://www1.health.gov.au/internet/main/publishing.nsf/Content/health-pubhlth-strateg-phys-act-guidelines#npa1864>].
13. Australian Government | Department of Health. Development of Evidence-based Physical Activity Recommendations for Adults (18-64 years) 2013 [Available from: [https://www1.health.gov.au/internet/main/publishing.nsf/Content/F01F92328EDADA5BCA257BF001E720D/\\$File/DEB-PAR-Adults-18-64years.pdf](https://www1.health.gov.au/internet/main/publishing.nsf/Content/F01F92328EDADA5BCA257BF001E720D/$File/DEB-PAR-Adults-18-64years.pdf)].
14. Australian Sports Commission. Participation 2020 [Available from: <https://www.clearinghouseforsport.gov.au/kb/persons-with-disability-and-sport/participation-statistics>].
15. Australian Bureau of Statistics. Participation in Sport and Physical Recreation by People with a Disability 2013 [11/11/20]. Available from: <https://www.abs.gov.au/ausstats/abs@.nsf/Products/4156.0.55.001~July+2012~Main+Features~Participation+in+Sport+and+Physical+Recreation+by+People+with+a+Disability?OpenDocument>.
16. Australian Sports Commission. AusPlay survey results July 2016-June 2017 [Website]. 2017 [Available from: <https://www.clearinghouseforsport.gov.au/research/ausplay/results>].
17. Martin Ginis KA, Ma JK, Latimer-Cheung AE, Rimmer JH. A systematic review of review articles addressing factors related to physical activity participation among children and adults with physical disabilities. *Health Psychology Review.* 2016;10:4, 478-494.
18. Shields N, Synnot AJ, Barr M. Perceived barriers and facilitators to physical activity for children with disability: a systematic review. *British journal of sports medicine.* 2012;46(14):989-97.
19. Bloemen MAT, Backx FJG, Takken T, Wittink H, Benner J, Mollema J, et al. Factors associated with physical activity in children and adolescents with a physical disability: a systematic review. 2015. p. 137-48.

20. Jaarsma EA, Dijkstra PU, Geertzen JHB, Dekker R. Barriers to and facilitators of sports participation for people with physical disabilities: A systematic review. *Scandinavian Journal of Medicine and Science [Internet]*. 2014; 24(6):[871-81 pp.].
21. Rimmer JH, Riley B, Wang E, Rauworth A, Jurkowski J. Physical activity participation among persons with disabilities. *American Journal of Preventive Medicine*. 2004;26(5):419-25.