



Healthy • Active • Happy • Kids

EVIDENCE AND EVALUATION SUMMARY (2011 – 2015)



Health

Suggested citation

L Henderson, S Lukeis, B J O'Hara, B McGill, C Innes-Hughes & C Rissel (2016) Go4Fun®: Evidence and Evaluation Summary (2011-2015). NSW Ministry of Health.

Acknowledgements

The authors would like to acknowledge the contribution of Deb Welsby, Shay Saleh, Anita Cowlshaw, Nicholas Petrunoff, Phebe Betts and the Local Health District Health Promotion teams for their delivery of the Go4Fun® program.

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SHPN: (CPH) 160443.
ISBN: 978-1-76000-520-7 (Print)

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February 2017

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Executive Summary

Childhood obesity is one of the most important public health issues facing Australia, with approximately one quarter of children and adolescents being overweight or obese. Childhood obesity has immediate and ongoing detrimental impacts with overweight and obese children more likely to remain overweight or obese into adulthood and more likely to develop non-communicable diseases at a younger age and have a higher chance of premature death.

Education about healthy eating and physical activity in children is the key to establishing healthy habits in later years. The NSW Healthy Children Initiative includes a number of evidence based programs, in a range of settings delivered within the framework set by the *NSW Healthy Eating and Active Living Strategy: Prevention overweight and obesity 2013-2018*. These interventions have contributed to stabilising the increasing trend in overweight and obesity seen since 1985 and are an important contribution towards achieving the Premier's Priority target of reducing childhood overweight and obesity by 5 per cent by 2025.

Accordingly, treatment interventions for overweight and obese children are important; their goal being weight maintenance or deceleration of weight gain through lifestyle change; including reduced energy intake and sedentary behaviour, increased physical activity and measures to support behavioural change. Evidence suggests that such interventions can reduce the risk of developing obesity-related disease and that community-based lifestyle interventions are effective at: reducing weight and the risk of cardio-metabolic risks in children who are overweight or obese; maintaining weight loss after the intervention; and increasing family physical activity and dietary behaviours.

Go4Fun[®] is an evidence based child obesity treatment program that has been translated as a community-based program for the Australian context and is an important component of the NSW Government's response to the prevention and treatment of childhood obesity. The 10 week program is family-focused and has been designed specifically for children aged 7-13 years who are above a healthy weight. Each session is delivered over two hours and covers nutrition and health behaviour change theory and fun, game-based physical activity for children.

Go4Fun[®] has been delivered in NSW since 2009, and was initially piloted within three former Area Health Services. Over a period of two years, implementation was extended state-wide to the remaining Local Health Districts (LHDs). The program was also originally delivered twice a week over ten weeks (20 sessions) and in 2014, after research comparing the effectiveness of a once per week (10 sessions) delivery model with the twice per week delivery mode (with similar health and behavioural outcomes being achieved), the once per week model was implemented as the standard Go4Fun[®] delivery model.



The implementation of Go4Fun® relies on co-ordinated delivery at a state and local level. State-wide delivery is managed by the NSW Office of Preventive Health (OPH) in partnership with a centralised service provider. The Better Health Company (BHC), formerly known as MEND Australia, has provided the centralised service in NSW since 2009. The OPH and BHC work in close partnership with LHD health promotion services that are funded to manage implementation at a local level.

Provision of training to LHD staff and ongoing professional development is a critical component of Go4Fun® service delivery. For the period July 2011–June 2015, 37 training courses were delivered to 567 Theory and Physical Activity Leaders across NSW. For the same period, 657 Go4Fun® programs were delivered across NSW with 33% of programs delivered in the 2013/2014 financial year. Two thirds (66%) of Go4Fun® programs were delivered in major cities and 74% of programs were delivered in socio-economically disadvantaged communities.

For the period July 2011–June 2015 7,313 children (and their families) were recruited to take part in Go4Fun® (recruitees), 86% (6,288) enrolled in Go4Fun® having attended at least one Go4Fun® session and having satisfied the age and weight eligibility criteria (enrollees) and 81% (5,925) completed the program as defined by having completed 3 out of 10 sessions for the once a week program and 6 out of 20 sessions for the twice a week program (completers).

For the period July 2011–June 2015



37

training courses were delivered to 567 Theory and Physical Activity Leaders across NSW



657

Go4Fun® programs were delivered across NSW with 74% of programs delivered in socially disadvantaged communities



6,288

eligible children and their families participated in Go4Fun®

Key referral sources for the period
July 2011 - June 2015



23%
school promotions



17%
media promotions



16%
community promotions



16%
health professional referrals
and general practice promotion

A number of marketing and promotional activities targeting parents and referral sources have been used to recruit participants to the program. For the period July 2011-June 2015 the most common referral sources included:

- promotions undertaken through schools (1,549; 23%);
- media promotions including press, radio, television and internet advertising (1,170; 17%);
- community promotions and promotions undertaken at community and leisure centres (1,110; 16%);
- health professional referrals and promotion within general practice (1,109; 16%).

Approximately 86% (6,288) of participants recruited to Go4Fun® become enrollees of the program, the majority of enrollees were in primary school (4,758; 89%), spoke English at home (2,294; 67%) and did not identify as Aboriginal or Torres Strait Islander (2,027; 92% and 3,127; 90%).

Approximately 80% (5,925) of participants recruited to Go4Fun® completed the program. In regard to the socio-demographic profile of these completers: 52% (3,075) were female, 51% (3,044) were aged between 6.5-9 years (with an average age of 9.9 years), approximately 9% (480) were Aboriginal or Torres Strait Islander, 33% (1,092) spoke a language other than English at home; 70% (4,122) were from major cities and 67% (3,891) were from the three most disadvantaged socio-economic quintiles.

There were some significant differences between the socio-demographic profile of participants who withdraw from Go4Fun® and those that completed the program (completers). The following participants were more likely to withdraw from Go4Fun® prior to completing the program:

- older participants aged between 10-13 years;
- Aboriginal and Torres Strait Islander participants (for the period 2011-2013);
- participants who spoke a language other than English;
- participants in regional and remote locations; and
- participants from the three most disadvantaged socio-economic quintiles.

In relation to the impact that Go4Fun® had on participants' who completed Go4Fun®, the following significant improvements were observed:

- **Improvements in weight and body composition:** reduction of 0.6 Body Mass Index (BMI) units, and reduction of 1.6cm waist circumference.
- **Improvements in nutrition-related behaviours:** for the period 2011-2013 there was an increase of 5.8 units in participants nutrition score; an increase of 0.3 daily serves of fruit and 0.6 daily serves of vegetables and a decrease of 0.2 daily serves of sugar sweetened drinks.
- **Improvements in physical activity related behaviours:** increases of 3.5 hours of physical activity per week and a decrease of 4.3 hours in sedentary behaviours for participants who completed Go4Fun® during 2011-2013; and an increase of 3.6 hours per week of physical activity and a decrease of 2.9 hours per week for participants who completed Go4Fun® during 2013-2015 (the differences in the magnitude of these improvements likely due to the change in questionnaires from 2013).
- **Improvements in cardiovascular fitness:** as measured by heart rate recovery, with a decrease in 6.0 beats per minute (bpm) at the completion of Go4Fun®.
- **Improvements in a participant's self-esteem:** evident at the completion of Go4Fun® with an increase of 2.5 units (scale 0-30).

There were also corresponding increases in the proportion of participants meeting the recommended serves of fruit per day (52% to 67%), meeting the recommended serves of vegetables per day (2% to 6%) and meeting the physical activity recommendations per day (53% to 74%).

Whilst anthropometric measurements for parents and carers are not routinely collected across all sites, Go4Fun® has also had a positive impact on the family setting. Parents and carers who participated in the program made significant improvements to their own anthropometric risk profile with an average weight loss of 700g; 0.3 kg/m² reduction in their BMI and 2.2cm reduction in their waist circumference.

Go4Fun® implementation in NSW has demonstrated success in its ability to reach to the most disadvantaged groups and improve short-term health outcomes of children who are above a healthy weight. Continuous quality improvements and maintaining an equity focus by improving access to the program (from Culturally and Linguistically Diverse, Aboriginal, low socio-economic and regional and remote communities) is a priority and will continue to be facilitated by monitoring and research activities. A number of activities are currently underway to maintain and improve the quality of the program and extend the reach and accessibility of the program. These include a behavioural incentive trial, design and piloting of non-face-to-face delivery approaches (i.e. online, phone and SMS) and delivery of a culturally adapted version of Go4Fun® for Aboriginal families. A clinical engagement strategy has also been developed to increase awareness and referrals from a range of health professionals.

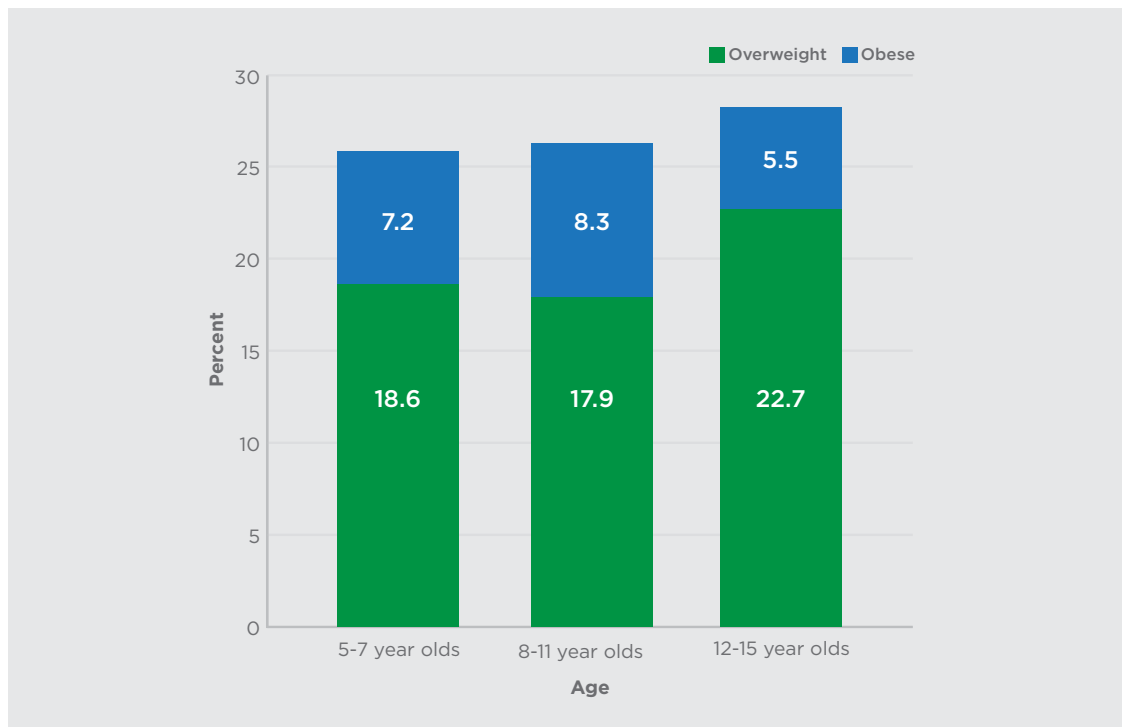
1. Background and Evidence

1.1 PREVALENCE OF OVERWEIGHT AND OBESITY IN CHILDREN

Addressing childhood obesity is one of the most urgent public health priorities for this century¹. In Australia, approximately one quarter of children and adolescents are overweight (15.5% of 5-7 year olds, 19.6% of 8-11 year olds and 19.5% of 12-15 year olds) or obese (8.5 % of 5-7 year olds, 6.7% of 8-11 year olds and 7.1% of 12-15 year olds).

The prevalence reported for NSW children and adolescents is similar to national figures² (Figure 1).

Figure 1: Prevalence of overweight and obesity in NSW children and adolescents, 2011-2012



Source: Australian Health Survey 2011-2012²

While overweight and obesity is evident in Australian children across all socio-economic groups, disadvantaged children are more likely to develop persistent overweight and obesity than socially advantaged children^{3, 4}. In NSW, there is also a higher prevalence of overweight and obesity in children from an Aboriginal background⁵, a socio-economically disadvantaged background^{3, 6} and an Asian or Middle Eastern background⁶.

The prevalence of overweight and obesity in children has been relatively stable in NSW since 2007, with a prevalence of 22.0% in 5 to 16 year old children in 2015⁷. However, the prevalence remains high and is a cause for concern.

1.2 CONSEQUENCES OF CHILDHOOD OVERWEIGHT AND OBESITY

Overweight or obese children are more likely to remain overweight or obese into adulthood¹. Accordingly, childhood obesity is associated with an increased risk of adult obesity-related morbidity, including being more likely to develop non-communicable diseases such as diabetes, cardiovascular diseases and certain types of cancer (endometrial, breast and colon). In addition, overweight and obese children also experience other health consequences, for example musculoskeletal disorders, at a younger age^{1, 8}.

In Australian children who are overweight or obese, increased risks of compromised physical and psychological health are evident from the age of 6 to 7 years⁹. These children experience more cardio-metabolic and non-alcohol fatty liver disease risk factors than those of a healthy weight; and experience psychological problems such as compromised perceived quality of life, depression, emotional and behavioural disorders and poor self-esteem¹⁰.



1.3 THE NEED TO ADDRESS CHILDHOOD OBESITY

The importance of offering early treatment interventions for overweight and obesity in children is highlighted when considering the resulting short and long term physical and social consequences¹¹. Encouraging a healthy body weight has the potential to reduce risks for later life as well as improving the health and wellbeing of children^{9, 12}. The primary goal of childhood overweight or obesity treatment interventions (also known as secondary prevention interventions) is weight maintenance or deceleration of weight gain enabled through decreased energy intake and/or increased energy expenditure^{11, 13}; for example, interventions addressing healthy eating and the promotion of physical activity in children can reduce the risk of developing obesity-related disease^{12, 14}. The treatment of childhood overweight and obesity requires interventions which include consistent and integrated messages to achieve sustained dietary and physical activity behaviour changes¹⁵.

The NSW Schools Physical Activity and Nutrition Survey 2015 identified the following lifestyle behaviours which could contribute to overweight and obesity in primary school aged children (from Year K to Year 6), as needing attention¹⁶:

- **Physical activity levels and fundamental movement skills:** with less than a quarter (23%) of primary school aged children meeting the physical activity guidelines, and children who are overweight or obese having a lower skill proficiency in locomotor skills (sprint run, vertical jump, leap and side gallop) than their peers.
- **Levels of screen time:** with less than two thirds (53%) of primary school aged children meeting screen time guidelines on weekdays.
- **Food related behaviours:** with only 5% of primary school children meeting the daily recommended vegetable intake.

1.4 EVIDENCE BASE FOR CHILDHOOD OBESITY INTERVENTIONS

Research suggests that lifestyle interventions are effective at reducing weight and the risk of cardio-metabolic risks in children who are overweight or obese^{11, 17, 18}; maintaining weight loss after the intervention^{11, 19}; and changing family physical activity and dietary behaviours¹⁹.

The characteristics that are common to effective lifestyle interventions include:

- a dietary component^{11, 17};
- a structured exercise or physical activity component^{11, 17};
- a behavioural component^{11, 17}; and
- family (parental) involvement^{17, 19, 20}.

Community-based programs are an accepted way of reaching high risk populations²¹ and are important in the prevention and treatment of childhood obesity²², having large population reach. The UK Mind Exercise Nutrition Do it (UK MEND) program, is one such multi-component group-based childhood obesity program with evidence for effectiveness in a community setting that has been implemented, replicated and evaluated, showing:

- efficacy in weight and psychosocial outcomes^{23, 24};
- acceptability to parents²³;
- positive long term outcomes²⁵; and
- participation by those from disadvantaged and ethnic minority backgrounds²⁶.

Go4Fun[®] is an evidence-based child obesity treatment program adapted from the UK MEND program and has since been translated as a community-based program for the Australian context.



2. The Go4Fun® program

2.1 OVERVIEW OF GO4FUN®

Go4Fun® is an important component of the NSW Government's response to the prevention and treatment of childhood obesity. The program is an action within the *NSW Healthy Eating and Active Living Strategy: Prevention overweight and obesity 2013-2018* and will contribute to the NSW Premier's Priority to reduce overweight and obesity rates of children by 5% over ten years (by 2025).

Within NSW, Go4Fun® has an equity focus with prioritisation for delivery in socially disadvantaged communities.

The program is family focused and aimed at improving the health, fitness, self-esteem and confidence of overweight and obese children and their families. Families commonly self-refer to Go4Fun® or can be referred by health professionals.

Go4Fun® is free for eligible NSW families to participate in and includes a two-hour weekly session delivered over a ten week period in parallel with the school term.

Children are eligible for the program if they are:

- aged between 7 and 13 years (children are accepted at age 6.5 years);
- overweight or obese (\geq 85th body mass index (BMI) percentile for age and gender); and
- able to attend each session with a parent or carer.



2.2 PROGRAM ELEMENTS OF GO4FUN®

Go4Fun® is a multi-component obesity treatment program that has been designed specifically for children aged between 7-13 years who are above a healthy weight. The program is delivered in local community settings (such as leisure centres and youth clubs) over ten weeks and engages families in practical interactive sessions to support healthy lifestyle changes. The program incorporates games, activities and interactive sessions that focus on educating children about healthy eating, the importance of physical activity and positive behaviour change.

Go4Fun® comprises a two-hour weekly session which begins with one hour of theory covering nutrition and health behaviour change, attended by children, parents and carers and facilitated by the Theory Leader. In the second hour, the children participate in a fun, game-based physical activity session led by the Physical Activity Leader while the parents and carers attend a facilitated discussion on behaviour change concepts and skills with the Theory Leader.

The following provides an outline of the ten weekly program sessions:

Week	Theory session content	Parent only session	Physical activity session (for children)
1	Meet the Leaders, Healthy Growth Check 1* Introduction to the program	No	No
2	Fitter, Healthier, Happier	Goals and Rewards	Yes
3	Be a moving and grooving family	Goals and Rewards	Yes
4	Refined versus Unrefined	External Triggers	Yes
5	Fats and Sugars	Internal Triggers	Yes
6	How to be a label reading detective Supermarket Tour	No	No
7	Ready, Steady, Eat	Bullying	Yes
8	Survival Guide to Parties, Eating Out and other Tempting Occasions	Modelling & Sleep and Routines	Yes
9	Who wants to be a Healthionnaire?	Problem Solving	Yes
10	Healthy Growth Check 2** Graduation Ceremony	No	No
11	Group reward (either delivered as an additional session or as part of Week 10)	N/A	N/A

* *Healthy Growth Check 1 – pre-anthropometric measurements and pre-questionnaires which collect health behaviours and socio-demographic information*

** *Healthy Growth Check 2 – post-anthropometric measurements and post-questionnaires which collect health behaviours and feedback from participants*



Go4Fun® has been delivered in NSW at scale since

2011



The **once per week** delivery model (**10 sessions**) has been the standard mode of delivery since **October 2014**



Go4Fun® is delivered by **11 out of 15 LHDs** and will expand to **12 LHDs** in the 2016-17 financial year

2.3 PHASED STATE-WIDE DELIVERY OF GO4FUN®

Pilot program

Go4Fun® has been delivered in NSW since 2009 through a phased approach to piloting and implementation. The program was initially piloted within three former Area Health Services (Sydney South West Area Health Service, Greater Southern Area Health Service and Greater Western Area Health Service). In 2010, implementation was extended to an additional three Area Health Services (Northern Sydney Central Coast Area Health Service, North Coast Area Health Service and South Eastern Sydney Illawarra Area Health Service). In 2011, Go4Fun® was introduced into the remaining Local Health Districts (LHDs) and service targets were developed based on the prevalence of childhood overweight and obesity in each LHD and population density.

Once per week delivery model

Since the program was launched in 2009, the NSW Ministry of Health (MOH) has made continued investments to monitor, evaluate and improve the program. Go4Fun® was first delivered twice a week (20 sessions) and in 2012, a once per week (OPW) delivery model (10 sessions) was designed in order to increase access to the program and to increase program recruitment, retention, cost efficiency and sustainability. From July 2013 – March 2014, a cluster randomised controlled trial was conducted to compare the effectiveness of the OPW delivery model with the twice per week (TPW) delivery model. The study concluded the OPW delivery model achieved similar health and behavioural outcomes in comparison to the TPW delivery model. As a result, the OPW delivery model has been the standard mode of delivery across NSW since October 2014.

Local Health Districts and service targets

Go4Fun® is currently delivered by 11 out of 15 LHDs and this will expand to 12 LHDs in the 2016/2017 financial year. From July 2014, four rural LHD's discontinued Go4Fun® delivery due to the difficulty achieving sufficient numbers and local capacity to service the face-to-face delivery of the program in rural and remote communities.

Since the 2016/2017 financial year, service targets have been derived through consultation with LHDs around the total number of programs that they intend to deliver over the year. Consideration has been given to target numbers of participants per program, acknowledging the difficulty experienced in regional areas to recruit participants to the program.

2.4 GO4FUN® DELIVERY MODEL

Overview

Go4Fun® is managed by the NSW Office of Preventive Health (OPH) which has responsibility for state-level oversight of program delivery, state-wide advertising and communications, program monitoring and evaluation.

OPH works in partnership with health promotion services within LHDs who are responsible for the management and implementation of the program at a local level. The role of LHDs includes building and maintaining local partnerships and program promotion through local referral networks (i.e. schools, health professionals and community organisations). LHDs are funded by OPH to deliver the program in line with service volumes detailed in LHD service level agreements.

The Better Health Company (BHC) is the current centralised service provider and is funded to provide centralised state-wide program infrastructure and program delivery support. The role of BHC includes the provision of a centralised referral line, program resources, training for LHDs and data management systems.

BHC facilitates the collection of local level data from LHDs and provides OPH with regular reporting on the implementation. OPH routinely monitors the reach and outcomes of Go4Fun®, identifies evaluation needs and leads all aspects of program evaluation.



The following table demonstrates the Go4Fun® service delivery model and the roles and responsibilities of OPH, BHC at a state-level, and LHDs at a local level.

	NSW Office of Preventive Health (OPH)	Better Health Company (BHC)	Local Health District (LHD) Program Managers
Program management	<ul style="list-style-type: none"> State-level program management. Collaboration with BHC and LHDs for ongoing program development. 	<ul style="list-style-type: none"> Management of the 1800 phone enquiry and referral service. Collaboration with OPH and LHD's for ongoing program development. 	<ul style="list-style-type: none"> Local program management. Contribution to ongoing program development.
Training	<ul style="list-style-type: none"> Contribution to the development and review of training. 	<ul style="list-style-type: none"> Delivery of Program Manager and Leader training. Provision of professional development initiatives. Review and revision of training as required. 	<ul style="list-style-type: none"> Recruitment of Physical Activity and Theory leaders. Attendance at Program Manager training.
Marketing and communication	<ul style="list-style-type: none"> State-wide marketing and communications. Management of Go4Fun® website and Facebook page. 	<ul style="list-style-type: none"> Contribution to state-wide and local marketing and communications. 	<ul style="list-style-type: none"> Local marketing and promotion. Contribution to the Go4Fun® website and Facebook page.
Monitoring and evaluation	<ul style="list-style-type: none"> State-wide program monitoring. Development of evaluation requirements. 	<ul style="list-style-type: none"> Provision of data collection systems for monitoring and evaluation. Analysis of data and provision of monitoring reports. Participation in program evaluation activities. 	<ul style="list-style-type: none"> Program monitoring and data entry at the local level. Provision of individual reports to program participants.
Quality and risk management	<ul style="list-style-type: none"> Support implementation of the Quality Assurance (QA) framework (see below) and site visits. State-wide risk management. 	<ul style="list-style-type: none"> Lead implementation of the QA framework and site visits. Participate in state-wide risk management. 	<ul style="list-style-type: none"> Local level risk management. Local level QA.
Program delivery	<ul style="list-style-type: none"> Oversight of program delivery. Provision of support to LHDs to deliver the program. Monitoring of state and national policy issues to inform program development and implementation. 	<ul style="list-style-type: none"> General program support for LHD staff and OPH. Development and distribution of program resources (see below). 	<ul style="list-style-type: none"> Build and maintain local partnerships and referral networks. Manage contractual agreements for program delivery. Manage participant recruitment and local level program delivery.

* BHC initially had a role in managing state-wide marketing and communications and more recently (since 2014-2015) the role has transitioned to OPH.

Leader training

Go4Fun® sessions are facilitated by a Theory Leader and a Physical Activity Leader who have attended Go4Fun® leader training. Leaders are qualified health professionals such as dietitians, nutritionists, exercise physiologists, physiotherapists, fitness leaders, community nurses and health promotion officers.

Go4Fun® leader training was comprised of two days of theory training and one day of physical activity training from 2009 to mid-2011. However, following feedback during this period that it was difficult for leaders to attend three full days of training, the training was restructured to include an online component, one theory day and one physical activity day. The online component covers the core concepts and theory of the program and the face to face days focus on practical delivery and facilitation skills. Theory and Physical Activity leaders are recommended to attend the full two day training course, to ensure a thorough understanding of the program components and approach.

Professional development

Historically, annual face-to-face workshops were delivered by BHC for program managers and program leaders and provided opportunities for staff to attend relevant professional development activities and share examples of best practice. More recently (since early 2014) professional development has been delivered via webinars. Topics for professional development webinars are based upon survey feedback from Program Managers who highlight areas where there is interest or further support required. Participation in professional development is optional but encouraged and LHDs determine the number and allocation of program delegates.

Go4Fun® Best Practice Framework

The Go4Fun® Best Practice Framework was developed by OPH in partnership with BHC to support the ongoing delivery of Go4Fun® across NSW and to inform program and service improvements. It provides an opportunity for peer and self-assessment across five domain areas:

1. Facilitation skills
2. Content knowledge
3. Organisation and preparation
4. Safety
5. Personal qualities

As part of the implementation of the Best Practice Framework, LHDs are offered site visits and following the visit OPH and BHC provide local and state-level support and recommendations to improve the quality of service delivery.

Go4Fun® Best Practice Framework

Peer and self-assessment
across **five domain areas**:



Facilitation skills



Content knowledge



Organisation and
preparation



Safety



Personal qualities

Program resources

An important component of Go4Fun® program delivery is the standardised set of resources. Each program pack provided to LHDs includes leader manuals, teaching aids including posters, physical activity resources, anthropometric measurement kits and participant packs, including family handouts. Within each participant pack, there are also a number of branded participant resources such as participant t-shirts, drink bottles and back packs.

Prior to the beginning of each school term, LHDs are able to order the required number of participant resources for the following term.

1800 phone number

In 2012 a free call centralised 1800 registration line was established to facilitate the provision of Go4Fun® registrations. The centralised number is managed by BHC and LHDs are alerted when a family is registered to a local program. The script used at registration is continually reviewed and refined in consultation with OPH and the LHDs, to ensure appropriate information is gathered from and communicated to families.



Theory leader manual



Family handouts



Participant packs



Top up items



Go4Fun
Healthy • Active • Happy • Kids

Go4Fun
powered by
betterhealthcompany

3. Evaluation of Go4Fun®

3.1 EVALUATION AND RESEARCH ACTIVITIES TO DATE

A number of evaluation and research activities have been undertaken by OPH in collaboration with BHC and research partners since the inception and implementation of Go4Fun® in NSW. Importantly these evaluation and research activities have made a significant contribution to the evidence base underpinning the provision of community-based obesity prevention and treatment programs. These are detailed below:

→ A process evaluation was undertaken between 2009-2012 and described the scaling-up of Go4Fun® and the characteristics of the population it reached and retained and the characteristics of the children who completed (and did not complete) the program²⁷. The evaluation found that Go4Fun® successfully reached the targeted population of overweight/obese children and is a rare example of an up-scaled translational program. Specifically the evaluation found that between 2009 and 2012, a total of 2,499 children participated in Go4Fun®.

Results found that:

- children were mainly from low-middle socio-economic status communities (76.5%);
- resided in major cities (63.3%);
- 5.7% were from Aboriginal communities; and
- at baseline, 96.5% of children were overweight or obese; 94.5% had a waist-to-height ratio ≥ 0.5 ; and had an average BMI z-score of 2.07.

More than half of participants (57.9%) completed at least 75% of sessions. Amongst completers, girls, non-Aboriginal children and children residing in less socially disadvantaged areas were significantly more likely to complete the program.

Process evaluation findings (2009-2012)²⁷:



76.5%

of participants were from low-middle socio-economic areas



63.3%

of participants lived in major cities



5.7%

of participants were Aboriginal

→ An impact evaluation was also undertaken in 2009-2012 and demonstrated that Go4Fun® was effective at supporting changes to participants' weight and weight related behaviours²⁸. The evaluation found:

- Beneficial improvements for children's' body mass index (-0.65kg/m²), BMI z score (-0.11), waist circumference (-1.8cm), and waist-to-height ratio (-0.02); self-esteem (+2.7units), physical activity (+1.2 days/week), screen time (-4.8hours/week), and unhealthy foods index (-2.4units) (all p < 0.001).
- Children who completed ≥75 % of the program were more likely to have beneficial changes in BMI, self-esteem and diet (sugar sweetened beverages, lollies/chocolate, hot chips and takeaways) compared with children completing <75% of the program.

→ A cluster randomised control trial was undertaken during 2013 (Terms 3 and 4) and in 2014 (Term 1) with the primary aim of comparing the health, behavioural and psychosocial outcomes at program completion and 6-months after program completion for children attending the once a week Go4Fun® program compared to those attending the twice a week Go4Fun® program²⁹. The study found that there were no significant differences between the once a week program compared to the twice a week program in changes for BMI z-score, and other health and behavioural measures. Apart from one measure of physical activity, that of undertaking physical activity outside of the Go4Fun® program, with those attending the once a week program having a greater increase in such activity at the completion of the program than those attending the twice a week program format.

These evaluation and research activities have contributed to the ongoing refinement and service improvement of Go4Fun®.

3.2 PURPOSE OF EVALUATION

The primary purpose of evaluation is to:

- describe the process of implementing Go4Fun®;
- assess the reach of Go4Fun® and
- assess the impact of Go4Fun® on participants.

Monitoring is also used to inform quality improvements and for performance monitoring.

Impact evaluation findings (2009-2012)²⁸:

On average participants:



decreased BMI by
0.65 units



decreased waist circumference by
1.8cm



increased physical activity by
1.2 hours/week



decreased screen time by
4.8 hours/week



decreased intake of
unhealthy foods

Randomised control trial findings (2013-2014)²⁹:

No significant differences in participant outcomes between Go4Fun® delivered once a week compared to twice per week.

3.3 IMPLEMENTATION OF GO4FUN®

As detailed previously, the implementation of Go4Fun® has included the scaling-up of the program at a state-wide level (2009-2011); the establishment of a performance monitoring framework³⁰; dedicated funding to LHDs to implement the program and ensure that it met the needs of the local community; and ongoing implementation support provided by BHC.

Crucial to the delivery model is the employment by LHDs of local delivery staff and their attendance at training provided by BHC.

From July 2011-June 2015, 37 leader training courses were delivered by BHC with 567 participants taking part in the training. To support ongoing learning, in addition, two full day professional development workshops were held in 2012 and 2013 and 4 webinars were held in the period 2014-2015. The following topics were covered during this period:

- Working with the parents/carers on Go4Fun®: learning styles and practical tips on how to engage adult learners
- Recruitment and promotion of Go4Fun®
- Engagement and retention of families in Go4Fun®
- Motivational interviewing: a brief introduction

To support quality delivery of the Go4Fun® Best Practice Framework a total of 6 LHD site visits were undertaken during the implementation of the framework (January 2014 – June 2015) jointly by BHC and OPH.



Feedback from leader training course participants

- **99.5%** of participants detailed that the trainers' delivery of information was good or very good.
- **99.4%** of participants outlined that the information in the training was easy or very easy to understand.
- After participating in the training **95.1%** of participants rated their confidence in running a Go4Fun® program at seven or higher (from a possible scale of 1 to 10 with ten being most confident).

"I feel like I have learnt a lot and feel confident being a leader on the Go4Fun® program. Making us do practical applications and teach the rest of the group was very beneficial."

"Practical approach was fantastic - very engaging. I learnt a lot!"

"Facilitator was excellent at retaining attention & very good at getting key messages across."

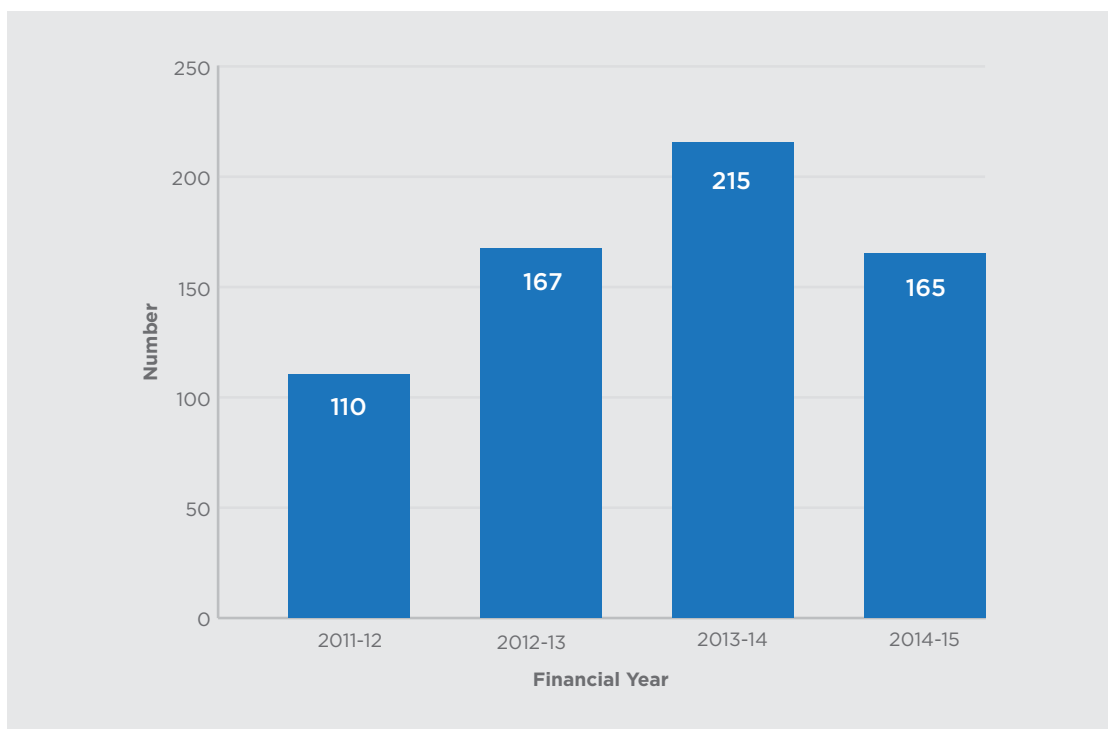
"Training had a nice mix of theory, practical and practice. Liked that things were always linked back to and simplified to understandable concept."

3.4 REACH OF GO4FUN®: PROGRAM DELIVERY

3.4.1 Number of programs delivered over time

From July 2011-June 2015, 657 Go4Fun® programs were delivered across NSW; 16.7% of these programs were delivered in the 2011/2012 financial year, 25.4% were delivered in 2012/2013, 32.7% were delivered in 2013/2014 and 25.1% were delivered in 2014/2015 (Figure 2). An average of 11 participants were recruited to each Go4Fun® program.

Figure 2: Number of programs delivered by year, July 2011-June 2015



3.4.2 Location and socio-economic status of Go4Fun® programs

Two thirds of Go4Fun® programs were delivered in major cities (65.6%); with a further 33.6% delivered in inner and outer regional locations, and a smaller proportion (0.8%) delivered in remote and very remote locations (Figure 3). A substantial proportion of Go4Fun® programs were held in socio-economically disadvantaged communities, with 74.0% of Go4Fun® programs delivered in locations classified in the 3rd, 4th and 5th socio-economic quintiles (most disadvantaged) (Figure 4).

When Go4Fun® program delivery is compared by rurality approximately half (45.7%) of programs were delivered within metropolitan LHDs, 37.1% were delivered within regional LHDs and 17.2% were delivered in rural LHDs (Table 1).

As previously highlighted, from July 2011, Go4Fun® was implemented across the state within all 15 LHDs and from July 2014, four rural LHD's discontinued Go4Fun® delivery. From July 2016 one rural LHD (Southern NSW) will recommence delivery of Go4Fun®.

Local targets for this period were based on population density of children in the eligible age range and the prevalence of childhood overweight and obesity in each LHD (based on data from the NSW Child Health Survey, 2007-2008). In terms of delivery against these targets, the metropolitan areas that have a high population density and prevalence of childhood obesity were funded to deliver the most programs within this period (Hunter New England, Western Sydney and South Western Sydney).

Figure 3: Geographical location of Go4Fun® programs classified by Accessibility Remoteness Index of Australia (ARIA)³¹, July 2011-June 2015

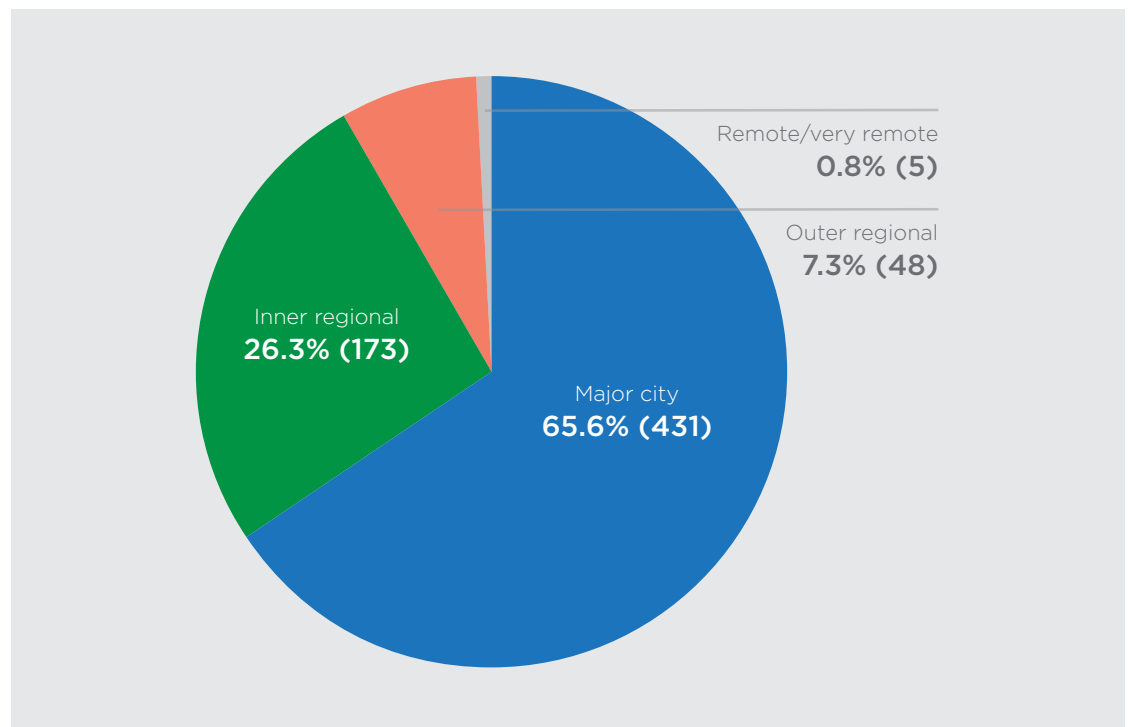


Figure 4: Socio-economic status of the location of Go4Fun® programs classified by Socio-economic Index For Areas (SEIFA)³² classification, July 2011-June 2015

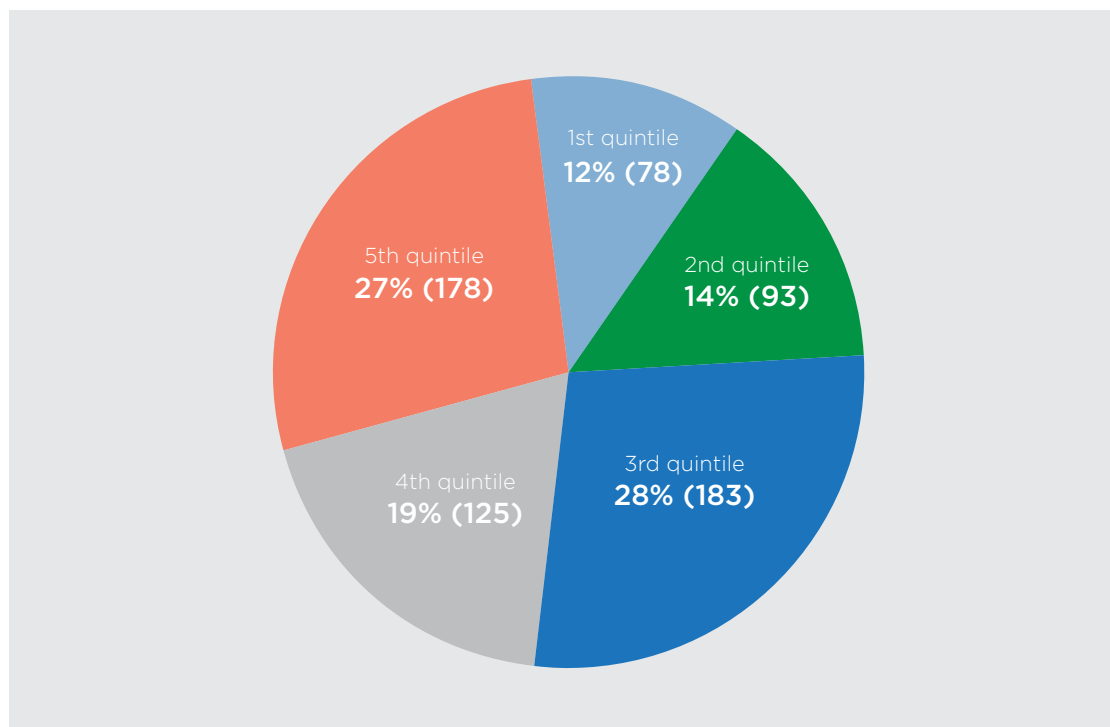


Table 1: Delivery of Go4Fun® programs by Local Health District classification, July 2011-June 2015

Local Health District classified by location	n	%
Metropolitan LHDs Sydney, South Western Sydney, South Eastern Sydney, Western Sydney, Northern Sydney	300	45.7
Regional LHDs Illawarra Shoalhaven, Hunter New England, Nepean Blue Mountains, Central Coast	244	37.1
Rural LHDs Northern NSW, Mid North Coast, Southern NSW, Murrumbidgee, Western NSW, Far West	113	17.2
	657	

Definitions



Recruitees

Children and their parent(s) or carer(s) who have registered their interest to attend Go4Fun®



Enrollees

Children who are eligible to attend Go4Fun® and who have attended at least one session.

Eligibility is based on the child being:

- Aged between 7 to 13 years (children are accepted if aged 6.5 years);
- Overweight or obese (\geq 85th BMI percentile for age and gender);
- Able to attend each session with a parent or carer.



Completers

Children who have completed the Go4Fun® program, is defined as:

- Attending a minimum of three out of ten sessions for those participants registered in the once a week program.
- Attending a minimum of six out of twenty sessions for those participants registered in the twice a week program.

3.5 REACH OF GO4FUN®: PROFILE OF PARTICIPANTS

3.5.1 Profile of recruitees

For the period July 2011-June 2015 7,313 participants and their families were recruited to participate in Go4Fun® (Figure 5); further:

- 7,047 (96.4%) participants confirmed their intent to participate prior to attending their first session;
- 6,288 (85.9%) enrolled in Go4Fun® having attended at least one Go4Fun® session and satisfied the age and weight eligibility criteria (enrollees); and
- 5,925 (81.0%) completed the program as defined by having completed 3 out of 10 sessions for the once a week program and 6 out of 20 sessions for the twice a week program (completers).

The greatest number of recruitees occurred in 2013/2014 (32.5%), followed by 2014/2015 (28.2%) (Figure 6). It is also apparent that Terms 1 and 4 tend to have higher recruitees, which is likely due to it being easier to recruit participants in the warmer months.



Figure 5: Flow chart of Go4Fun® participants, July 2011-June 2015

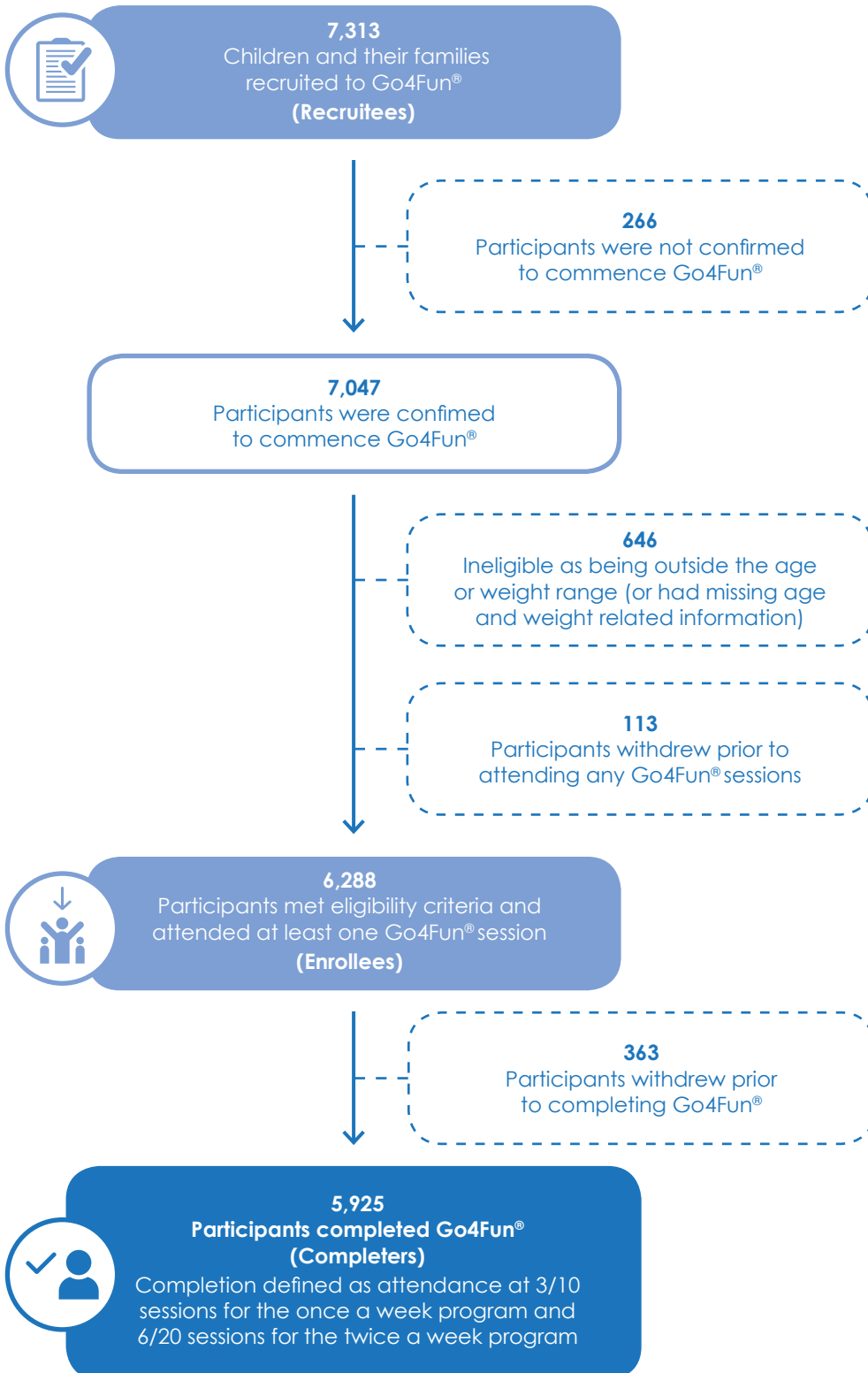
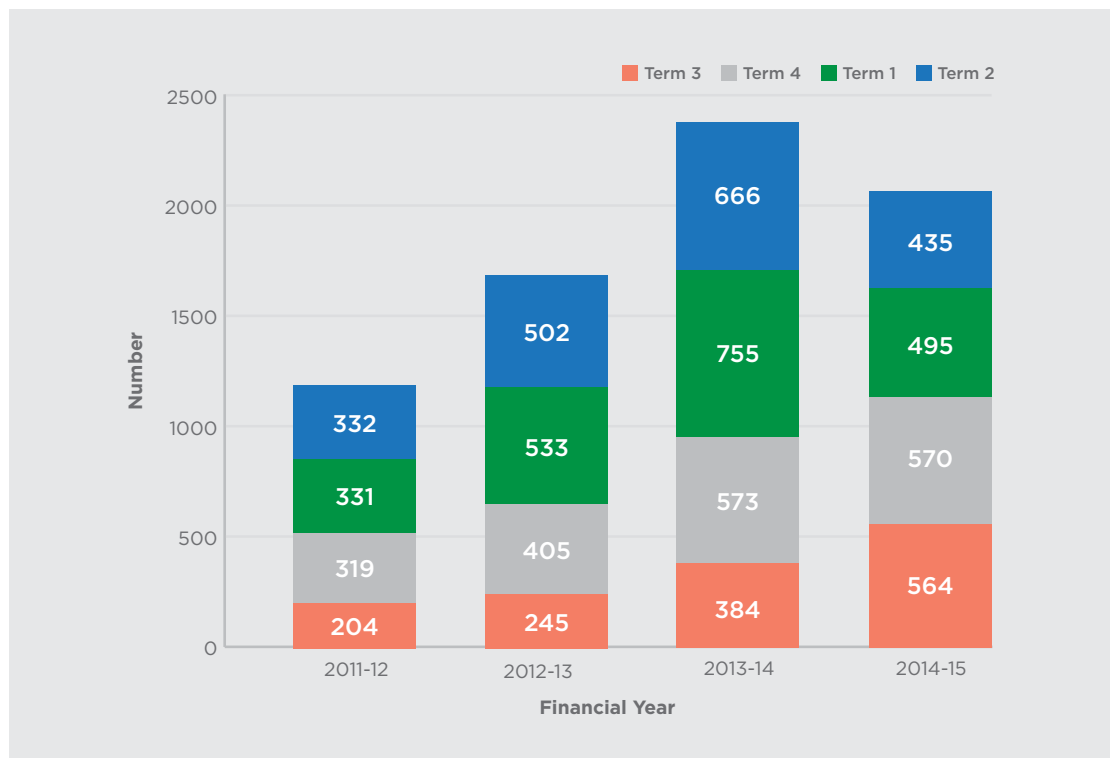




Figure 6: Number of Go4Fun® recruitees by term and year, July 2011-June 2015



The majority of Go4Fun® recruitees were from major cities (4,899; 67.8%); with a further 31.2% (2,255) from inner and outer regional locations, and a smaller proportion (75; 1.0%) from remote and very remote locations. A substantial proportion of recruited participants were classified as being from socio-economically disadvantaged communities, with 67.7% (4,906) of the Go4Fun® recruitees being from locations classified in the 3rd, 4th and 5th socio-economic quintiles (most disadvantaged). In line with the number of programs delivered by each LHD (Table 1), more participants were recruited by metropolitan LHDs (3,563; 48.7%) when compared to regional LHDs and rural LHDs (2,632; 36.0% and 1027; 14.0% respectively) (Table 2).

Table 2: Go4Fun® recruitees by Local Health District classification, July 2011-June 2015

Local Health District	n	%
Metropolitan LHDs Sydney, South Western Sydney, South Eastern Sydney, Western Sydney, Northern Sydney	3563	48.7
Regional LHDs Illawarra Shoalhaven, Hunter New England, Nepean Blue Mountains, Central Coast	2632	36.0
Rural LHDs Northern NSW, Mid North Coast, Southern NSW, Murrumbidgee, Western NSW, Far West	1027	14.0
Other / Not classified	91	1.2
	7313	

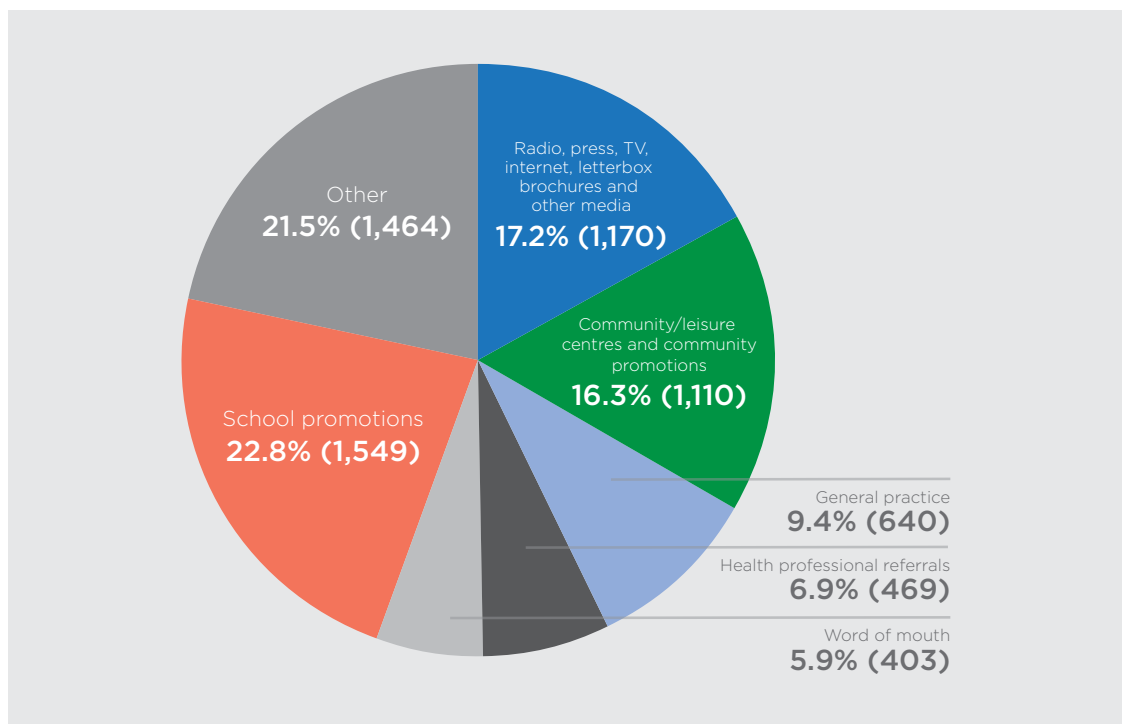
3.5.2 Program referral / recruitment sources for recruitees

The 1800 Go4Fun® registration line has been well utilised by families and referrers since its inception in 2012, with 4,186 inbound calls having been received. To support online and phone registrations, a number of state-wide and local marketing activities and local clinical engagement strategies have been used to recruit eligible participants to Go4Fun®.

For the period July 2011-June 2015 the most common referral sources detailed by those recruited to Go4Fun® included (Figure 7):

- promotions undertaken through schools (22.8%);
- media promotions including press, radio, television and internet advertising (17.2%);
- community promotions and promotions undertaken at community and leisure centres (16.3%);
- and health professional referrals and promotion within general practice (16.3%)

Figure 7: Referral / recruitment sources for recruitees, July 2011-June 2015



There have been changes over time in the most common sources of promotion and referral to Go4Fun® with local newspapers featuring prominently in 2011/2012 and 2012/2013; and general practice being a common referral source in 2012/2013. Schools have been a substantial source of referral over the four years and the internet as a referral source has been steadily increasing; whilst referrals from previous Go4Fun® participants (word of mouth) has remained fairly consistent across the four years (Table 3).

There were also some significant differences between recruitment and referral sources based on the location and socio-economic level of disadvantage of recruits (Table 4):

- Recruits from major cities were less likely to cite community promotions as their source of recruitment than participants from other locations.
- Recruits from more disadvantaged communities were more likely to cite community promotions as their source of recruitment.
- Recruits from more advantaged communities were more likely to cite local newspapers as their source of referral.

Table 3: Referral / recruitment sources for recruits by year, July 2011-June 2015

	2011/12		2012/13		2013/14		2014/15	
	n	%	n	%	n	%	n	%
Local newspapers	244	25.5	202	14.4	107	4.5	46	2.2
Radio	19	2.0	22	1.6				
Other media	12	1.3	106	7.6	58	2.4	18	0.9
Community and Leisure centres	27	2.8	45	3.2	107	4.5	118	5.7
Community promotions	59	6.2	117	8.3	386	16.2	251	12.2
General Practice	73	7.6	177	12.6	219	9.2	171	8.3
Health Professionals	95	9.9	153	10.9	129	5.4	92	4.4
Internet	12	1.3	39	2.8	126	5.3	159	7.7
Go4Fun® participant	60	6.3	118	8.4	114	4.8	111	5.4
School	306	32.0	380	27.0	461	19.4	317	15.4
Other	50	5.2	47	3.3	671	28.2	781	37.8
TOTAL	957		1406		2378		2064	

Notes:

Chi-square tests (linear by linear association) of significance undertaken comparing proportion of referral sources between a) 2011/2012 and 2012/2013; p-value = 0.01 and b) 2013/2014 and 2014/2015; p-value <0.0001.

The questionnaire used to collect source of referral was amended between the two periods 2011/2012 - 2012/2013 and 2013/2014 2014/2015.

Responses are based on participants' first response (as multiple referral sources responses were allowed).

Table 4: Referral / recruitment sources for recruits by region³¹ and socio-economic status³², July 2011-June 2015

	Major cities		Other [#]		1st and 2nd quintile of advantage (most advantaged)		3rd, 4th & 5th quintile of advantage (most disadvantaged)	
	n	%	n	%	n	%	n	%
Local newspapers	295	18.4	144	20.1	167	22.3	272	17.3
Radio	19	1.2	21	2.9	8	1.1	32	2.0
Other media	114	7.1	43	6.0	59	7.9	98	6.2
Community and Leisure centres	44	2.7	28	3.9	25	3.3	47	3.0
Community promotions	84	5.2	87	12.1	44	5.9	127	8.1
General Practice	169	10.5	75	10.4	74	9.9	171	10.9
Health Professionals	178	11.1	65	9.1	75	10.0	168	10.7
Internet	33	2.1	15	2.1	21	2.8	27	1.7
Go4Fun [®] participant	136	8.5	40	5.6	66	8.8	110	7.0
School	482	30.1	193	26.9	193	25.8	482	30.7
Other	67	4.2	28	3.9	25	3.3	70	4.5
TOTAL	1602		718		749		1572	

Notes:

Chi-square tests (linear by linear association) of significance undertaken comparing proportion of referral sources between a) major cities and other locations; p-value <0.0001, and b) 1st and 2nd quintiles and 3rd, 4th and 5th quintiles of advantage; p-value=0.001.

Responses are based on participants' first response (as multiple referral sources responses were allowed).

[#] Other refers to inner and outer regional, and remote and very remote locations.

3.5.3 Profile of enrollees

Approximately 86% (6,288) of participants recruited to Go4Fun® become enrollees of the program, having attended at least one Go4Fun® session and being assessed as being eligible to participate (i.e. comply with age and weight related eligibility criteria) (Figure 5).

In relation to the socio-demographic profile of enrollees, there were fairly equal proportions of genders and age groups; with the average age of enrollees being 9.9 years (Table 5). The majority of enrollees were in primary schools (88.5%), spoke English at home (66.7%) and did not identify as Aboriginal or Torres Strait Islander (92.3% and 90.3%). Further, the majority of Go4Fun® enrollees were from major cities (70.7%), with a further 28.5% from inner and outer regional locations. A substantial proportion of the enrolled participants were from socio-economically disadvantaged communities, with 66.6% of enrollees being from locations classified in the 3rd, 4th and 5th socio-economic quintiles (most disadvantaged) (Table 5).

Table 5: Socio-demographic profile of Go4Fun® enrollees, July 2011- June 2015

	July 2011-June 2015 N=6,288	
	n	%
Gender		
Female	3244	51.6
Male	3044	48.4
Age categories		
Ages 6.5-9 years	3207	51.0
Ages 10-14 years	3081	49.0
School years		
Years K-2	1077	20.0
Years 3-6	3681	68.5
Years 7-9	616	11.5
Aboriginal status*		
Non-Aboriginal / Torres Strait Islander	2070	92.3
Aboriginal / Torres Strait Islander	172	7.7
Non-Aboriginal / Torres Strait Islander	3127	90.3
Aboriginal / Torres Strait Islander	334	9.7
Language#		
English	2294	66.7
Other	1144	33.3
Region³¹		
Major city	4393	70.7
Inner regional	1471	23.7
Outer regional	299	4.8
Remote / very remote	54	0.9
Socio-economic status³²		
1st quintile - most advantaged	896	14.4
2nd quintile	1187	19.1
3rd quintile	1392	22.4
4th quintile	1115	17.9
5th quintile - most disadvantaged	1636	26.3

Notes:

*Term 3 2011-Term 2 2013 Aboriginal status was collected using the question "Please circle the appropriate numbered box to indicate your child's ethnic background" and Term 3 2013-Term 2 2015 Aboriginal status was collected using the question "Is the child of Aboriginal or Torres Strait Islander origin?"

Information on language spoken at home was not available in 2011/2012 and 2012/2013

3.5.4 Profile of completers

Approximately 80% (5,925) of participants recruited to Go4Fun® completed the program (Figure 5). The socio-demographic profile of Go4Fun® completers remained somewhat consistent over the last four years (Table 6).

The average age of participants who were eligible and completed Go4Fun® was 9.9 years (range 6.52 years to 13.99 years).

Table 6: Socio-demographic profile of Go4Fun® completers by year, July 2011-June 2015

	2011/2012 N=855		2012/2013 N=1,314		2013/2014 N=1,954		2014/2015 N=1,802		ALL N=5,925		p-value
	n	%	n	%	n	%	n	%	n	%	
Gender											
Female	500	58.5	700	53.3	989	50.6	886	49.2	3075	51.9	<0.0001
Male	355	41.5	614	46.7	965	49.4	916	50.8	2850	48.1	
Age categories											
Ages 6.5-9 years	398	46.5	681	51.8	1026	52.5	939	52.1	3044	51.4	0.023
Ages 10-13 years	457	53.5	633	48.2	928	47.5	863	47.9	2881	48.6	
School years											
Primary school years	655	87.2	955	89.1	1494	87.5	1408	91.3	4512	88.9	0.010
High school years	96	12.8	117	10.9	214	12.5	135	8.7	562	11.1	
Aboriginal status*											
Non-Aboriginal / Torres Strait Islander	734	91.1	1179	93.8	-	-	-	-	-	-	0.02
Aboriginal / Torres Strait Islander	72	8.9	78	6.2	-	-	-	-	-	-	
Non-Aboriginal / Torres Strait Islander	-	-	-	-	1611	88.0	1416	92.9	3027	90.2	<0.0001
Aboriginal / Torres Strait Islander	-	-	-	-	219	12.0	109	7.1	328	9.8	
Language#											
English	-	-	-	-	1262	69.6	978	64.4	2240	67.2	<0.0001
Other	-	-	-	-	219	30.4	541	35.6	1092	32.8	
Region³¹											
Major city	564	67.5	903	69.7	1355	69.9	1300	72.5	4122	70.3	0.009
Other	271	32.5	392	30.3	584	30.1	492	27.5	1739	29.7	
Socio-economic status³²											
1st & 2nd quintile - most advantaged	237	28.4	470	36.3	687	35.4	584	32.5	1978	33.7	NS
3rd, 4th & 5th quintile - most disadvantaged	598	71.6	826	63.7	1255	64.6	1212	67.5	3891	66.3	

Notes:

*2011-2013 Aboriginal status was collected using the question "Please circle the appropriate numbered box to indicate your child's ethnic background"; and 2013-2015 Aboriginal status was collected using the question "Is the child of Aboriginal or Torres Strait Islander origin?".

Information on language spoken at home was not available in 2011/2012 and 2012/2013.

Chi-square tests (linear-by-linear association and Pearson chi-square) of significance undertaken, comparing proportions over the four time periods in the case of chi-square (linear-by-linear association) tests and comparing two time periods in the case of Pearson chi-square tests in the case of Aboriginal status and language.

NS not significant.

Missing data varies for each variable.

3.5.5 Session attendance

For Go4Fun® participants who completed the once a week program (2,030), the average number of sessions attended was 7 out of 10 sessions (70.0%) and for participants who completed the twice a week program (3,895), the average number of sessions attended was 12 out of 20 sessions (60%).



3.5.6 Withdrawal and completion

As noted previously, some Go4Fun® participants do not complete the program and withdrew:

- prior to confirming their registration (266; 3.6%);
- prior to attending any sessions (113; 1.5%); or
- prior to completing the program (363; 5.0%).

There were some significant differences between those who withdrew from Go4Fun® and those who completed the program. Participants were more likely to withdraw from the program in the period 2011-2013 than in the most recent two years (Table 7); a result that may be explained by the change in the Go4Fun® delivery model from twice per week to once per week, as participants who were offered Go4Fun® twice a week were more likely to withdraw prior to completion (Table 8).

Table 7: Go4Fun® completion and withdrawal by year, July 2011-June 2015

	2011/12 N=1,041		2012/13 N=1,569		2013/14 N=2,121		2014/15 N=1,936		ALL N=6667		p-value
	n	%	n	%	n	%	n	%	n	%	
Completed Go4Fun®	856	82.2	1313	83.7	1954	92.1	1802	93.1	5925	88.9	<0.0001
Withdrew from Go4Fun®	185	17.8	256	16.3	167	7.9	134	6.9	742	11.1	

Notes:

Chi-square tests (linear by linear) of significance undertaken comparing proportion of participants who completed Go4Fun® or withdrew from Go4Fun® over the four year period.

Table 8: Go4Fun® completion and withdrawal by type of program, July 2011-June 2015

	Once per week N=2,192		Twice per week N=4,475		ALL N=6,667		p-value
	n	%	n	%	n	%	
Completed Go4Fun®	2030	92.6	3895	87.0	5925	88.9	<0.0001
Withdrew from Go4Fun®	162	7.4	580	13.0	742	11.1	

Notes:

Chi-square tests (pearson chi-square) of significance undertaken comparing proportion of participants who completed Go4Fun® or withdrew from Go4Fun® based on their attendance at either the once or twice per week program.

There were also some significant differences based on the socio-demographic profile of those who completed and those who withdrew from Go4Fun® as summarised below:

- Older participants aged between 10-13 years were more likely to withdraw from Go4Fun® than younger participants (12.6% compared to 9.3%; p-value <0.0001).
- Aboriginal participants recruited to Go4Fun® (for the period 2011-2013) were more likely to withdraw than non-Aboriginal participants (13.8% compared to 8.3%; p-value=0.013).
- Participants who spoke a language other than English were more likely to withdraw from Go4Fun® (5.0% compared to 2.6%; p-value<0.0001).
- Participants in regional and remote locations were more likely to withdraw than those from major cities (13.9% compared to 9.9%; p-value<0.0001).
- Participants in the lowest three quintiles of disadvantage (most disadvantaged) were also more likely to withdraw from Go4Fun® than more advantaged participants (12.2% compared to 8.8%; p-value<0.0001).

Participants more likely to withdraw:



Older participants aged between 10-13 years



Aboriginal participants



Non English speaking participants



Participants in regional and remote locations



Participants in the lowest three quintiles of disadvantage

On average participants:



Reduced BMI by
0.6 BMI units



decreased waist
circumference by
1.6cm



increased daily serves by
0.3 fruit
0.6 vegetables



increased physical activity by
3.5 hours/week



decreased sedentary behaviour by
4.3 hours/week



improved cardiovascular fitness, with a
decrease in recovery heart rate by
6.0 bpm



increased self-esteem by
2.5 units

3.6 IMPACT OF GO4FUN®: CHANGES FOR PARTICIPANTS AND COMPLETERS

3.6.1 Anthropometric and behavioural changes for completers

Go4Fun® participants have their anthropometric measurements recorded at the commencement of the first session and again at the completion of the program. Similarly information regarding their physical activity behaviours, nutrition-related behaviours and psycho-social information is collected at the beginning and end of the program. For participants who completed Go4Fun®, the following significant improvements were observed (Table 9):

- **Improvements in weight and body composition:** an average weight loss of 400g, reduction in 0.6 BMI units, and reduction of 1.6cm in waist circumference.
- **Improvements in nutrition-related behaviours:** for the period 2011-2013 there was an increase of 5.8 units in participants nutrition score; an increase of 0.3 daily serves of fruit and 0.6 daily serves of vegetables and a decrease of 0.2 daily serves of sweetened drinks. The data is presented for this time period due to a change in the questionnaires used for collecting the data in 2013.
- **Improvements in physical activity related behaviours:** increases of 3.5 hours of physical activity per week and a decrease of 4.3 hours per week in sedentary behaviours for participants who completed Go4Fun® during 2011-2013; and an increase of 3.6 hours per week of physical activity and a decrease of 2.9 hours per week for participants who completed Go4Fun® during 2013-2015. The data is presented for two time periods due to a change to the questionnaires used for collecting the data in 2013. The difference in the magnitude of these improvements is likely to be due to the change in questionnaires from 2013.
- **Improvements in cardiovascular fitness:** as measured by heart rate recovery, with a decrease in 6.0 beats per minute (bpm) at the completion of Go4Fun®.
- **Improvements in a participant's self-esteem:** were also evident at the completion of Go4Fun® with an increase of 2.5 units.

There were also corresponding significant increases in the proportion of participants (Table 10 and Figure 8) meeting the recommended serves of fruit per day; serves of vegetables per day; meeting the physical activity recommendations per day; and who had a waist to height ratio of less than 0.5 at the completion of Go4Fun®.

Table 9: Anthropometric and behavioural changes for Go4Fun® completers, July 2011-June 2015

	N	Pre Mean	Post Mean	Change Mean	p-value
Anthropometrics					
Weight (kg)	3846	53.3	52.9	-0.4	<0.0001
BMI (kg/m ²)	3844	25.6	25.0	-0.6	<0.0001
BMI z score [∞]	3845	2.0	1.9	-0.06	NS
Waist circumference (cm)	3814	83.9	82.2	-1.6	<0.0001
Waist to Height Ratio	3813	0.6	0.06	-0.02	<0.0001
Nutrition related behaviours[^]					
Nutrition score	2827	14.8	20.6	+5.8	<0.0001
Fruit daily (serves)	1819	1.7	1.9	+0.3	<0.0001
Vegetables daily (serves)	1811	1.4	2.0	+0.6	<0.0001
Sweetened drinks daily (serves)	1731	0.5	0.3	-0.2	<0.0001
Physical activity related behaviours[#]					
Physical activity A (total hours per week)	1351	9.6	13.1	+3.5	<0.0001
Sedentary behaviours A (total hours per week)	1171	12.6	8.3	-4.3	<0.0001
Physical activity B (hours per week)	1289	8.8	12.5	+3.7	<0.0001
Sedentary behaviours B (hours per week)	1580	20.5	17.6	-2.9	<0.0001
Other					
Heart rate (bpm) [¥]	3791	110.2	104.2	-6.0	<0.0001
Self-esteem (units) [£]	2856	19.9	22.2	+2.5	<0.0001

Notes:

Pre data is collected prior at week 1 and post data is collected at week 10. NS not significant.

[∞] BMI z scores – have been calculated with reference to the Centres for Disease Control and Prevention BMI for age³³.

[^] Nutrition score – For the period Term 3 2011 – Term 2 2013; 14 questions providing an indication of dietary habits and patterns are asked, with possible responses including rarely, few times a month, a few times a week, most days of the week and everyday. An unhealthy nutrition score is derived; with higher scores indicating a higher frequency of consuming unhealthy foods.

Fruit and vegetable consumption – For the period Term 3 2013 – Term 2 2015, fruit and vegetable consumption is collected by asking how many serves of fruit and vegetables the child consumes each day.

Sweetened drinks – For the period Term 3 2013 – Term 2 2015, the consumption of sweetened drinks is collected by asking how many serves of sweetened drinks the child consumes each day.

[#] Physical activity A – For the period Term 3 2011 – Term 2 2013 physical activity levels are collected with the use of six questions that asks on average how much time does the child spend doing a range of activities that last more than 30 minutes per week (sessions)

[#] Sedentary activity A – For the period Term 3 2011 – Term 3 2013 sedentary activity levels are collected with the use of one question regarding how many hours per week does the child watch TV, DVDs, videos, play on the computer or video games.

[#] Physical activity B – For the period Term 3 2013 – Term 2 2015 physical activity levels are collected with the use of eight questions that asks how many hours and minutes does the child spend doing a range of activities during the week and on weekends.

[#] Sedentary activity B – For the period Term 3 2013 – Term 3 2015 sedentary activity levels are collected with the use of one question regarding how many hours during the week and on the weekend does the child watch TV, DVDs, videos, play on the computer or video games.

[¥] Heart rate – as a measure of cardiovascular fitness, heart rate recovery one minute after completing a height adjusted 3 minute step test.

[£] Self-esteem – is collected via an adapted Rosenberg Self Esteem Scale, which includes 10 items on a four point Likert scale, with higher values indicating a higher level of self-esteem.

Table 10: Proportion of completers at pre and post program meeting nutrition, physical activity guidelines and waist to height ratio recommendations, July 2011-June 2015

	Pre		Post		p-value
	n	%	n	%	
Fruit serves per day					
Not meeting recommendations	1506	47.8	628	33.4	<0.0001
Meeting recommendations	1642	52.2	1254	66.6	
Vegetable serves per day					
Not meeting recommendations	3807	98.5	1755	93.6	<0.0001
Meeting recommendations	48	1.5	119	6.4	
Physical activity levels per day					
Not meeting recommendations	1265	47.5	388	25.8	<0.0001
Meeting recommendations	1397	52.5	1117	74.2	
Waist to Height Ratio					
Ratio of less than 0.5 (preferred)	392	6.7	458	12.0	<0.0001
Ratio of 0.5 or more	5492	93.9	3374	88.0	

Notes:

Chi-square tests (pearson chi-square) of significance undertaken comparing proportions at pre and post program for key variables.

Pre data is collected prior at week 1 and post data is collected at week 10.

Questions to determine fruit and vegetable serves per day is only available for 2013/2014-2014/2015 participants.

The information regarding physical activity levels per day is taken from 2013/2014-2014/2015.

The number of participants and subsequent missing data varies for each variable and between pre and post time periods.

Australian Dietary Guidelines³⁴

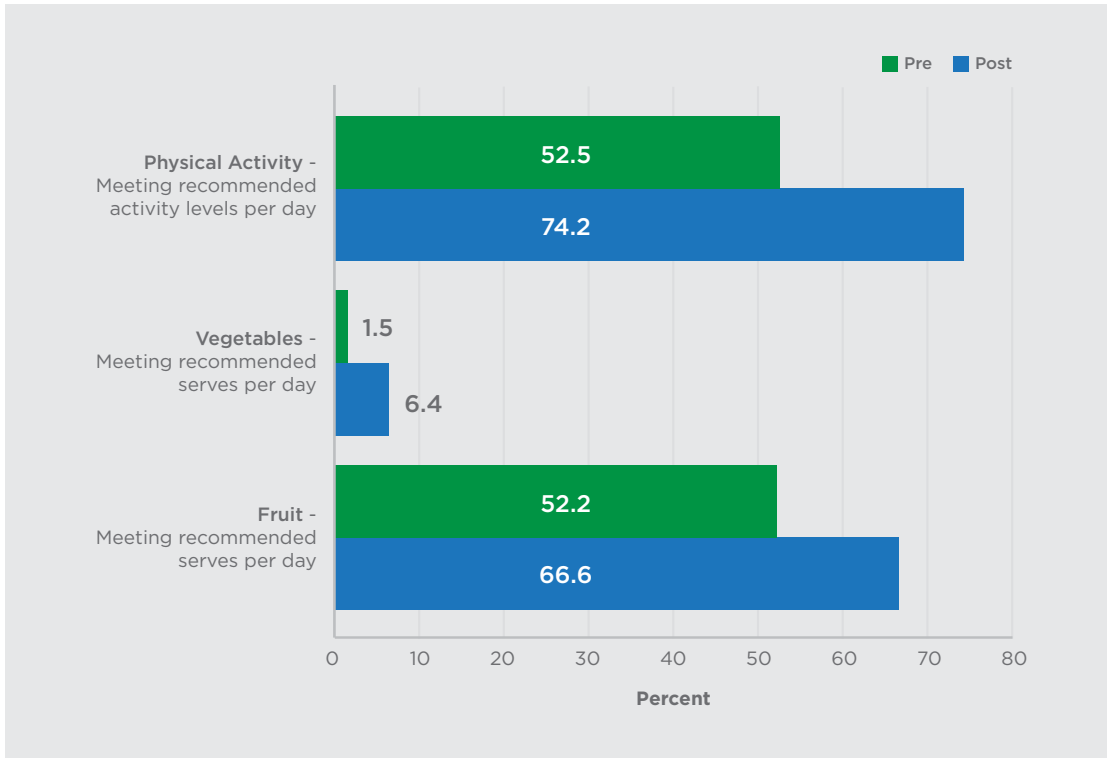


4-8 years	1.5 serves of fruit	4.5 serves of vegetables
9-11 years	2 serves of fruit	5 serves of vegetables
12-13 years	2 serves of fruit	5 serves of vegetables (females) 5.5 serves of vegetables (males)

Australia's Physical activity and Sedentary Behaviour Guidelines³⁵

5-12 years	60 minutes of moderate to vigorous PA every day
13-17 years	60 minutes of moderate to vigorous PA every day

Figure 8: Proportion of Go4Fun® completers at pre and post program meeting nutrition and physical activity guidelines, July 2011-June 2015



In relation to differences in improvements on key anthropometric measures between males and females, participants from major cities and other locations, and participants in the most advantaged two quintiles of socio-economic advantaged compared to the most disadvantaged quintiles, the results are summarised below (Table 11):

- Participants from major cities on average made greater improvements to their waist circumferences (1.8cm compared to 1.4cm) and their waist to height ratio than participants' located elsewhere (0.02 compared to 0.01).
- Participants from the 1st and 2nd quintiles of advantage (most advantaged) on average made greater improvements to their weight (0.5kg compared to 0.3kg), their BMI (0.6 kg/m² compared to 0.5 kg/m²), their waist circumference (2.0cm compared to 1.4cm), and their waist to height ratio (0.02 compared to 0.01).
- Male participants on average made greater improvements to their weight (0.5kg compared to 0.3kg) and their BMI (0.6 kg/m² compared to 0.5 kg/m²) compared to female participants.

Table 11: Change in anthropometric outcomes between baseline and program completion for Go4Fun® participants, by gender, geographic location and socio-economic status, July 2011-June 2015

	Males	Females	p-value	Major cities	Other [#]	p-value	1st & 2nd quintiles (most advantaged)	3rd, 4th & 5th quintiles (most disadvantaged)	p-value
	Mean	Mean		Mean	Mean		Mean	Mean	
	N=1802	N=2044		N=2521	N=1282		N=1328	N=2479	
Change in Weight (kg)	-0.5	-0.3	0.01	-0.4	-0.3	NS	-0.5	-0.3	0.02
Change in BMI (kg/m ²)	-0.6	-0.5	0.01	-0.6	-0.5	NS	-0.6	-0.5	NS
Change in Waist Circumference (cm)	-1.7	-1.6	NS	-1.8	-1.4	0.007	-2.0	-1.4	<0.0001
Change in Waist to Height Ratio	-0.02	-0.02	NS	-0.02	-0.01	0.008	-0.02	-0.01	<0.0001

Notes:

An independent samples T-test of significance was undertaken comparing participant's change in measurements between baseline and follow up based on their gender, geographic location and socio-economic status.

NS not significant.

Other refers to inner and outer regional, and remote and very remote locations.

The actual number of participants varies for each variable and for each socio-demographic category.

3.6.2 Anthropometric changes for participant parents and carers

Whilst it is not mandatory, local sites may offer to collect pre and post anthropometric measurements from parents and carers of participating children. Through the period of implementation from July 2011/June 2015, Go4Fun® has had a positive impact on participating parents and carers, who have made significant improvements to their own anthropometric risk profile through their participation in Go4Fun®. Statistically significant improvements have been seen with an average weight loss of 700g, 0.3 kg/m² reduction in their BMI and 2.2cm reduction in their waist circumference (Table 12).

Table 12: Anthropometric changes for parent and carers of Go4Fun® participants, July 2011-June 2015

	Baseline		Follow-up	Change	p-value
	N	Mean	Mean	Mean	
Weight (kg)	1675	85.1	84.3	-0.7	<0.0001
BMI (kg/m ²)	1658	31.4	31.1	-0.3	<0.0001
Waist circumference (cm)	754	101.9	99.6	-2.2	<0.0001

Notes:

Not all LHDs collect information on parents/carers



**On average
parents and carers:**



Reduced weight by
700g

Reduced BMI by
0.3 BMI units



decreased waist
circumference by
2.2cm

3.7 DATA SOURCES, LIMITATIONS AND NOTES

It should be noted that monitoring the implementation and the evaluation of the Go4Fun® program reflects the “real world” and accordingly data is collected using a variety of methods and sources:

- **Program implementation data** (quarterly, bi-annual and annual reporting) is used as the primary method to determine and monitor Go4Fun® implementation and reach.
- **Socio-demographic data** is collected either prior or at the first session with parents and carers providing information on their child's sex, date of birth, postcode of usual residence, language spoken at home and Aboriginal status. Postcode is used to generate socio-economic status³² and remoteness classification³¹.
- **Children's outcome data** in relation to anthropometric measures (at baseline and at program completion) is collected by Program Leaders according to defined protocols developed by the OPH and BHC. This includes measuring height and weight (which is also used for the calculation of BMI), waist circumference and heart rate (which is measured for one full minute following a three minute step test).
- **Behavioural outcomes** (physical activity, nutrition related questions) are collected by a self-report questionnaire which is provided to parents and carers of participating children and is collected at baseline and at program completion. A composite nutrition score has been calculated for 2011/2012 and 2012/2013, with higher scores indicating a higher frequency of consuming unhealthy foods.
- **Psycho-social outcomes** (self-esteem) are collected by a self-report questionnaire which is completed by the child at baseline and at program completion.
- **Outcome data** for parents and carers of participating children is measured by Program Leaders according to defined protocols developed by OPH and BHC. However, this data is not collected routinely across all sites.

These sources of data and methods of collection are considered appropriate given that Go4Fun® is a mature program based on evidence of ideal and best practice, however there are some limitations inherent within this approach.

- **Self-report data:** much of the information collected in relation to behavioural outcomes and psycho-social outcomes relies on self-reported data which is likely to include some social desirability biases and general inaccuracies.
- **Anthropometric measures:** importantly anthropometric measures are objectively measured and collected by trained health professionals who conduct the measurements at both pre and post program, which minimises potential biases in relation to these outcomes. However, it is worth noting that the recording of waist circumference is difficult due to the inherent difficulties in accurately measuring this variable.

- **Missing data:** despite a number of quality checks in place at a state and local level to improve data capture, missing data is evident with the data collection processes (possibly through incomplete questionnaires and errors in data entry) which has the potential to introduce some bias that must be acknowledged.

The analysis undertaken primarily focused on descriptive and impact analysis, and deals with the participants as a whole, which is considered appropriate for the purposes of this report. It should be noted that the sample has not been stratified according to who delivered the program or what type of program was delivered (once per week versus twice per week) in the analysis.





Nathan is a Theory Leader from Mid-North Coast Local Health District and he delivers programs in Macksville, Wauchope, Kempsey and Port Macquarie. As a leader, the most rewarding part of delivering the program for Nathan is the happiness and self-worth that the children gain throughout the program. Nathan sees children start the program with low self-esteem and as each week passes he notices a shift as their confidence builds. Each week families make small changes which have a snowball effect on their self-esteem and confidence.



"I see Go4Fun® as the awakener in a family's life that helps them to make healthier choices and behavioural changes. The program imparts positive change on the children and their families for the rest of their lives".





Natasha and her son Riley attended the Go4Fun® program at Seven Hills, Western Sydney. Their testimony gives sentiment towards their experience with the Go4Fun® program.



"The whole family has been getting involved in our new "life change". My son Riley has become happier in himself, he has more energy and loves doing his goals and getting his rewards. Riley is trying new foods (veggies) and is enjoying it. Go4Fun® is an amazing program and the highlight so far is Riley fitting back into a pair of shorts. After week 5 he tried them on and they fit perfectly! He was over the moon and is so proud and so am I. Thank you Go4Fun®."



Riley said "I'm so proud of myself, I'm getting healthy. Go4Fun' is fun and I love having fun".

4. Future Directions

Reducing the prevalence of childhood overweight and obesity by 5% over 10 years (by 2025) is a NSW Premier's Priority and Go4Fun® will contribute to meeting this important target. A range of strategies are currently being implemented to maintain quality and extend the reach and accessibility of the program by priority population groups.

These activities include:

- 1. Behavioural incentive trial** – a cluster randomised controlled trial being led by the Behavioural Insights Unit (Department of Premier and Cabinet) in partnership with OPH and BHC. The research aims to test the effectiveness of enhanced and systematic individual goal setting, rewards and SMS reminders delivered within the Go4Fun® program. Participants are being followed up at 12 - 18 months and the results of the trial will be used to inform improvements to the existing approach to goal setting and incentives³⁶.
- 2. Program review and quality improvement** – a thorough quality review is nearing completion and has involved feedback from Go4Fun® Program Managers, Leaders and families on program content and participant resources. A key focus of the review has been to improve literacy and health literacy of the service and has involved commissioning research to review and improve the pre/post nutrition, physical activity and sedentary behaviour questions to reduce participant burden. All program updates were completed in October 2016 with the objective of all participating LHDs to deliver the updated program from January 2017.
- 3. Non-face-to-face delivery model (FDM)** – a non face-to-face delivery model (i.e. phone, online and SMS) is required to extend the reach and accessibility of Go4Fun® to families on waiting lists (who are unable to access the face-to-face program) and rural and remote communities particularly as overweight and obesity prevalence in adults 16 years and older increase by remoteness. Following a review of the evidence on the effectiveness of non face-to-face delivered family-focused interventions, a delivery model is currently being developed. The delivery model will undergo user acceptance testing prior to piloting in 2016/17.
- 4. Post Program Support (PPS) model** – a post program support model is required to support families to maintain healthy behaviours following their participation in Go4Fun®. Following a review of the evidence on non face-to-face family-focused post program interventions, a delivery model (phone, online and SMS) is being developed and will undergo user acceptance testing prior to piloting in 2016/17.

5. Aboriginal Go4Fun® – a culturally adapted version of Go4Fun® was tested for acceptability and feasibility with four Aboriginal communities in both metropolitan and regional NSW locations in October 2015. The objective of the pre-pilot was to determine the cultural acceptability and feasibility of a culturally adapted version of Go4Fun® and to inform future delivery. Feedback from pre-pilot families, staff and stakeholders was generally positive, however, further cultural adaptations of the program content and delivery model have been recommended. The Aboriginal Go4Fun® program will be piloted again in 2016/17 following the implementation of pre-pilot recommendations³⁷.

6. Clinical Engagement Strategy (CES) – developed for implementation from January 2016 – June 2017 and involves a number of clinical engagement activities to be implemented at a state and local level. The over-arching aim of the strategy is to increase awareness of Go4Fun® and referrals from a broad range of health professionals. Initial activities involve a focus on integration of the Go4Fun® referral form into clinical software packages utilised by relevant health professionals.



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