The Development and Evaluation of a Health Promotion Programme for People with Intellectual Disabilities

Feidhmeanacht na Seirbhise Sláinte
Health Service Executive

Special Olympics
Ireland
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• Irish Cancer Society
• Diabetes Federation of Ireland
• Irish Osteoporosis Society
Introduction

The Special Olympics Ireland Health Promotion Project was initiated in 2008.
The aim of this project was to develop a user friendly Health Promotion resource pack for people with intellectual disabilities (ID).

Special Olympics Ireland (SOI) was aware of the lack of health promotion targeted specifically at people with ID in Ireland. In addition to this it has been well publicised that there are health disparities existing within the intellectual disability population. It is widely believed that these disparities may be reduced through appropriate education and increasing physical activity levels among people with ID (Jobling and Cuskelley, 2006). Jobling and Cuskelley in their 2006 study of the health knowledge of people with Down Syndrome found that the health knowledge of participants was poor. This highlights the need for health education among people with ID, as it is difficult to make a positive health choice when one does not have the knowledge in the first place.

There are 10,000 athletes registered with SOI and an estimated 44,400 people on the island of Ireland with an Intellectual disability. This represents about 23% of the total number of people with ID in Ireland. Given the high proportion of the ID population which SOI have access to it was evident that it would be an ideal organisation to facilitate a research project pertaining to people with ID. A research proposal was developed to seek funding from a variety of agencies and was granted in July 2008, a joint venture between the Health Service Executive Health Promotion Dublin North East and the Daughters of Charity Service for people with ID. A Project Officer was recruited to manage the project from inception to completion.

The project took place in 4 stages:

1. Research
2. Recruitment of participants
3. Development of resource pack
4. Pilot of resource pack
Aim

The aim of the project was to develop a comprehensive health promotion resource pack which can be used by Special Olympics clubs, organisations and individuals to increase health knowledge and improve health behaviours of people with ID through education, awareness and activities for individual and community programs.

This is in line with the objectives set out in the Disability Act 2005 which states: “establishes a system for the assessment of individual health service needs occasioned by the disability and, where appropriate, education needs for persons with disabilities over age 18 years.”

In addition to this, the Health Information and Quality Authority published a document entitled: National Quality Standards: Residential Services for People with Disabilities. One of the standards focuses on the health of individuals and highlights that people living in residential services should be encouraged to access health information and education both within the service and in the local community. It also states that “health promotion activities should be conducted in accordance with the individual’s wishes”.

Objectives

The main objectives of this project are to:

- Analyse existing health promotion material
- Identify health issues specific to that population group
- Develop health promotion materials with appropriate content suitable for this population, targeting specific issues such as physical activity and nutrition
- Involve the design of material that is marketable to individuals with an intellectual disability with potential to use with other constituent groups such as ethnic minority groups, schools etc
- Engage with both statutory and voluntary health promotion providers so as to support the programme and review the health information contained
- Increase awareness and educate families, coaches, volunteers and individuals with an intellectual disability about specific health topics
- Pilot the resulting materials and evaluate the effectiveness of the programme

“It is health that is real wealth and not pieces of gold and silver.”

- Mohandas K. Gandhi
Background and Significance

The health issues faced by individuals with intellectual disabilities are often complex due to co-morbidity. They may also be complicated by communication problems and a general lack of understanding due to the scant information available.

There is a dearth of published data in Ireland on the health and lifestyle of adults with intellectual disability (McGuire et al. 2007), however it’s clear that health disparities exist. People with ID experience health inequalities when compared with the general population (Cooper et al. 2004). There is a need for evidence-based data on the types and amounts of these inequalities that permit comparisons with the general population and to target and monitor the effects of health programmes (Lantman-de Valk et al. 2007). Health promotion programmes should be informed by research, targeted to meet specific health needs as well as being robust enough to deal with a complex range of health problems.

There has been an increasing concern regarding mortality, morbidity and the behavioural determinants of health among people with ID. People with ID represent approximately 0.6% of the population and as a group experience poorer health than the general population. The unmet health care needs of people with ID were starkly illustrated in the early 1990’s by research conducted by Prof Helen Beange and colleagues in 1995.

More recently, Cooper et al, (2006) conclude that people with ID have a higher level of health needs, a higher level of which is unmet, compared with the general population. Krahn, Hammond and Turner (2006) found that a range of contributing factors have resulted in the poor health of people with ID—complex health conditions that are poorly managed, frequent changes in direct care that result in inattention to health status and care needs, challenging behaviours that are poorly understood and managed, insufficient attention to individual health promotion behaviours and difficulty in implementing clinical preventative services. However McGuire, Daly and Smyth, (2007), suggest that as a result of improved healthcare generally the ID population has experienced increased longevity, but the authors argue that with this increase in longevity an increased risk for health problems exist.
People with Intellectual Disabilities
The World Health Organisation (WHO) defines intellectual disability “as the significantly reduced ability to understand new or complex information and to learn and apply new skills (impaired intelligence). The American Association of Intellectual and Developmental Disabilities defines intellectual disability as a disability characterized by significant limitations both in intellectual functioning (reasoning, learning, problem solving) and in adaptive behaviour, which covers a range of everyday social and practical skills. This disability originates before the age of 18. This results in a reduced ability to cope independently (impaired social functioning), and begins before adulthood, with a lasting effect on development”.

According to the Annual Report of the National Intellectual Database Committee 2010 there were 26,484 people registered on the National Intellectual Disability Database (NIDD) in December 2010, representing a prevalence rate of 5.7 per 1,000 population. It’s important to note that the database comprises of those who are currently in receipt of, or are waitlisted for intellectual disability services. Those with mild levels of ID, who are not connected to services, fall outside the inclusion criteria and are therefore likely to be under-represented on the database. In Northern Ireland (NI) the term learning disability is used instead of intellectual disability which is used in the Republic of Ireland*.

According to McConkey et al, 2003 there was a learning disability prevalence of 9.7 per 1,000 population. The Northern Ireland Statistics and Research Agency stated that the population of Northern Ireland in 2010 was 1,799,392 people. Using these figures we can conclude that 17,454 people with learning disabilities living in Northern Ireland.

* For the purpose of this report the term intellectual disability will be used.

Special Olympics Ireland
Special Olympics Ireland (SOI) was founded in 1978 and provides sports training and athletic competition in 15 sports to people with ID. It is an all island programme and is divided into 5 regions: Ulster, Munster, Leinster, Connaught and Eastern region (Dublin and parts of Wicklow and Kildare). Currently there are over 10,000 registered athletes in SOI, training in one of over 400 clubs each week. They are supported by a network of more than 18,000 volunteers, making Special Olympics one of the largest voluntary organisations in Ireland.

Although Special Olympics is primarily a sports programme, it also offers a number of additional programmes to athletes including the Athlete Leadership Programme and the Healthy Athlete Programme. SOI has been an integral part of highlighting the abilities of people with ID over the past 30 years.
Health Promotion

Health promotion is the process of enabling people to increase control over and improve their own health (WHO, 1986). It is widely accepted that there is a lack of appropriate health promotion resources available for people with ID. Research has indicated that people with ID do not engage in health promotion and disease prevention activities to the same extent as the non-ID population (Ouellette-Kuntz et al, 2005). People with ID either do not access or are not afforded opportunities to participate in health promotion or education programs (Frey & Temple, 2008). The International Association for the Scientific Study of Intellectual Disability (IASSID), has developed a consensus statement on the health of people with intellectual disabilities which recommends accessible health promotion programmes for people with an intellectual disability, as well as research into fitness, nutrition and common health problems associated with intellectual disability, to redress the longstanding disparities (Scheepers et al. 2005).

It is important to note that research has shown that health promotion efforts targeted to people with disabilities can have a substantial impact on improving lifestyle behaviours, increasing quality of life, and reducing medical costs (Rimmer and Rowland, 2008). Mann et al, 2006, evaluated an eight week health promotion programme for 192 adults with intellectual disabilities in the US and found that there was increase in knowledge of healthy diet and improvements in exercise frequency.

Despite these potential gains, people with ID experience lower rates of preventive care and health promotion practices than the general population (Krahn et al, 2006), perhaps due to a lack of awareness of services available to them or because the services themselves do not cater to their disability. The Pomona Project Final Report, (2008), for example, highlighted the lack of health promotion for people with ID throughout Europe. Dahlgren and Whitehead’s Determinants of Health Model (1991) depicts that the most modifiable factors of an individual’s health are individual lifestyle factors and social and community networks.

This project aims to improve the health of participants by modifying these factors, firstly, through health education and secondly by putting a supportive environment in place by way of the Special Olympics club, service and family members to help encourage and sustain health changes.

Health Needs/Disparities

The disparity in health status between those with and without ID has been recognised by the US Surgeon General in the convening of a health symposium ‘Closing the Gap: A national blueprint to improve the health of people with mental retardation’ hosted in 2001. Subsequently, numerous studies have reported on various aspects of the poorer health status of people with intellectual disabilities, a selection of which is presented below.

Obesity

Obesity has been widely publicised as one of the greatest public health challenges of the 21st Century and is associated with cardiovascular disease, certain cancers and diabetes (Horwitz et al, 2000). Population-level prevalence data indicate that the obesity levels of adults with ID are either similar to or higher than their non-ID counterparts. Lack of healthy eating habits and regular physical activity, common factors associated with obesity in the general population, are also growing problems among people with ID (Rimmer and Yamaki, 2006).
Health screenings conducted during Special Olympics sports competitions have consistently shown that a significant number of athletes with ID were overweight or obese (Marks et al, 2010). Marshall et al, 2003 in a Northern Irish study of 464 people with ID found that 64% of adults screened were either overweight or obese. In Emerson’s 2005 study of 1304 adults with intellectual disabilities it was found that 55% of participants were either overweight or obese. Marshall et al (2003) reported that the number of people with an ID classified as overweight or obese was 64% in the UK with evidence from the US suggesting that this was as high as 89%. Melville et al (2005) reported an increased likelihood of obesity in women with Down Syndrome and of interest, this was not present in men when compared to individuals with other types of ID. Other studies have reported deviations from normal weight in the ID population. McGuire, Daly and Smyth (2007) found in their study that 68% of the ID population in one geographical location in Ireland were either overweight or obese.

**Nutrition**

There has been little research looking at the nutrition intake of people with ID. However, the evidence that exists suggests that people with ID are less likely to consume the recommended five portions of fruit and vegetables a day than people without an ID (Robertson et al, 2000). Screening data taken from the Healthy Athlete Programme at the 2003 Special Olympics World Summer Games (2003 SOWSG) in Dublin shows that only 20% of athletes who presented for screening consumed two or more portions of fruit each day and just 3% of athletes consumed 2 or more portions of vegetables per day. 32.5% of athletes consumed two or more portions of dairy products each day. This evidence highlights the fact that people with ID are not meeting healthy eating recommendations.

**Physical Activity**

The World Health Organisation (WHO) defines physical activity as any bodily movement produced by skeletal muscles that requires energy expenditure. The Department of Health and Children (DoHC) in Ireland recommend that adults should participate in at least 30 minutes of moderate intensity physical activity on 5 days of the week (DoHC, 2009).

Researchers have suggested that adults with ID are generally more sedentary than individuals without disabilities (Frey et al, 2005). As a result, people with ID may have a higher risk than the general population for morbidity and mortality from chronic diseases directly associated with inactivity, such as heart disease, type 2 diabetes mellitus, and osteoporosis. Physical inactivity according to Emerson (2005) is associated with increased risk of cardiovascular disease, some cancers and type 2 diabetes. In addition to these specific risks, physical activity may reduce depression (Lawlor and Hopker 2001), challenging behaviour (Lancioni and O’Reilly 1998) and cognitive decline in middle and old age (Richards et al 2003).

Beange et al (1995) concludes that 72% of men and 75% of women in their community based sample of people with ID had not engaged in any moderate to vigorous exercise in the preceding 2 weeks, compared with 49% of men and 65% of women in the general population. Results from a comparative study conducted in Ireland between people with ID in one geographical area and that of the National Survey of Lifestyle, Attitudes and Nutrition in Ireland (SLAN) in 2007 revealed that just 25.9% of people with ID as compared to 59% of the general population undertook regular exercise per week (McGuire et al, 2007). These authors concluded that the vast majority of people were reported to engage only in mild exercise, not the recommended moderate level of exercise.
Temple (2007) concluded the main barrier to undertaking physical activity was accessibility of physical activity options for people to engage in, whilst Melville et al (2007) suggested that there is a need to ensure that effective and accessible services are available for people to avail of. Special Olympics Ireland helps to alleviate this barrier by providing accessible physical activity options for people with ID in the community.

Temple and Walkley (2007) identified that three major factors, motivation for participation, social support and political and financial support influenced positive participation in physical activity. Carmeli et al (2005) showed that physical training improved the locomotor performance and perception of well-being among ‘older’ adults with ID.

The proportion of adults with intellectual disability engaging in physical activity at levels consistent with public health recommendations ranges from 17.5% to 33% (Temple and Walkley, 2007). A number of studies have shown that individuals with intellectual disability are less fit than the general community and that levels of physical fitness are low (Lynnes et al 2009). In addition, more than two-thirds of adults with intellectual disability do not participate in adequate levels of physical activity for improvements in health (Temple et al., 2006). Emerson et al, in their 2011 report entitled: Health Inequalities and People with Learning Disabilities in the UK, found that over 80% of adults with learning disabilities engage in levels of physical activity below the Department of Health’s minimum recommended level, a much lower level of physical activity than the general population.

Although Special Olympics athletes are actively involved in a sports programme, over half participate in just one sport, the majority of which would offer training of approximately one hour each week. Hence for many athletes their participation in Special Olympics would not be adequate to meet the recommendations and therefore it is important to educate people with ID about the benefits of participation in physical activity and the physical activity recommendations.

**Heart Health**

Cardiovascular Disease (CVD) still remains the most common cause of death in the Republic of Ireland, accounting for 34% of all deaths in 2010 (CSO, 2010). Wallace and Schluter, 2008, analysed the medical charts of 155 Australians with ID aged forty years and over. They found that although people with ID did not have higher levels of cholesterol or hypertension, their lifestyle factors, including a lack of physical activity and being overweight and obese, made them more at risk of CVD. Other evidence stated earlier, further highlights that the problems of obesity and sedentary lifestyles are prevalent among the ID population and as such may result in them being at risk of developing CVD.

**Bone Health**

Srikanth et al, (2011) found in their review of risk factors for osteoporosis among people with ID that there was an increased prevalence of osteoporosis and osteopenia among the intellectual disability population. In addition to this Wagemans and colleagues, (1998) found that their study group of 23 people with ID had low bone mineral density. Screening data taken from the Healthy Athlete Programme at the 2003 SOWSG shows that 23.3% of athletes who presented for screening had a bone mineral density reading below normal. In addition, data taken from the 2003 SOWSG showed low levels of dairy consumption which is a risk factor for osteoporosis (Special Olympics, 2003).
**Diabetes**

The prevalence of diabetes in the general adult population is estimated at 6% (World Diabetes Foundation 2011). People with ID face an increased risk of diabetes as compared to the general adult population. In addition to this, it is true to say that there are very high levels of lifestyle factors such as obesity and lack of physical activity among people with ID which can result in the onset of Type 2 diabetes mellitus.

In Ireland, it is estimated that there are 200,000 people with diabetes and a further 200,000 who have diabetes but are unaware that they have the condition. The majority of these people will only be diagnosed through an acute medical event of the complications of long term untreated hyperglycaemia. A further 250,000 people have impaired glucose tolerance or “pre-diabetes” of which 50% will develop diabetes in the next 5 years if lifestyle changes are not made. (Diabetes Federation of Ireland).

A report published by the Institute of Public Health in Ireland, entitled “Making Diabetes Count: What does the future hold?” predicts a 26% increase in diabetes in Northern Ireland and a 37% increase in the Republic over the ten year period (2005-2015). The report also cites that this will be mainly in Type 2 Diabetes Mellitus. What is significant here, is that this type of diabetes is often as a result of modifiable lifestyle factor such a being overweight and lack of physical activity. The high incidence of overweight and obesity among people with ID, coupled with their increased likelihood to lead a sedentary lifestyle puts this population group at increased risk of developing diabetes.

**Cancer**

According to the CSO, 29% of deaths in Ireland in 2010 were as a result of cancer. As people with ID are living longer, their chances of developing cancer also increases (Hanna et al, 2011). In addition the European Code against Cancer states that by participating in regular moderate physical activity, eating five or more portions of fruit and vegetables daily, and maintaining a healthy weight the risk of developing cancer is reduced. The research cited earlier shows that people with ID are less likely to follow these health protective behaviours. Horwitz and colleagues (2000) in their report on the health needs of people with ID stated that cancer is among the most common causes of death among individuals with ID, with estimates ranging from 7.4% to 34.0% depending on the population studied.

**Sun Safety**

According to the National Cancer Registry the commonest cancer in Ireland is non-melanoma skin cancer. A number of sports offered by Special Olympics take place outdoors, highlighting the importance of promoting sun safety to Special Olympics athletes. In addition, screening data taken from the Healthy Athlete Programme at the 2003 Special Olympics World Games in Dublin shows that only 30% of athletes who presented for screening were aware of sun protection methods.

**Oral Health**

In 2005, Turner et al looked at the screening data from the Special Smiles (oral health screening programme at Special Olympics events) screening at the 2005 Great Britain Special Olympics National Games. They compared the screening data with data representative of the general population and found that Special Olympics athletes were more likely to be free from fillings and obvious untreated dental decay. However, they did identify that there was an increase in the incidence of individuals requiring urgent treatment in the over 35 year age group. This finding is significant to Special Olympics as the average age of an athlete is 31.3 years. In addition to this screening data, other data gathered at the Special Smiles Screening at the 2010 SOI Games in Limerick showed that 24.5% of the 661 athletes who presented for screening had untreated decay.
This review has identified a number of key health issues for people with intellectual disabilities, including data on the prevalence of physical activity, nutrition, cancers, diabetes etc. The review aimed to illustrate some of the evidence in the field and highlight the need for health promotion interventions that may assist in reducing some of the health problems experienced by people with ID.
Development of the Health Promotion Resource Pack

In the initial stages of the Health Promotion Project, key health promotion publications were consulted in order to ensure that project met current health promotion recommendations.

The Ottawa Charter which was published by the World Health Organisation following the First International Conference on Health Promotion in 1986, stated that health promotion should target five key levels:

1. Building Healthy Public Policy
2. Creating Supportive Environments
3. Developing Personal Skills
4. Strengthening Community Action
5. Re-orientating Health Services

It was felt that by running a targeted health promotion programme in Special Olympics clubs three of the five levels could be reached as follows: 'Developing Personal Skills' through educating participants on different areas of health, and giving them the skills and tools to help to make the healthier choice the easier choice; 'Creating Supportive Environments' by putting health on the agenda of clubs, and by enabling volunteers in clubs to support participants to change health behaviours; and ‘Strengthening Community Action’ by making health promotion an integral part of the Special Olympics community club.

According to the Ottawa Charter the use of the community as a health promotion setting has been widely advocated as the most effective way to promote health among both communities and individuals, highlighting that the use of the Special Olympics clubs would be a very suitable setting for health promotion within the ID population group.

The development of the Health Promotion Resource pack started with a comprehensive survey of key stakeholders, including General Practitioners (GPs) and family members of athletes, which was conducted to identify their concerns regarding the health of people with ID. This was conducted through:

• Desk based research
• Questionnaires to parents/carers of Special Olympics athletes
• Questionnaires to GPs

A random sample of 180 GPs taken from the Irish College of General Practitioners and Health and Social Care Northern Ireland were sent a questionnaire in relation to the health needs of people with ID, the most suitable health promotion activity and the factors which influence health. A response rate of 35% was achieved, with an additional 12% blank questionnaires returned (addresses out of date etc.).
Four Special Olympics clubs who were not participating in the Health Promotion Programme also received the same questionnaire for distribution to parents/carers with 80 receiving the survey and a response rate of 58% was achieved. The results highlighted that overweight and obesity were the primary concern of both groups. In addition to this they felt that it was most appropriate to develop a combination of various health promotion activities to increase knowledge and change behaviours. Desk based research reflected this and highlighted that one of the biggest health issues facing people with ID is the issue of overweight and obesity, coupled with low levels of physical activity.

**Resource Development**

An Advisory Group was established to oversee the development of the resources and to review the modules with an opportunity to provide feedback. It comprised of researchers, academics and people with expertise in the areas of health and intellectual disability from both Ireland and the UK. It was decided that the most effective way of promoting health to people with ID would involve a two pronged approach.

Firstly, by developing a Health Toolkit of educational workshops covering the health topics identified in the needs assessment. In order to ensure sustainability of the programme, the Toolkit was designed to be easy to use by people who had no previous health promotion experience. This would allow Special Olympics to use existing volunteers in clubs to roll out the programme. The workshops themselves were developed to be educational, engaging and fun, incorporating active participation as the main learning methodology. As Special Olympics is a sports programme, coaches in clubs which were participating in the programme were shown programme content and asked to provide feedback. They identified, in the development phase, the importance of keeping the workshops concise so that they could be easily incorporated into the training session without impacting heavily on the sports training provided by the club.

The second element of the resource pack consisted of an Athlete Pack of accessible health promotion education leaflets. The information in the leaflets was gathered from current research and adapted from materials produced by other health promotion bodies. Furthermore, in order to ensure that the health information contained in the resources was of the highest quality and reflected the messages that the key players in the health arena were promoting, collaboration with the relevant health organisations was undertaken. The organisations were as follows:

- HSE Health Promotion – Healthy Eating; Physical Activity
- Irish Heart Foundation - Heart Health
- Irish Cancer Society – Cancer Prevention; Sun Safety
- Irish Diabetes Federation – Diabetes
- Irish Osteoporosis Society – Bone Health

Not only did this help ensure that the information was of the highest standard, but it also helped to create an awareness among these organisations of people with ID and their health needs. In addition to this, participants were involved in the development of the resources to ensure they were easy to read and addressed the health needs that they feel are most pertinent to them.
The resource pack has been developed and consists of health promotion resources in the following areas:

- Nutrition
- Physical Activity
- Oral Health
- Cancer Awareness
- Heart Health
- Sun Safety
- Bone Health
- Diabetes

This topic selection was based on health issues identified through consultation with key stakeholders including primary care physicians and family members. These topics are covered in 15 modules which can be covered on a week by week basis. Health Promotion Facilitators within clubs chose a suitable time to run the workshops. In community clubs this was generally at the start/end of training whilst in service based clubs, the workshops were often run separately to sports training as they have more face to face time with participants. The workshops are based on active participative learning methods and take about 20 minutes to complete. Games like quizzes, tasting games etc. are included to encourage participation. The general format of the workshop includes:

- Introduction to topic
- How it relates to health
- How to make health changes

There is a Workshop Evaluation form contained in the Toolkit, for the Health Promotion Facilitator to complete at the end of each workshop. This was designed to encourage the Facilitator to reflect on the workshop and to identify any changes to be made to subsequent workshops.

The resource pack has been developed in order to address health needs at 3 different levels:

1. **Awareness Raising**
   This will be achieved by creating awareness of health protective behaviours among participants by making health a key part of the Special Olympics programme. The programme aims to target individuals who are at the pre-contemplation or contemplation phase of Prochaska and DiClemente’s (1983) Transtheoretical Model of Behaviour Change, where individuals are either not yet thinking about or just thinking about making a change. By creating an awareness of health protective behaviours it may encourage individuals to move to the next stage i.e. preparation, where they begin to plan changing their behaviour.
2. Education
This will be achieved through health promotion workshops covering the various health topics which are to be delivered by nominated volunteers in SOI Clubs. These volunteers will be trained via an online training mechanism which will save on costs and increase accessibility to volunteers. Additionally it will enhance the sustainability of the project as new volunteers can be trained ad lib without the need to co-ordinate group training sessions. The workshops take an active participatory approach and comprise of both oral education and health educational games. Additionally, participant will receive a series of take home resources which can be used individually or with the support of carers to increase health knowledge.

3. Behaviour Change
This will be achieved through the following:

- Establish effective goals
  Goals are preset in the participant’s Task Diary. The Task Diary is a picture based diary with pre-identified goals based on the various modules covered in the Health Toolkit. Each participant is encouraged to complete a goal after each workshop they participated in and record it in their diary. The goals are in line with SMART objectives i.e. specific, measurable, achievable, realistic and within a timeframe.

- Reward changes
  On completion of an agreed number of goals the participants will receive a reward. Research shows that record keeping and rewards based interventions are effective and sustainable behaviour change methodologies. Clubs were advised on a variety of rewards which could be used as incentives and were encouraged to plan their own.

Trialing of Health Promotion Resources
In order to ensure the user friendliness and accessibility of the Health Promotion Resource Pack each of the 36 groups was visited during training times. Each group was assigned two modules of the resource pack and 1 hour was spent with each group of participants and coaches/staff. The participants went through two randomly assigned health promotion workshops and were taken through each of the support resources and games. They were then given the opportunity to express their views in terms of user friendliness, learning experience etc.

Additionally the coaches/staff were invited to share their views on the workshops and how they felt they would be able to run the workshops themselves with the tools provided.

Following the workshop, based on the information gathered, relevant changes were made to the resources. Once these changes were made, the amended resources were used with a new group. Each module was piloted a minimum of twice and in some cases three times. The final adjustments to the resource pack were made following consultation with the Advisory Group. The resources were sent to a designer to be prepared for printing.
The final resource pack comprised of a Health Toolkit and an Athlete Pack. The Health Toolkit is made up of 15 health promotion workshops, games cards and posters/visual aids for use during the workshops. The Toolkit and its components are all contained in a convenient, durable ring binder which is easy for facilitators to transport. The Athlete Pack is a hard backed binder which contains easy read leaflets on the topics covered in the health promotion workshops and easy read recipes. In addition to this, in order to support health changes there were three wipe clean diaries for participants to use. The first is a magnetic Food Diary which is picture based and reusable week to week. The purpose of this is to help participants to identify any issues with their diet and to make appropriate changes. The second is a Healthy Smile sticker which was designed for use in the bathroom with a series of images showing the correct tooth brushing methods along with other oral hygiene messages. The final is a physical activity diary to help participants record their participation in physical activity and to identify areas for improvement.

One Health Toolkit and an Athlete pack for each participant in the club were distributed to participating clubs (outlined below) on the same day as the pre-test data collection. The Health Promotion Facilitator in the club received instruction in the use of both resources and was asked to run a workshop each week for the next 15 weeks. After the last workshop was held, post-test data collection was conducted, and a questionnaire was distributed to facilitators and parents/carers, accompanied with stamped addressed envelopes for return. All resources remained with the club/participants for use into the future.

Participants

The participants in the Health Promotion Programme came from two sources:

1. **Registered athletes in a Special Olympics Club**
   In this instance, letters were sent to all club contacts of the 400 registered Special Olympics clubs inviting them and their athletes to participate. The first clubs totalling 350 respondents were admitted to the programme on a first come, first serve basis with a total of 22 clubs participating.

2. **Service users of the Daughters of Charity Services for people with ID (DoC)**
   The DoC were co-sponsors of the Health Promotion Project and were given an allocation of 150 participants in the project. Some of these participants were both service users of the DoC and SOI athletes.
Methodology

Data was gathered with both qualitative and quantitative methods. The initial data collection phase involved a quantitative data collection.

In order to assess both health knowledge and health behaviour changes through participation in the Health Promotion Programme, it was decided that an administered questionnaire would be the most suitable. As there was no such suitable questionnaire already available a specific questionnaire was designed (appendix 1). The questionnaire covered nutrition knowledge and behaviour, physical activity levels, knowledge relating to heart health, bone health and sun safety along with oral health behaviours. This questionnaire was piloted with 30 Special Olympics athletes.

The questionnaire was adapted from the Special Olympics Healthy Athlete Health Promotion Screening Tool as this is the most widely used tool of its kind for people with ID. Support images were gathered to aid participants with communication difficulties. In the event that a participant was unable to communicate, parents/key workers assisted in filling out the questionnaire.

In addition to the questionnaire, Body Mass Index (BMI) and waist hip circumference measurements were taken from each athlete. The BMI of each participant was obtained by weighing them on a Seca 899 portable weighing scales to the nearest 0.00kgs and measuring height on a Seca Leicester Height Measure to the nearest 0.00cm. Each measurement was taken twice and an average of both measurements was used to calculate BMI.

BMI is calculated as follows: Weight in kilograms ÷ Height in metres squared. BMI categories were determined in accordance with the World Health Organisations BMI classification:

- Underweight: < 18.50kg/m²
- Normal: 18.50kg/m² – 24.99kg/m²
- Overweight: 25.00 kg/m² – 29.99kg/m²
- Obese: ≤ 30.00kg/m²

Data was collected both prior to and after the pilot of the programme within each club, either on a training day or at another suitably appointed time. The Project Officer or a suitably trained volunteer (nurse/physiotherapist/dietician) took the measurements on both occasions. The measurement procedure was explained to each participant by means of a photo book.
Focus Groups

Further to this a sample of participants from the five Special Olympics regions participated in a focus group to discuss their participation in the Health Promotion Project. The focus groups comprised of a maximum of six participants as recommended by the National Federation of Voluntary Bodies guide, “Using Focus Groups as a Research Method in Intellectual Disability Research’.

The participants were invited to participate by their Health Promotion Facilitator in the focus groups. The focus groups were run in a location convenient to the participants and at a time which was suitable. They were recorded by way of the iTalk recording app for the iPhone which was used in conjunction with the mini microphone for the iPhone.

A moderator’s guide was developed in order to focus the discussion and to ensure that key questions were answered. The Project Officer facilitated the focus groups, transcribed the recorded data and analysed it through thematic content analysis.

Statistical Analysis

The questionnaire data was inputted into Microsoft Excel prior to transfer into SPSS.

Ethical Considerations

Ethical approval was sought from the Daughters of Charity Ethics Committee in November 2008 and was granted in January 2009.

Demographic Information

Initially 500 participants consented to participating in the project. In year two of the project two services failed to re-affiliate with Special Olympics and the athletes were no longer able to participate, resulting in a loss of 50 participants.

Data was collected from participants at training sessions and absenteeism at training sessions resulted in details of 168 participants which had to be omitted as they were missing at either or both of the data collection phases. This resulted in 282 participants results being used in the analysis. 61% of participants were female (n=171) and 39% were male (n=111). The mean age of participants was 35 years (with a range of 12-79 years). Participants had varying degrees of intellectual disability with 36% mild, 60% moderate and 4% severe/profound participating in the project.
Results

Hypothesis
It is hypothesised that by developing a user friendly health promotion resource pack for use with people with an intellectual disability participants would report an:

a. Increase in health knowledge
b. Improvements in health behaviours

The Special Olympics Health Promotion Programme is a descriptive cohort study with a pre-test post-test experimental design. This method was chosen as it is both time and cost effective given the limited resources of the project.

Quantitative Results
The pilot ran for a period of fifteen weeks in each club (based on one workshop per week). Baseline data was collected one week prior to the first workshop being delivered and post intervention data was gathered one week after the last workshop was delivered. Data was collected at the club training venue.

Health Knowledge
The health knowledge which was assessed was designed to reflect the learning objectives of the Health Promotion Resource Pack including:

• Nutrition
• Sun Safety
• Bone Health
• Heart Health

1. Nutrition
The nutrition knowledge was assessed in relation to the Department of Health and Children’s Food Pyramid recommendations and was divided into the bottom 4 shelves of the food pyramid. The purpose was to assess whether or not the participants were aware of the recommended number of portions of foods from each shelf of the food pyramid which are:

a. Carbohydrates (6+)
   Bread, potatoes, rice, pasta, cereals
b. Fruit and Vegetables (5+)
   Fresh, frozen, dried, juices, vegetable soups
c. Dairy (3)
   Milk, cheese, yoghurt
d. Meat, fish and alternatives (2)
   Meat, fish, beans, peas, lentils, Quorn®

![Image of Food Pyramid]
The Related-Samples Wilcoxon Signed Ranks Test was performed on the data to establish whether there was an increase in knowledge of the Food Pyramid recommendations. There was a substantial improvement in the participant’s knowledge of the Food Pyramid recommendations after participating in the Health Promotion Project. It was found that for each of the food groups the mean answer increased from baseline to post-test. Table 1 displays the percentage of participants who were aware of the daily recommended portions from the food groups both before and after the intervention.

Table 1
Knowledge of Food Pyramid Recommendations

<table>
<thead>
<tr>
<th>Food Group</th>
<th>Pre Test</th>
<th>Post Test</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbohydrate</td>
<td>8%</td>
<td>49%</td>
<td>0.00</td>
</tr>
<tr>
<td>Fruit and Vegetables</td>
<td>38%</td>
<td>67%</td>
<td>0.00</td>
</tr>
<tr>
<td>Dairy</td>
<td>26%</td>
<td>58%</td>
<td>0.01</td>
</tr>
<tr>
<td>Protein</td>
<td>9%</td>
<td>38%</td>
<td>0.02</td>
</tr>
<tr>
<td>Water</td>
<td>9%</td>
<td>38%</td>
<td>0.00</td>
</tr>
</tbody>
</table>

All of the data were statistically analyzed. When the Related-Samples McNemar Test was performed, to see if there was a significant difference from pre-test to post-test in the number of participants who knew the correct food pyramid recommendations, it was found that for each of the food groups there was a statistically significant difference between the pre and post-test data (p<0.05).
Participants were asked to indicate the number of servings from each food group that should be eaten each day. Figure 1.0 displays the mean answer for each food group in the pre-test and post-test compared to the Food Pyramid recommendations. The results show that for each food group the mean answer given in the post-test was closer to the recommended than that given in the pre-test. The Wilcoxon Test* was performed, and confirmed that the differences were statistically significant.

* The Wilcoxon signed-rank test is a non-parametric statistical hypothesis test used when comparing two related samples or repeated measurements on a single sample to assess whether their population mean ranks differ (i.e. it’s a paired difference test).

The questionnaire also assessed participants’ dietary intake. Participants were asked the number of servings they consume each day of foods from each shelf of the Food Pyramid. Figure 2 shows the mean number of servings from each food group which participants consumed in the pre-test and the post-test compared to the Food Pyramid recommendations. For each food group the mean in the post-test was closer to the recommendations than in the post-test.
2. **Sun Safety**
Participants were asked “what should I do when I’m outside to protect myself from the sun”. In both tests the number one response from participants was “use sunscreen”, however when the Related Samples McNemar test was computed it was found that in the post-test the number of athletes who added both “wear a hat” and “wear sunglasses” increased significantly (p=0.002, p=0.000 respectively). The number of participants who provided “no relevant answer” reduced by 30% after the pilot. In addition to this there was a 29% increase in the number of participants who were able to give 2 or more answers to this question.

3. **Bone Health**
Participants were asked “what should we do to keep our bones healthy”. Participants were allowed to give up to three answers and these answers were grouped into predetermined categories. There was a 31% increase in the number of participants who answered “eat dairy/calcium rich foods”. In addition to this the number of participants who were unable to provide an answer reduced by 36%. There was a 77% increase in the number of participants who were able to give 2 or more answers to this question.

4. **Heart Health**
Participants were asked “what should we do to keep our heart healthy” and a number of answers were permitted. The highest ranked answers in both the pre-test and post-test were “Balanced diet”, “Participate in Physical Activity” and “Don’t smoke” and these had the strongest increasing numbers after. There was a 34% decrease in the number of participants who were unable to provide a relevant answer to the question. There was a 75% increase in the number of participants who were able to give 2 or more answers to this question.

**Health Behaviours**

The behaviours which were assessed were also designed to reflect the learning objectives of the Health Promotion Resource Pack including:

1. Nutrition
2. Physical Activity
3. Smoking
4. Dental Health

Table 2 displays the percentage of participants who complied with the Food Pyramid recommendations in relation to the different food groups. The Related Sample McNemar Test was computed for each food group and the P-Value for each is indicated. For each food group the increase in participants meeting recommendations was statistically significant.

<table>
<thead>
<tr>
<th>Food Group</th>
<th>Pre Test</th>
<th>Post Test</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbohydrate</td>
<td>65.2%</td>
<td>80.1%</td>
<td>0.00</td>
</tr>
<tr>
<td>Fruit and Vegetables</td>
<td>18.4%</td>
<td>35.8%</td>
<td>0.00</td>
</tr>
<tr>
<td>Dairy</td>
<td>23%</td>
<td>37.2%</td>
<td>0.00</td>
</tr>
<tr>
<td>Protein</td>
<td>62.1%</td>
<td>70.9%</td>
<td>0.00</td>
</tr>
</tbody>
</table>
In addition to these behaviors participants were asked if they eat wholegrain carbohydrate foods. There was an increase in the number of participants who choose the wholegrain variety in the post-test as compared to the pre-test (see Table 3). The Wilcoxon Signed Ranked Test computed that there was a significant difference in the pre-test and post-test (p=0.000).

1. **Nutrition**

<table>
<thead>
<tr>
<th>Carbohydrate Variety</th>
<th>Pre Test</th>
<th>Post Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wholegrain</td>
<td>51.7%</td>
<td>76.7%</td>
</tr>
<tr>
<td>Non-Wholegrain</td>
<td>31.4%</td>
<td>15.1%</td>
</tr>
<tr>
<td>Both</td>
<td>17%</td>
<td>8.2%</td>
</tr>
</tbody>
</table>

Participants were also asked if they eat low fat dairy products. The percentage of participants eating low fat dairy products increased from 70% to 90% over the duration of the programme. On computation of the Related Sample McNemars Test we see that these changes are statistically significant (P≥0.05).

2. **Physical Activity**

Participants were asked how many days each week they participate in moderate physical activity. Moderate physical activity was described as working hard enough to raise your heart rate and break a sweat. In the pre-test the mean response was 4.4 days per week. This increased to 4.8 days per week in the post-test which on computation of the Related Samples Wilcoxon Signed Ranks Test, this increase was found to be significant (p= 0.00).

48.6% of participants in the pre-test met the recommended 30 minutes of more of physical activity on their active days, this increased to 70.6 in the post test. On computation of the Related Samples Marginal Homogenity Test, this was found to be significant at a level of 0.05. The percentage of participants who met the recommended 30 minutes of moderate intensity physical activity on 5 or more days of the week increased from 22% in the pre-test to 49% in the post-test.

3. **Smoking**

There were low levels of smoking found with 5 smokers in the pre-test group which reduced to 4 cases in the post-test group representing 1.9% and 1.7% of participants respectively.
4. Oral Health

- **Tooth Brushing Frequency**
  There was a 10% increase in the frequency of tooth brushing. The Related Samples Marginal Homogeneity Test was performed and this showed that there was a statistically significant increase in frequency (p < 0.05). None of the respondents brushed their teeth less frequently after the project.

- **Quantity of Toothpaste**
  Again on computation of the Related Samples Marginal Homogeneity Test it was found that there was a significant increase in the number of participants who used the recommended amount of toothpaste after participating in the project (p<0.000).

- **Dentist Visits**
  13% of participants increased the frequency of their dental visits, the Related Samples Marginal Homogeneity Test found that this is statistically significant (p<0.000). In addition to this, there was a 3.2% decrease in the number of participants who have never been to the dentist.

5. Anthropometric Data

Body Mass Index was measured at the pre-test and post-test stages.

<table>
<thead>
<tr>
<th>BMI Class</th>
<th>% Pre Test Cases</th>
<th>% Post Test Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Underweight</td>
<td>1%</td>
<td>0%</td>
</tr>
<tr>
<td>Normal</td>
<td>21.6%</td>
<td>23.6%</td>
</tr>
<tr>
<td>Overweight</td>
<td>25.6%</td>
<td>26.6%</td>
</tr>
<tr>
<td>Obese</td>
<td>51.8%</td>
<td>49.7%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BMI Class Pre Test</th>
<th>BMI Class Post Test</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Normal</td>
<td>Overweight</td>
</tr>
<tr>
<td>Underweight</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Normal</td>
<td>42</td>
<td>0</td>
</tr>
<tr>
<td>Overweight</td>
<td>2</td>
<td>47</td>
</tr>
<tr>
<td>Obese</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>Total</td>
<td>46</td>
<td>53</td>
</tr>
</tbody>
</table>

As shown in Table 3 the incidence of overweight and obesity in both the pre-test and post-test groups is high, representing a cumulative 77.4% and 76.3% respectively. The mean BMI scores were 31.01 in the pre-test group and 30.92 in the post-test group which displays a slight reduction. However, when the Paired-Sample T-Test was computed it concluded that the difference is not statistically significant. This is reflected in a P-Value of 0.557.
The cross tabulation shows changes in BMI class. There were no cases of underweight in the post-test. Two participants who were classified as overweight in the pre-test were normal in the post-test. Similarly six participants who were classified as obese in the pre-test reduced to the overweight category in the post-test. However, when a Marginal Homogeneity Test was completed these changes in BMI class were not found to be significant (P=.248).

6. Analysis of other factors
A second set of statistical tests were run in order to assess whether there was a relationship between the changes made and external factors like club type, age of participant, gender or degree of intellectual disability.

- Club Type
There are two main types of Special Olympics clubs: i) Community clubs, and ii) Services and Special Schools offering a Special Olympics programme within or linked with their own service or curriculum of activities. During the statistical analysis process, both types of clubs were compared to see if there was a difference in results from participants who were in each.

Overall there was no difference between the two types of clubs except in relation to oral health where participants in community clubs significantly improved their oral health behaviours (frequency of tooth brushing, quantity of toothpaste and dentist visits) compared to their counterparts in services. There were no cases in either club type of participant’s behaviour regressing in the post-test.

- Age group
For the purposes of this project the participants were divided into the following age groups:

- <22
- 22-28
- 29-38
- 39-46
- >46

There were variances across the age groups in relation to nutrition intake. It was found on computation of the Related Samples McNemar Test that participants in the two oldest age groups (39-46 and >46) were less likely to positively change their nutrition behaviour (p=0.227 and 0.289 respectively). Similarly, the Related Samples Wilcoxon Signed Ranks test showed that participants in the two oldest groups were less likely to change their oral health behaviours (p=0.102 and 0.180 respectively).

However, across all other categories the changes were found to be similar in each age group.

- Gender
In general it was found that the male and female groups did not differ in their health knowledge or behaviour.
- **Degree of Intellectual Disability**
  Participants were divided by degree of intellectual disability into three categories: Mild, Moderate, Severe/Profound. As there were only 4% of cases in the latter group they were excluded from the comparative analysis. The main differences were in relation to BMI, participants in the moderate category experienced significant changes (p=0.017 and p=0.021 respectively). Whilst those in the mild category saw slight improvements in BMI and Waist Hip Ratio, neither were found to be statistically significant. In addition, the standard deviation for the moderate group is much lower than the mild group in both instances. This implies that their answers are more consistently based around the mean. BMI and Waist Hip Ratio are the only two improvements that differ across level of intellectual disability.
Qualitative Results

Focus Groups
Data gathered from the five focus groups was analyzed with thematic content analysis. Four key themes were identified:

1. Health information learned
2. Lifestyle Changes/Benefits
3. Recommended Changes
4. Positives

1. Health Information learned
Over the course of the focus groups the key learnings that athletes identified related to nutrition, physical activity and oral health knowledge.

- “I learned about the different food groups and that fruit and vegetables are good for you”
- “I learned that brown bread is healthier than white”
- “I learned how to change my diet, eat lean meat. Don’t eat the fatty bits at all – cut that off”
- “(I learned) how to brush my teeth right”

2. Lifestyle Changes
Again within this theme the key lifestyle changes that participants referred to related to nutrition and physical activity.

- “There’s one particular thing on my mind, I never had fruit, for years and now I am having fruit that I never had before in the juices, you know the smoothies”
- “I started drinking water”
- “Since I started this, I started using the, you know the low fat milk and that what do you call it, you know the seeded bread, brown bread”
- “I grill my stuff instead of frying it”
- “I’m eating Weetabix in the morning and I used to eat Rice Krispies” The Health Promotion Facilitator in this service went on to explain that they noticed substantial differences in the participant’s concentration levels and her parents commented that they noticed improvements also
- “I used to eat only bananas, but after we played the game (Fruit and Vegetable Tasting Game) I started to eat lots of fruit and I love them”
- “I go walking with my Mam”
- “I do exercise outside”
- “We started walking; we have two groups a fast one and a slower one”
3. **Recommendations**
In the main, participants felt that they would recommend participating in the programme to other athletes:

- “Yes for definite, I would recommend it”
- “Yes definitely – big time!”
- One participant felt that it depended on the athlete: “Well I suppose it depends on the athletes, you know what I mean like, I was able to understand the programme the way it is but somebody else mightn’t”

Participants also pointed out changes that they would like to see to any future additions:

- “Some more recipes, I think there is only one recipe for a pasta dish, I think I would like to see more of those”
- “I’d like to see a DVD to see people make healthy changes”

4. **Positives of the Programme**
One of the key positives which were outlined by participants were the Athlete Pack resources:

- “I like the thing on the wall for brushing your teeth” (Healthy Smile Sticker)
- “I liked the food diary I use it every day”
- “I liked the Healthy Smiles sticker and the sticker on the fridge” (Food Diary)
- “I liked the recipes; they showed me how to make my own dinners”

They found the resources were easy to understand. “It explains everything easier, you know what I mean like, than some healthy option books you can get and that”

**Facilitator Questionnaires**
The 15 Health Promotion Facilitators in each participating club completed an evaluation questionnaire on completion of the pilot. The table below highlights the overall programme strengths and challenges as identified by the facilitators.

<table>
<thead>
<tr>
<th>Programme Strengths</th>
<th>Programme Challenges</th>
</tr>
</thead>
<tbody>
<tr>
<td>User Friendly</td>
<td>Time Limitations</td>
</tr>
<tr>
<td>Practical</td>
<td>Absenteeism of Athletes</td>
</tr>
<tr>
<td>Fun</td>
<td></td>
</tr>
</tbody>
</table>

All facilitators felt that the athletes enjoyed participating in the programme. “They all loved it and each week enjoyed telling me all the positive changes they made”.

Facilitators felt that the information was at the appropriate level for athletes to understand “they were able to understand. A number referred to the fact that athletes enjoyed the team approach “loved working as a group”, “all worked well together as a team”.

All respondents felt that the Health Toolkit was “easy to use” and “relevant”. They also commented “it’s a great resource for the club to dip into in the future”. In addition all facilitators felt that the information contained in the Toolkit was targeted at an appropriate level. However they did make some recommended changes to the layout of the pack.
Family Member/Carer Questionnaires

40 Family members were asked to fill in an evaluation questionnaire on their view of the Health Promotion Project. All the feedback was very positive and highlighted the successfulness of the programme.

- 80% of family members felt that their athlete gained health knowledge as a result of participating in the programme, whilst 60% felt that their athlete changed their health behaviours as a result of participating in the programme.
- A number of parents mentioned how the programme helped the entire family to focus on their health, “it’s the best thing she ever did. Very aware of healthy eating now and keeps a check of all at home!”
- Family members felt that the programme was “easy to follow” and “pitched appropriately” for people with ID. In addition it was noted by a number of family members that by linking healthy lifestyle with sport it was a motivational factor for participants to make health changes. Some recommendations for the future which were made included that “more input from home needed” and “to run it for a longer period of time.”
Discussion

It is evident that there has been a lack of user friendly health promotion material available for use with people with ID. This project aimed to negate this gap through a participatory research approach.

The project has successfully resulted in the production of the Health Toolkit and Athlete Pack. In addition to this it aimed to identify whether or not the use of such resources would help to increase the health knowledge of people with ID and furthermore, if it would result in an improvement in health behaviours.

The project aimed to create a sustainable health promotion programme which could be used within existing Special Olympics clubs and train the pool of volunteers already in place to deliver the programme. In addition to this it was identified that creating links between family and club would be imperative to ensure cohesiveness. The Ottawa Charter on Health Promotion (WHO, 1986) highlights creating supportive environment as one of the cornerstones of health promotion. By creating these links between club and family, it helps to ensure that there is a supportive environment in place for health change to take place.

This study has illustrated that use of these resources has resulted in a significant improvement for both health knowledge and health behaviours among participants. One of the first topics covered was nutrition. There was a large significance placed on nutrition throughout both the Health Toolkit and the Athlete Pack as overweight and obesity was one of the most important factors identified in the health needs assessment.

The results have shown that in relation to health knowledge, participants across the board have improved their nutrition knowledge. There was a statistically significant increase in the number of participants who were able to correctly identify the number of recommended daily servings for each shelf of the Food Pyramid. This is further supported by the data which was gathered throughout the focus groups where a common theme indicated that an increase in knowledge of nutrition recommendations was of significance to the majority of participants. A female participant in the Munster focus groups highlighted that “I learned about the different food groups and that fruit and vegetables are good for you”.

These results are further supported by the corresponding changes in nutrition intake for participants. Again as with nutrition knowledge we see a statistically significant increase in the number of participants who changed their behaviors to meet the recommendations. These results are similar to those found by Mann et al in their 2006 evaluation of the "Steps to Your Health" health promotion intervention with 192 people with ID. They also found a significant increase in the nutrition knowledge of participants and a corresponding improvement in healthy eating behaviours.
Whilst there is no data showing the nutrition intake of people with ID in Ireland it is useful to compare the data from this study with that of the 2006 National Survey of Lifestyle, Attitudes and Nutrition in Ireland (SLAN). The SLAN survey looked at the nutrition intake of 9,223 Irish people in relation to the Food Pyramid. While the results in this study displayed an improvement from pre-test to post-test there were still evident disparities in healthy eating behavior when one compares this sample group with the data from the SLAN survey.

In the Special Olympics programme, participants were more likely to reach the recommended intake of carbohydrate foods per day (6+ servings). In the SLAN survey just 26% of respondents met the recommendations whilst in the Special Olympics programme, 80% of all participants met the recommendations in the post-test. It is also important to note that the percentage of participants who chose a wholegrain variety of carbohydrate foods increased from 51.7 to 76.7.

One participant in a Leinster focus group told us “I’m eating Weetabix in the morning and I used to eat Rice Krispies”. The Health Promotion facilitator in the club went on to explain how she and other staff members had noticed a marked improvement in the participants concentration levels and her family also commented on this improvement.

The results in relation to the fruit and vegetable group were not so positive for Special Olympics with just 35% of participants in the post-test (increased from 18% pre-test) meeting the recommendations. The SLAN participants fared much better with 65% meeting the daily recommendations of fruit and vegetables, a mean intake of 7.1 servings per day. So, whilst the Special Olympics group did see an increase in fruit and vegetable intake after participating in the Health Promotion Programme the results are still some way from those of the general population with a mean intake of 3.8 servings of fruit and vegetables each day. This is a disappointing finding as there is a wealth of evidence highlighting the benefits of consuming a diet rich in fruit and vegetables. The European Cancer Code recommends eating at least five portions of fruit and vegetables each day in order to reduce the risk of cancer.

It is recommended that we consume three servings of dairy products each day. This study saw a rise in consumption of dairy products with the mean rising from 2.0 to 2.3 servings per day, this still remains less than the population average which is 2.4 according to the SLAN survey and less then the recommended 3 servings per day. In addition to this it was found that the percentage of participants who used low fat dairy products increased from 70% to 90%.

For protein foods there was no change from the pre-test to the post-test, however, as the intake was already at the recommended 2 servings per day at pre-test stage the only aim would be to maintain this behaviour. In relation to foods which are high in fat and sugar the participants of this project had an average of 3 serving per day pre-test which reduced significantly to 2 servings in the post-test. This was much less than the SLAN survey which had a mean response of 7.3, however this difference could be accounted for by the participants’ lack of knowledge of food preparation.

It is evident that there has been an increase in participants’ knowledge of the Food Pyramid recommendations. This is further enhanced by the fact that there was a significant change in participants’ nutrition intake which reflects the recommendations. A parent of a female participant in Munster commented that “The best thing she ever did. Very aware of healthy eating now and keeps a check of all at home!”
Part of the data collection included anthropometric measurements. This involved both BMI testing and waist circumference measurement. The BMI testing displayed very high levels of overweight and obesity with total of 76.3% of participants whose post-test measurements fell into those categories. This is much higher than the SLAN survey which found that 50% of respondents were overweight/obese. Furthermore, it is higher than a 2003 study by McConkey et al of the impact of nurse led health promotion activities which found that 64% of participants were overweight or obese. It does however reflect the data from Thomas and Kerr’s (2010) study of adults with intellectual disabilities where 69% of participants were in the overweight/obese category. This study found a slight decrease in the mean BMI scores from 30.01 in the pre-test to 30.92 in the post-test; this was not found to be statistically significant. It is important to note that the results may have been somewhat skewed, as the athletes who put themselves forward to participate in the project may have been those who felt that they were an unhealthy weight or had a specific interest in health and this may have been one of the motivational factors for their participation, which could mean that selection bias was present.

Furthermore, although we did see some limited weight loss, this may have been due to the short time frame when the testing took place. This project did not have a focus on losing weight but looked more at educating participants on healthy lifestyle choices with a resulting change in health behaviour. Some participants did experience weight loss; 6 participants who were classed as obese in the pre-test, reclassified into the overweight category, similarly 2 participants who were classified in the overweight category shifted to the normal category in the post-test. In addition to this, the 2 participants who were underweight in the pre-test increased their weight to be classified in the normal category in the post-test.

Furthermore when the results were analyzed by degree of intellectual disability it was found that there were significant reductions in BMI (p=0.017) in participants with moderate ID. McConkey et al in their study of the impact of a nurse led health promotion activities for people with ID, found that there was a significant reduction in the mean weight of participants after participating in the programme. However, their study was limited to just 20 participants, who were deemed as needing to reduce weight.

This research showed a significant increase in frequency of physical activity, increasing from 4.4 days per week to 4.8 days per week. A recent literature review of physical activity levels among adults with ID states that existing evidence indicates only a small proportion of adults with ID (17.5% to 33%) meet World Health Organisation public health recommendations (Temple et al., 2006). 48.6% of participants in the pre-test met the recommended 30 minutes of more of physical activity on their active days, this increased to 70.6% in the post test. The percentage of participants who met the recommended 30 minutes of moderate intensity physical activity on 5 or more days of the week increased from 22% in the pre-test to 49% in the post-test. This is much higher than the results displayed in The Irish Sports Monitor Annual Report, 2009 which states that 26% of the 9,781 people surveyed participate in the recommended levels of physical activity. This indicates that participation in the Health Promotion Programme resulted in increased levels of physical activity above population norms.

These results reflect those found by Bazzano et al in their 2009 evaluation of a community based health intervention for people with ID. They found after participation in their programme that participants significantly increased both the frequency and duration of physical activities.
In addition to this, during the focus groups in the present programme, it was mentioned time and time again by participants that they increased their levels of physical activity through participating in the programme. In one club, which was a service for people with ID, the participants set up a walking group, which they divided into two, one fast and one slower group, to ensure all abilities were catered for. Walking was one of the most popular activities participated in, however, the vast majority of participants in the study participated in 2 or more types of physical activity. This is a general theme within Special Olympics, where a large number of athletes participate in two or more sports.

It was evident from participants that if they wanted to increase their levels of physical activity, walking was the most accessible form. In addition to this it was evident that participants who increased their physical activity were more likely to do it in groups, whether it was a walking group within a service or whether they went walking with a family member. This highlights the benefits of creating supportive environment for health change among the ID population. This is supported by Temple (2009) who identified role modelling by care providers and family members as a positive factor to support participating in physical activity with people with ID. Increased levels of physical activity is of significance to the intellectual disability population in particular, because they are more likely to lead a sedentary lifestyle (Frey et al, 2005).

The triangulation approach to evaluation which was used in this programme really helps to paint a picture of its success. Whilst the empirical data highlights significant improvements across the board, the focus groups and feedback questionnaires provide insight into the real lifestyle changes that were made, and furthermore the secondary impacts that these changes made in the lives of individuals. Through the focus groups, participants were able to link their learning to the positive changes they had made to their lives. Additionally, they commented on the approaches used within the programme which helped to encourage their changes. One game in the Health Toolkit involves participants tasting a variety of fruit and vegetables. A number of participants commented how through this game they not only realised they like fruit and vegetables but they started to consume more as a result. The other aspect of this was that the programme took a fun approach to learning, by incorporating educational games into the workshops and encouraging active participation. This was also highlighted in the focus groups as one of the elements of the programme that the participants enjoyed the most, “I really enjoyed playing the games”.

Another aspect of the programme that added to its success was running the programme within the club. By doing this, not only did it create a supportive environment, but it also allowed participants to identify the importance of good health behaviours for sport. One coach reported that “the Health Promotion Project was a useful addition to the club. It gave the athletes the opportunity to link sport, exercise and health in a meaningful way.” It was also very important to the facilitators in the clubs that the Health Toolkit was very concise and easy to use. Coaches in clubs are already volunteers giving up their time, so it was imperative that the resources which they used were ready to use and required little preparation. The feedback from the facilitators reiterated this “Excellent Programme, easy for instructor to follow and easy for athletes to learn”.

Conclusion

The results of this research highlight that by participating in a targeted health promotion programme people with ID can both increase their health knowledge and improve their health behaviours. In addition to this it has portrayed how using the community setting of a Special Olympics Club helps to increase success rates of the programme overall and provides a sustainability of the programme into the future. Furthermore by running the programme within the club it helps to create a supportive environment for health.

Although this research has its limitations including the lack of a case control aspect to the study there are still a number of very positive aspects which can be taken on board. The fact that statistically significant changes were seen in relation to both health knowledge and health behaviour bodes very well for future roll out. More promising still is the excellent positive feedback from Health Promotion Facilitators within clubs.

It is important to note that although this research did see improvements in the health knowledge and health behaviours in participants, significant health disparities continue to exist. The most notable of these disparities is the very high levels of overweight and obesity compared to the general population. It is imperative that these issues are addressed so that people with ID can live healthy and independent lives to the best of their ability.

There needs to be a joined up approach to this among people with ID themselves, carers and family members, whilst supported by organisations like Special Olympics. The fact that the Health Toolkit and the Athlete Packs can be used by the intellectual disability services and families could act as a support to this. It was evident in this study that often people with ID have limited control over the food they eat and so it is recommended that future projects work closely with either family members or staff in services to help educate them in healthy meal preparation.

The Special Olympics Ireland Health Promotion Programme is just one approach that can successfully increase the health knowledge and improve the health behaviours of people with ID. However a concerted effort should be made to tackle the problem of overweight and obesity in people with ID, by providing the necessary primary care services and with the support of allied health professionals.
Bibliography

**American Association of Intellectual and Developmental Disabilities (2012)**

The Healthy Lifestyle Change Program a Pilot of a Community-Based Health Promotion Intervention for Adults with Developmental Disabilities. American Journal of Preventive Medicine 37 (6), 201-208

**Beange, H., Gale, L. and Stewart L. (1995)**

Medical disorders of adults with mental retardation, a population study, American Journal Mental Retardation 99 (6), 595-604


**Carmeli, E., Zinger-Vaknin, T., Morad, M., Merrick, J. (2005)**
Can physical training have an effect on well-being in adults with mild intellectual disability? Mechanisms of Ageing and Development 126 (2), 209-304

**Central Statistics Office (2010)**
Vital Statistics Fourth Quarter and Yearly Summary. Stationary Office, Dublin

Improving the health of people with intellectual disabilities: outcomes of a health screening programme after one year. Journal of Intellectual Disability Research Vol 50 (9), 667-677

**Corbin S, Malina K, Shepherd S. Special Olympics World Summer Games 2003 Healthy Athletes Screening Data.Washington, D.C., Special Olympics, Inc., February 2005.**

**Dahlgren, G. and Whitehead, M.,**
Policies and strategies to promote social equity in health, Institute of Futures Studies, Stockholm, 1991

**Department of Health and Children (2009)**
Doyle, J.

Emerson, E. (2005)
Underweight, obesity and physical activity in adults with intellectual disability in supported accommodation in Northern England. Journal of Intellectual Disability Research 49 (2), 134-143

“I’d Rather Watch TV”: An Examination of Physical Activity in Adults with Mental Retardation. Mental Retardation 43 (4), 241-254

Promotion of health for people with intellectual disabilities in Latin America. Salud Pública de México 50 (2), 167-5177.

Government of Ireland (2005)


Health Information and Quality Authority (2009)
National Quality Standards: Residential Services for People with Disabilities

Health Research Board (2010)

The Health Status and Needs of Individuals with Mental Retardation New Haven, CT: Yale University School of Medicine and Special Olympics. www.specialolympics.org

Prevalence of eating disorders in adults with mental retardation living in the community, American Journal on Mental Retardation, 109 (6), 501-506


Making Diabetes Count: What does the future hold? Institute of Public Health in Ireland

Annual report of the National Intellectual Disability Database Committee 2010. HRB Statistics Series 2. Dublin: Health Research Board

Lancioni, GE and O’Reilly, MF. (1998)
A review of research on physical exercise with people with severe and profound developmental disabilities, Research in Developmental Disabilities, 19 (6), 477-492

Lawlor, DA., Hopker, SW (2001)
The effectiveness of exercise as an intervention in the management of depression: Systematic review and meta-regression analysis of randomized controlled trails, British Medical Journal, 322 (7289), 763-767

Leeder, SR., Dominello, A., (2005)


Lunn, P. and R. Layte (2010)

Thomas, G. and Kerr, M. (2011)
Longitudinal Follow-up of Weight Change in the Context of a Community-Based Health Promotion Programme for Adults with an Intellectual Disability Journal of Applied Research in Intellectual Disabilities 2011 Vol. 24 (4) 381–387

Fostering independence in health-promoting exercise, Journal of Intellectual Disabilities 13 (2), 143-159

Healthy Behaviour Change of Adults with Mental Retardation: Attendance in a Health Promotion Program American Journal on Mental Retardation 111 (1) 62–73

Evaluation of Community-Based Health Promotion Programs for Special Olympics Athletes. Journal of Policy and Practice in Intellectual Disabilities 7 (2), 119–129


Lifestyle and health behaviours of adults with an intellectual disability. Journal of Intellectual Disability Research 51 (7), 497-510

Obesity in adults with Down Syndrome: a case-control study, Journal of Intellectual Disability Research, 49 (2), 125-133

National Cancer Registry Ireland (2011)


Northern Ireland Statistics and Research Agency (2010)


Office of the Surgeon General (US); National Institute of Child Health and Human Development (US); Centers for Disease Control and Prevention (US).


Health Promotion for People With Disabilities: Implications for Empowering the Person and Promoting Disability-Friendly Environments. American Journal of Lifestyle 2, 409-420

Obesity and intellectual disability Mental Retardation and Developmental Disabilities Research Reviews Vol. 12 (1), 22-27

Lifestyle related risk factors for poor health in residential settings for people with intellectual disabilities. Research in Developmental Disabilities 21 (6), 469-86
Scheepers, M., Kerr, M., O’Hara, D., Bainbridge, D., Cooper, S.-A., Davis, R., Fujiura, G., Heller, T., Holland, A., Krahn G., Lennox, N., Meaney, J. and Wehmeyer, M.


Temple, VA (2007)
Barriers, enjoyment and preference for physical activity among adults with intellectual disability. International Journal of Rehabilitation Research, 30 (4), 281-287

Physical activity of adults with mental retardation. Review and research needs. American Journal of Health Promotion 21, 2–12

Perspectives of constraining and enabling factors for health-promoting physical activity by adults with intellectual disabilities, Journal of Intellectual and Developmental Disability, 32 (1), 28-38


U.S. Public Health Service.

Health problems in people with intellectual disability in general practice: a comparative study. Family Practice 17 (5), 405-407

Osteoporosis and Intellectual Disability: is there any relation? Journal of Intellectual Disability Research 42 (5), 370-374


World Health Organisation (2012)

World Health Organisation (2012)

World Health Organisation (1986)
The Ottowa Charter for Health Promotion
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