

Evaluation of a recreational team game for seniors: Lifeball – a case study

Anne - Marie Holt - West Australian Centre for Health Promotion Research, Curtin University

Prof Peter Howat - Centre for Behavioural Research in Cancer Control, Curtin University

Dr Helman Alfonso - School of Population Health, University of Western Australia

The objective of this project was to assess changes in physical activity, social isolation and loneliness of Lifeball participants as a result of participation in Lifeball. Lifeball is a team game based on walking, ball passing and goal shooting. Newly enrolled Lifeball players ($n = 95$) aged 50 years and over were recruited from Lifeball clubs in Western Australia. Subjects completed a questionnaire on their physical activity levels and perceptions of their psychosocial health and well-being. The questionnaire was administered at baseline and after 3 months of participation in Lifeball. There was no significant change to overall physical activity levels. However, it appears Lifeball was used to replace other recreational pursuits that the subjects were involved in. There was a positive shift in variables associated with social isolation and loneliness. Lifeball provides alternative physical activity opportunities and may help reduce social isolation and loneliness.

Introduction

Life expectancy is steadily increasing with a significant percentage of the Australian population now over the age of 65 years. This demographic currently represents 12.7% of the population with estimations that it will double over the next 20-year period (Australian Institute of Health and Welfare, 2008).

The onset of disease and injuries in the older population is affected by risk factors accumulated in earlier stages of life. Some of these risk factors which lead to preventable early death or disability include being overweight or obese, poor nutrition and inadequate physical activity (Australian Institute of Health and Welfare, 2008).

Regular participation in physical activity has declined in Australia with less than 50% of the adult population being active at a level that will provide some health – enhancing benefits (Australian Institute of Health and Welfare, 2008). In Western Australia 13.5% of the overall adult population is inactive, 31.8% are insufficiently active and 54.6% are sufficiently active (McCormack et al., 2003). Participation in sport and physical activity is even more limited in the over 65's age group with only 51% of males and 41% of females participating in a regular sport or physical activity program (Australian Institute of Health and Welfare, 2008).

Physical activity has both physiological and psychological benefits. It can act as a buffer against chronic lifestyle diseases, improving the ability to age more healthily. Psychological benefits include improvements in mental health and wellness. Research shows that these health gains can improve the functional capacity and quality of life for older people (Howat et al., 2004).

Mental illness is a major health issue with some predictions that it will surpass chronic diseases such as coronary heart disease and cancer as the major causes of morbidity and mortality as the population continues to age (Australian Institute of Health and Welfare, 2008)). Higher incidence rates of depression, anxiety and stress have contributed to mental health becoming one of Australia's national health priority areas. It is currently third to cardiovascular disease and cancer as a leading cause of premature death and disability (Australian Institute of Health and Welfare, 2008). This is likely to have an increasing impact on the public health system in future decades (Molster, Daly & Couchley, 2005).

Social isolation and loneliness contribute to poor mental health. Lack of social interaction has been shown to be a confounding factor in those suffering from depression and anxiety (Australian Institute of Health and Welfare, 2008). Research demonstrates an association between social isolation and risk of depression particularly in the elderly

(House, 2001). "The magnitude of risk associated with social isolation is comparable with that of cigarette smoking and other major biomedical and psychosocial risk factors" (House, 2001). Regular physical activity by older adults may also improve cognitive functioning, as well as alleviate depressive symptoms (Tierney et al., 2009).

Together these issues illustrate the importance of public health interventions targeted specifically to older adults. Programs that target risk factors specific to this population have potential to contribute to an improved standard of living and quality of life.

Team games and group physical activity programs provide an opportunity for social contact that is not provided by individual pursuits (Robertson, 1996). Lifeball is a team game for older adults (55 years and over) that uses the basic skills of walking and ball handling (catching, throwing and shooting for goal) (Wilson-Lord, 2004). The game was created to meet a need in the community for a team game that targets mature persons who are leading sedentary lifestyles. It is non-competitive and is often an entre point into physical activity for older persons who are inactive. The game is played nationally and is growing rapidly in Western Australia (WA). This project was the first to attempt an evaluation of the game in WA. The objectives of this project were to assess changes in physical activity, social isolation and loneliness of Lifeball participants.

Methods

Research Sample

The sample of participants (n = 95) who took part was selected from new clubs located in the Perth metropolitan area and country towns in the south west of WA during 2005 and 2006. Each subject participated in Lifeball once a week during the three-month research period.

Instrument

The validated Perth Active Living for Seniors (PALS) questionnaire was administered (Jancey et al., 2008). The survey was divided into the following sections; physical activity, general health, social isolation and loneliness, and social support as well as demographic data including age, gender, marital status, education level, country of birth. Height and weight were used to calculate BMI.

Procedure

A pre-test/post-test design was used where the survey was administered twice to each subject. Survey 1 was completed at initial enrolment in Lifeball and Survey 2 was completed by participants after 3 months participation in the game.

Ethical Issues

Participation in this research project was voluntary. Privacy and confidentiality issues were addressed by ensuring that the participants who agreed to be subjects completed a 'consent and disclaimer form'.

Data Collection and Analysis

Survey 1 provided baseline data. SPSS statistical software allowed for frequency and percentages as well as mean and median values to be calculated. The means of the physical activity variables from Survey 1 and Survey 2 were

compared using a paired samples t-test. This allowed for any change in the frequency of physical activity between Survey 1 and Survey 2 to be identified. McNemar's test was used to compare the variables pre and post intervention for social isolation and loneliness, social support and general health. The significance level was set at $p < .05$.

Results

The evaluation was conducted from July 2005 to March 2006 with the questionnaire being administered twice to each subject during this period. A target sample of 100 new Lifeball participants was established with 95% (n = 95) responding by the end of the project. Although 95 participants completed Survey 2, the n reported for measures of social isolation and loneliness was as low as 69 due to missing values (Table 2).

The participants were predominately female (n = 81; 85%) which is consistent with Lifeball in general where the majority of players are female. Ages ranged from 52 to 89 years with a mean age of 67.2 years. The majority of the subjects were either married (57%), widowed (24%) or divorced (6%). Subjects were born in Australia/New Zealand (64%), UK/Europe (22%), and Asia (8%). Most of the subjects had attended high school and achieved school certificate or 6th form leaving (62%). A few had been tertiary educated (14%).

Recruitment of the subjects used the following criteria:

- Subjects were recruited voluntarily from a cross-section of newly formed clubs over the course of the study.
- The subjects were new players who were selected at their first game.
- All subjects attended and played the game on a once-a-week basis and were regular players over the three month period whilst being surveyed.
- The game involves four consecutive quarters of 15 minutes each. Each player/subject participated in a full 60 minute game.

Physical Activity

Physical Activity was measured via both recreational and incidental activity (Table 1). Frequency was measured by days per week, times per week and types of activities (e.g. walking for leisure, walking to do errands, as well as playing golf, bowls and other games).

Recreational Activity

Recreational activity was measured by frequency (time, duration and number) and was separated into 'walking for recreation/leisure' and 'moderate physical activity other than walking'. There were no statistically significant changes in either of the recreational categories between Survey 1 and Survey 2 (Table 1) ($p < .05$).

At Survey 1, Lifeball was recorded as the main recreational pursuit of choice by 29% (n = 27) of the participants. The subjects surveyed were new players to the game itself. Prior to taking up participation in both the game and the survey they had participated in other recreational pursuits such as bowls and golf. During the first survey period these subjects recorded that Lifeball was or became their main recreational pursuit of choice with n = 27 (29%) of the players stating this. By Survey 2 this had increased to 73% (n = 68).

	Survey 1		Survey 2		Difference		p-value	n
	mean	(sd)	mean	(sd)	mean	(sd)		
Recreational Activity or Exercise								
Walking for recreation or leisure (1)	5.71	3.38	5.8	3.5	-0.1	-0.1	0.79	55
Walking for recreation or leisure (2)	4.87	2.09	5.00	2.00	-0.1	0.08	0.71	55
Walking for recreation or leisure (3)	225.5	150	225.0	145	0.5	5.81	0.98	57
Moderate physical activity other than walking (10 mins+) (1)	3.39	2.21	3.500	1.90	-0.1	0.35	0.84	49
Moderate physical activity other than walking (10 mins+) (2)	3.11	1.54	3.20	1.60	0	-0	0.87	46
All physical activity for recreation/leisure other than walking (3)	234.3	144	254.0	179.0	-20	-35	0.37	53
Incidental (Spontaneous) Activity								
Walking as incidental (spontaneous) activity (1)	4.81	3.23	4.90	3.70	-0	-0.4	0.91	48
Walking as incidental (spontaneous) activity (2)	4.38	1.81	4.10	2.10	0.30	-0.3	0.34	45
Total time spent walking as incidental activity (3)	200.4	202.0	191.0	172.0	9.80	29.90	0.78	45
(1) Refers to number of times per week (2) Refers to days per week (3) Refers to total time per week								

Table 1 - Measures of Physical Activity by frequency (time, duration and number).

	Survey 1		Survey 2		*p-value	n
	Low	High	Low	High		
Feel close to people	46	24	34	36	0.004	70
Feel that you can't find companionship when you want it	38	31	26	43	0.004	69
Feel that there are people who really understand you	50	21	40	31	0.031	71
Feel that there are people around you but not with you	62	8	69	1	0.039	70
Feel that there are people you can talk to	32	39	24	47	0.039	71
Low refers to <i>Never/rarely/sometimes</i>						
High refers to <i>Always</i>						*p<.05

Table 2 - Measures of Social Isolation and Loneliness.

The other most popular recreational activities (excluding walking) were: going to the gym, Prime Movers, swimming and dancing at Survey 1.

Incidental Activity

The total time spent engaged in incidental activity (e.g. walking to do errands) was an average of 200.4 minutes per week (SD = 202.0) at Survey 1, and this decreased marginally to 191.0 minutes per week (SD = 172.0) by Survey 2. These and other measures of incidental physical activity were not significantly different between the two survey periods.

Social Isolation and Loneliness

Five of the variables that measured social isolation and loneliness showed statistically significant changes (Table 2).

Feel close to people

The survey question item asked "How often do you feel close to people?" The list of responses to choose: *Never, Rarely, Sometimes or Always.*

At Survey 1, 66% (n = 46) responded that they never, rarely or sometimes feel close to people whereas by Survey 2 this

had decreased to 48.5% (n = 34). There was an increase of 17% (n = 12) between Survey 1 and 2 in the 'always' response.

Feel that you can't find companionship when you want it

The proportion of subjects who responded either 'never, rarely or sometimes' to this question decreased by 17% (n = 12) from Survey 1 to Survey 2 and increased by 17% (n = 12) for a response of 'always'.

Feel that there are people who really understand you

Under this variable the proportion of respondents who indicated 'never, rarely or sometimes' was 70% (n = 50) at Survey 1 and 56% (n = 40) at Survey 2. The proportion who responded 'always' shifted from 29% (n = 21) (Survey 1) to 44% (n = 31) (Survey 2).

Feel that there are people around you but not with you

The greatest change for this variable was to the 'always' response which decreased from 11% (n = 8) to 1% (n = 1). A p-value of 0.039 illustrates the statistical significance of these figures.

Feel that there are people you can talk to

Proportionally, 45% (n = 32) said 'never, rarely or sometimes' in Survey 1 and in Survey 2, 34% (n = 24) responded in either of these ways. At Survey 1, 55% (n = 39) said they 'always' felt that there were people they could talk to and this increased to 66% (n = 47) at Survey 2.

Discussion

The results indicate some potential health benefits from participation in Lifeball.

Physical Activity

The average participation in physical activity for this group was 210 minutes per week. This was 60 minutes more than the recommended minimum level prescribed to achieve health benefits (Miriam et al., 2007). Therefore, this group can be classified as active rather than sedentary. There was no significant change from Survey 1 to 2 in the amount of time the subjects participated in physical activity. It can be reasoned that the replacement of other recreational pursuits by Lifeball appeared to account for this. Many of the subjects who took part were already participating in other activities that made them 'time-poor' and Lifeball probably replaced their regular participation in these activities.

West Australian population indices report a linear relationship between those older adults who participate in regular physical activity above the recommended guidelines of 150 minutes/week and the amount of habitual incidental

physical activity (McCormack et al., 2003). These findings concur with the results found in this project.

Social Isolation and Loneliness

The most significant changes that occurred between the two survey periods were with the social isolation measures. The variables that showed significant improvements were: reduced feelings of loneliness, improved feelings of emotional support and reduced isolation (Table 2). It is possible that these changes were due to playing Lifeball on a regular basis where the game generated new social networks for the participants. This is consistent with other literature, which reports that for older adults it is the social aspect of physical activity and exercise programs that provide motivation and adherence to continued participation (Donovan & Halpern, 2002).

Offering programs that have a high social interaction component, such as a team game improves participation (Eyler et al., 1999; Robertson, 1996). The most significant changes in the program occurred in the social isolation and loneliness measures. These findings concur with other research into the benefits of group physical activity programs for older adults (Bailey & McLaren, 2005; Corbin & Pangrazi, 1998; Deforche & De Bourdeaudhuij, 2000; Eyler et al., 1999; Howat et al., 2004; McAuley et al., 2000; McTeer & Curtis, 1984). Increasing the proportion of older Australians participating in regular physical activity is likely to be a key factor in the health of this population (Howat et al., 2004; Strawbridge et al., 2002). Programs such as Lifeball increase the options available to older adults to engage in physical activity and concurrently reduce social isolation. This is supported by other research that shows that team games can encourage a sense of belonging and group identity (McTeer & Curtis, 1984). Similarly, Bailey and McLaren (2005) highlighted the importance of fostering a sense of belonging within the group activity itself.

Limitations

Some limitations to the project are acknowledged. The sample size was relatively small due to a limit in the available number of new participants enrolling in Lifeball during the period when the study was undertaken. It was also not possible to establish a control group that was comparable to the study group. Hence, there are limitations to attributing changes to the intervention alone.

Conclusion

It appears that participation in Lifeball can contribute to reducing social isolation and loneliness for those who take part. The social nature of the game may explain why other recreational activities were replaced with Lifeball. The growing proportion of elderly people in the population is likely to impose increased burden on the health care system in future decades. Mental illness is now recognized as a major cause of morbidity and mortality in the ageing population. Social isolation and loneliness significantly contribute to the mental health of older people. Hence, measures that reduce social isolation and loneliness are likely to not only reduce health care costs but also improve the quality of life of older people. Further research is recommended to assess the contribution of other recreational pursuits to the reduction of social isolation and loneliness.

Key Points

No significant change in overall physical activity levels of the subjects. A significant change in social isolation and loneliness measures.

Acknowledgements

Thanks to the West Australian Lifeball players who volunteered for this project, and the funding of Lifeball by The West Australian Health Promotion Foundation (Healthway) and The Premiers Physical Activity Taskforce (PATF) Western Australia.

References

- Australian Drug Foundations (ADF) (2002). Good sports accreditation program.
- Burton Nelson, M. (1994). *The Stronger Women Get, The More Men Love Football*, New York; Harcourt Brace & Company.
- Clarkson, J., Giles-Corti, B., Donovan, R. & Frizzell, S. (2002). Play hard drink safe: A pilot project to promote responsible alcohol consumption in sporting clubs in Western Australia. *Health Promotion Journal of Australia*, 13: 226-231.
- Duff, C. (2002). Evaluation of the Good Sports Accreditation Program in Victoria. Melbourne: Australian Drug Foundation.
- Duff, C., Scealy, M. & Rowland, B. (2004). The culture and context of alcohol use in community sporting clubs in Australia: Research into 'attitudes and behaviour'. *Centre for Youth Drug Studies, Australian Drug Foundation*.
- King, E. Taylor, J. & Carroll, T. (2005). Alcohol consumption patterns among Australian 15-17 year olds from 2000 – 2004. Sydney: Australian Government Department of Health and Ageing.
- Mission Australia (2005). National Youth survey 2005: Key and emerging issues. Mission Australia.
- Munro, G. (2000). Challenging the culture of sport and alcohol. *International Journal of Drug Policy*, 11: 199-202.
- 2004 National Drug Strategy Household Survey (2005). Drug Statistics Series No. 13. Canberra: Australian Government Department of Health and Ageing.
- Snow, P. & Munro, G. (2000). Alcohol consumption in amateur Australian football clubs: Evidence from a rural region. *Health Promotion Journal of Australia*, 10: 237-243.
- Snow, P. & Munro, G. (2005). Alcohol (mis)use in metropolitan amateur football clubs. *Healthy Lifestyles Journal*, 53(1): 7-11.
- White, V. & Hayman, J. (2006). Australian secondary school students use of alcohol in 2005. Monograph Series No. 58. Canberra: Australian Government Department of Health and Ageing.

Author's note

Annie Holt is Managing Director of Leading Edge Corporate Health. She has a career spanning over 20 years in the Health and Fitness Industry. Her future interests lie in health promotion and education relating to the ageing population. Recently she has been working in School of Public Health (Tutor) at Curtin University Western Australia.

Peter Howat is Professor and Director of the Centre for Behavioural Research in Cancer Control at Curtin University. He is an investigator on several funded projects including NHMRC (3), ARC (2), and Healthway (4). He is Australian Editor of *The American Journal of Health Behavior*, and on the Editorial Boards of *Global Health Promotion* and the *Australian Journal of Health Promotion*.

Correspondence

All correspondence should be sent to Annie Holt – amholt@iinet.net.au, P O Box 273, MELVILLE WA 6957. Phone: 0414 595 847, Fax: 08 9330 5009.