ORIGINAL RESEARCH

USING PEER EDUCATOR DELIVERED SEMINARS TO IMPROVE THE LEVEL OF PHYSICAL ACTIVITY AMONG OLDER ADULTS: A PILOT INVESTIGATION

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ABSTRACT

Objectives: This research aimed to investigate the influence of peer educator delivered seminars to older adults on physical activity and exercise uptake, and whether improvements in activity levels and functional wellbeing follow. Design: Two part evaluation. Data are from a post-seminar survey that informed a process evaluation (Part 1 - Seminar) and a non-controlled prospective investigation (Part 2 - Cohort). Setting: Cohort data were collected from a regional community organisation and Seminar data at a number of meeting places for older adult organisations throughout Queensland. Participants: Seminar - 412 older adults, classified "Mostly third age" (> 65 years with average health), attended 23 seminars throughout the state. Cohort data were collected from nine adults (age 74.22 ± 4.43 years) at baseline and at two follow ups. Main outcome measures: Seminar satisfaction and intention to change data were collected by questionnaire post-seminars. Cohort data were collected for function, balance and quality of life pre-seminar, and four (PS1) and eight (PS2) weeks post. Results: Seminar data showed a raised awareness of the need for more movement, and an indication that individuals aimed to become more involved. For cohort, minutes per day sitting was significantly reduced at PS1 (p = 0.046) but not PS2, and a positive trend emerged for function and total METs-minutes per week. Conclusion: While further research is required, data suggest peer educator delivered seminars can have a positive impact on the intention to be active, and the activity levels and functional wellbeing of older adults. Peer educator delivered seminars may be a valuable complement to behaviour modification and social-ecological models in the drive towards seeing more adults become physically active.

KEY WORDS: Peer educator; Physical activity; Function; Wellbeing; Australia.

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INTRODUCTION

Good nutrition and a physically active lifestyle have known benefits for prolonging functional independence and reducing the risk of disability, institutionalisation and mortality among older adults (Guralnik *et al.* 1995). While improved dietary choices are seen to have a positive impact on normal ageing (Drewnowski & Evans, 2001), participation in regular physical activity is associated with improved ability in daily tasks, a decreased risk of falls and a decrease in the symptoms of chronic disease (Faber *et al.* 2006; Fiatarone *et al.* 1990; Chodzko-Zajko *et al.* 2009a). Even commenced later in life, and independent of disease or disability, research shows that a physically active lifestyle is an essential component of prolonged capacity in activities of daily living, referred to as functional wellbeing (Sims *et al.* 2006). However, while it has been reported that older adults are aware of the benefits of physical activity, less than 30% adhere to the national prescribed guidelines (Manini *et al.* 2005; Marquez *et al.* 2009).

A number of established barriers to adherence are known to prevent older adults meeting the recommended health guidelines (Brawley *et al.* 2003; Cohen-Mansfield *et al.* 2003). In relation to physical activity, poor health, environment, lack of knowledge and their physician's advice are among the regularly reported as barriers for individuals becoming involved (Schutzer & Graves, 2004). In contrast, among aged matched adults motivated to undertake physical activity, these barriers are often discredited as excuses to remain sedentary (Grant, 2001). Moreover, present guidelines also go some way to debunk these barriers given physical activity is advised for all adults independent of age, level of fitness or disability, and prescribe simple goals such as an increase in normal daily activities, gardening, walking or attending regular social events (Chodzko-Zajko *et al.* 2009b; Sims *et al.* 2006). However, it appears the dissemination of these health guidelines is insufficient to entice increased participation (Layne *et al.* 2008). Therefore, alternative methods to encourage positive lifestyle modification among older adults must be explored.

Brawley et al. (2003) suggested that supported behavioural modification may be the primary step for increased physical activity participation among older adults. While effective on an individual level, this model requires a significant population shift and encompasses policy based interventions. Moreover, the step from individual to population activity promotion requires a significant level of knowledge dissemination. Peer educator delivered knowledge based seminars have been suggested to assist in this knowledge dissemination and encouragement for older adults (Layne *et al.* 2008). Among other tactics, peer educator delivered seminars may be an important catalyst to promote activity uptake and adherence.

This concept has been trialled successfully before in a Dutch population where individuals received peer educator health education combined with low-intensity exercises taught by professional instructors (Hopman-Rock & Westhoff, 2002). This marriage of education and practical delivery was further applied to Turkish immigrants to the Netherlands (Reijneveld *et al.* 2003), with both interventions showing promise in activity adherence. An Australian concept, the Eat Well Be Active (EWBA) program has seen varied success among younger populations (Eat Well Be Active, 2010). With the aim of improving nutritional and activity choices for individuals and families, the EWBA peer educator delivered program

encourages greater knowledge of health, education, welfare, neighbourhoods and food supply by promoting environmental and individual barrier awareness to healthy eating and physical activity.

The value of using seniors as peer educators to older adults was outlined in a review by Peel and Warburton (2009). In respect to falls prevention, they stated that as an independent model, peer education by seniors to seniors had mixed outcomes, but appeared to have communication, role model and sustainability advantages over other educational models. Still, there is little research available about the uptake of knowledge and the adherence to lifestyle modification among older individual's that might follow a peer educator delivered seminars. The aim of this project was to assess the influence of peer educator delivered seminars on the physical activity and exercise habits of older adults, and whether health and functional wellbeing benefits followed. It was hypothesised that if participants embrace the concepts outlined by peer educators, and make accompanying modifications to their activity regimes, an increase in functional wellbeing, physical activity and quality of life will follow.

METHODS

Study Design

Delivered via peer educators, the EWBA program has recently been adapted for use among older adults in Queensland, Australia. This assessment was conducted in two parts and in cooperation with the Council of the Aged Queensland (COTA Queensland, Australia).

Part 1

State wide feedback data were collected using a brief questionnaire, administered by the peer educator following the seminar delivery, and collated by COTA Queensland staff (Seminar). This data underwent a process evaluation, with outcomes used to gauge the effectiveness of the seminar and to inform a secondary pilot investigation.

Part 2

Functional wellbeing and quality of life data were collected from a cohort of individuals before and following a EWBA peer educator delivered seminar. Individuals were members of a senior's organisation in North Queensland, Australia (Cohort) who had requested the seminar to fill their monthly guest speaker spot. Data were collected before the seminar to assess the individual's baseline functional wellbeing and quality of life and at two follow-ups.

The project received approval from the University of Queensland's Medical Research Ethics Committee and all cohort participants supplied informed consent.

Peer Educators

Peer educators for the EWBA program were recruited through an existing data base of volunteers held by COTA Queensland. All individuals on the data base were interviewed in accordance with the COTA Queensland protocols for appropriateness and completed a descriptive application form. Training for peer educators was delivered over two days, was based on the established training manual for the program and was supplemented by PowerPoint presentations for the information-based sections, group and individual activities. In addition to the topic, educators were taught about the administrator organisation (COTA Queensland) and guided with techniques for improved delivery and adult education strategies. All peer educators were encouraged to deliver seminars using the same format and employing the same objectives. The "Be Active" objectives were:

1. Define "physical activity" and list the benefits of being active.
2. Describe changes with ageing and how they affect physical activity needs of seniors.
3. Outline physical activity recommendations for seniors.
4. Demonstrate some simple exercises appropriate for almost every senior person.

Seminar assessment

Twenty three peer educator EWBA seminars lasting 30 – 60 minutes were delivered throughout Queensland between December 2009 and April 2010. Delivery was to a range of seniors organisations and all were upon request from the organisation. Process evaluation identified that nearly all attendees were mostly "third" age (>65 years) independent living with some health problems or a chronic disease, but still capable of looking after themselves. Two groups were mostly "fourth" age with dependent care needs and identified as frail, mobility and functionally challenged. The feedback questionnaire covered a range of topics including peer educator delivery and quality, active learning outcomes, and present and intended change in physical activity. Most questions were scored on a four point Likert scale, with written answers requested for others. Only the peer educator delivery and "be active" data were considered for this study. The Be Active Consumer Feedback Questionnaire is included as Appendix.

Cohort recruitment

Nine older adults (three males and six females, 74.2 +/- 4.4 years) were recruited to the study. Participants were members of a senior's organisation within Townsville, Australia. Following an expression of interest in receiving the EWBA seminar a number of Townsville organisations were contacted by the research team about participating in the Cohort analysis. The organisation's appropriateness was assessed by telephone interview using the selection criteria; the organisation must meet once a month, have a membership of greater than 25, membership must be exclusive to adults over 60 years and not be gender biased. Only one organisation meeting this criteria and happy to participate in the analysis was identified. One month prior to seminar delivery the organisation was given a brief project overview presentation, which included a request for participation. Individuals who registered their interest were issued with a project information sheet and asked to attend the next three meetings 15 minutes earlier to undertake the assessment. The inclusion criteria for individuals were: over 60 years of age, community-dwelling independent living and having no significantly terminal or unstable cardiovascular, respiratory, neuromuscular or cognitive illness. Participants were excluded if they were unable to commit to the duration of the project.

Cohort assessment

Assessment was undertaken at the monthly meeting prior to the seminar (baseline) and again before the next two meetings (post-seminar 1 – PS1, and post-seminar 2 – PS2). In addition to functional performance, participants were requested to complete three questionnaires at each assessment time. Questionnaires were taken away, completed and returned within a week of the meeting using stamped addressed envelopes. When questionnaires were not received, participants were reminded by telephone.

Data for age and gender were collected by personal interview at the baseline assessment. Height and weight were measured using a stadiometer and electronic scale, respectively, employing standard methodologies (Henwood *et al.* 2008). Body mass index (BMI) was calculated from weight (kg) divided by the square of height in metres. In addition, participants completed a medical history form which informed on number of medications and co-morbidities.

Functional performance

The *Timed Up and Go* test was used to assess participant functional strength, endurance, balance and agility, and is extensively validated among older adults. From a seated position in a hard-back chair, participants were instructed to stand, walk three metres, turn, walk back three metres and sit. Walking was undertaken at the participant's habitual walking speed (Podsiadlo & Richardson, 1991) with the test performed in triplicate and the best timed result used for analysis. Personal safety was heavily emphasised during test familiarisation.

Questionnaires

The *Activity-specific, Balance Confidence* (ABC) scale and *University of Queensland Quality of Life* (UQQoL) questionnaire were used to assess balance confidence and quality of life, respectively (Powell & Myers, 1995; Henwood & Bartlett, 2008). Both questionnaires are designed and validated for use among older adults, they are easy to complete (ABC 20 questions and the UQQoL 16 questions) and address situation specific to the older demographic. The Short-form International Physical Activity Questionnaire was used to assess time sitting in minutes per day and total physical activity as metabolic equivalent of task (METs) minutes per week (Ainsworth *et al.* 2000b). All questionnaires have displayed significant reliability among older populations (Ainsworth *et al.* 2000a; Henwood & Bartlett, 2008; Powell & Myers, 1995) and are simple and straightforward to complete.

Data analysis

Cohort data were analysed using the SPSS (SPSS 17.0; Chicago, Illinois) statistical software package. All measures were assessed for normality of distribution. Normally distributed data were analysed by repeated measure analysis of variance (ANOVA) and those that did not satisfy the normality assumption were analysed by Friedman's non-parametric test. At baseline, Spearman's correlation coefficients were used to investigate the associations between all variables. A strong association was defined as a moderate to large correlation, > 0.3 and > 0.5, respectively (Cohen 1988). All tests were two-tailed, and an α level of 0.05 was set for statistical significance. Seminar data were appraised by COTAQ staff, consolidated and numerically ranked in relation to each question. Data are presented as mean ± standard deviation, and the non-parametric variables as median (inter-quartile range). Percent change was calculated as ((post-baseline)/baseline)*100.

RESULTS

Seminar

Of the 412 individuals who attended the state wide seminars, 69% (n = 284) answered at least one question on the feedback form. Feedback indicated that attendees were generally happy with the seminars (80% rated it 4, on a 1 – 4 Likert scale) and found the information to be clearly disseminated (87% rated it 4). However, only 22 and 18 individuals commented that they specifically found the exercise and benefits of being active information, respectively, the most valuable aspect of the seminar. When asked what they would change individually for improved health, 28% indicated they would join an exercise group, 23% indicated they would talk with a professional about physical activity and 70% intended to "move" more. However, 38% suggested they were active enough already, with 77% rated themselves active or very active (3 or 4, respectively) on a Likert scale. Data outlining the process evaluation are presented in Table 1.

Table 1: Eat Well Be Active peer educator seminar assessment. Questions are as per the post-seminar survey and directly related to the delivery and "Be Active" component of the seminar (n = 284).

1) Overall, how was this session? Please mark your rating for each item. (n=284)					
	1	2	3	4	
Confusing	1%	1%	11%	87%	Clear
Boring	2%	3%	12%	83%	Interesting
☹	2%	2%	16%	80%	☺
Too long	1%	40%	38%	31%	Too short
2) What did you find most useful? (n=218)					
- All of it			55%		
- Exercises			10%		
- Benefit of exercise and being active			8%		
- Confirmation of current practice			8%		
- Other			21%		
3) What did you find least useful? (n=66)					
- Nothing, it was all useful			62%		
- The things I already knew			11%		
- Exercise			8%		
- Other			20%		
4) After today, will you: (tick as many as apply)(n=198)					
- Share what you learned with others			58%		
- Move more			69%		
- Join an exercise/walking group			28%		
- Keep doing what you are doing now			54%		
- Consult a doctor about physical activity			23%		
5) How would you describe your activity levels now? (n=218)					
	1	2	3	4	
Not active at all	16%	9%	39%	38%	Very active in many ways

Table 2: Group baseline data (n = 9).

Characteristic	
Age (years)	74.22 ± 4.43
Number of medications	2.22 ± 1.72
Number of diseases	3.00 ± 1.32
Timed up and go (seconds)	6.84 ± 0.85
Weight (kilograms)	80.08 ± 12.72
Height (metres)	1.66 ± 0.09
BMI (kg /m^2)	28.80 ± 2.81
Sitting time (minutes/day)*	180.00 (240.00)
Total METs - minutes/week*	693.00 (3627.00)
ABC*	160.00 (24.00)
UQQoL	62.00 ± 13.13

BMI – Body mass index measured in kilograms per metre squared; ABC – Activity-specific Balance Confidence scale; UQQoL – University of Queensland Quality of Life questionnaire; * Data are median (interquartile range), all other data are mean ± standard deviation.

Cohort

One individual dropped out of the study due to family commitments, but all remaining participants attended each of the testing seminars, and all self-reported questionnaires were returned for analysis within a week of issue. As would be expected, a significant relationship emerged between weight, BMI (r = 0.700, p = 0.036) and height (r = 0.750, p = 0.020), but not between BMI and height (r = 0.133, p = 0.732), and number of medications and co-morbidity was related (r = 0.853, p = 0.003). In addition, relationships were found between UQQoL and height (r = 0.833, p = 0.005) and the ABC (r = 0.862, p = 0.003). All baseline measures are presented in Table 2.

A significant decrease in sitting time per day was observed between baseline and PS1 (p = 0.046, 180.00 (240.00) to 120.00 (220.00) minutes/day), but not PS2. In contrast, no other statistical change emerged for cohort variable in this study. Across the three time points, a 5.14 ± 8.79% decrease for the timed up and go was found, but this did not reach significance (p = 0.452, 6.85 ± 0.85 to 6.54 ± 0.81 seconds). Similarly, a positive trend in Total MET's-minutes per week was observed, but this did not reach statistical significance (p = 0.727, 693 (1813.5) to 3735 (5259) MET-minutes/week) (Figure 1). No change in balance confidence (ABC) or quality of life (UQQoL) was observed.

DISCUSSION

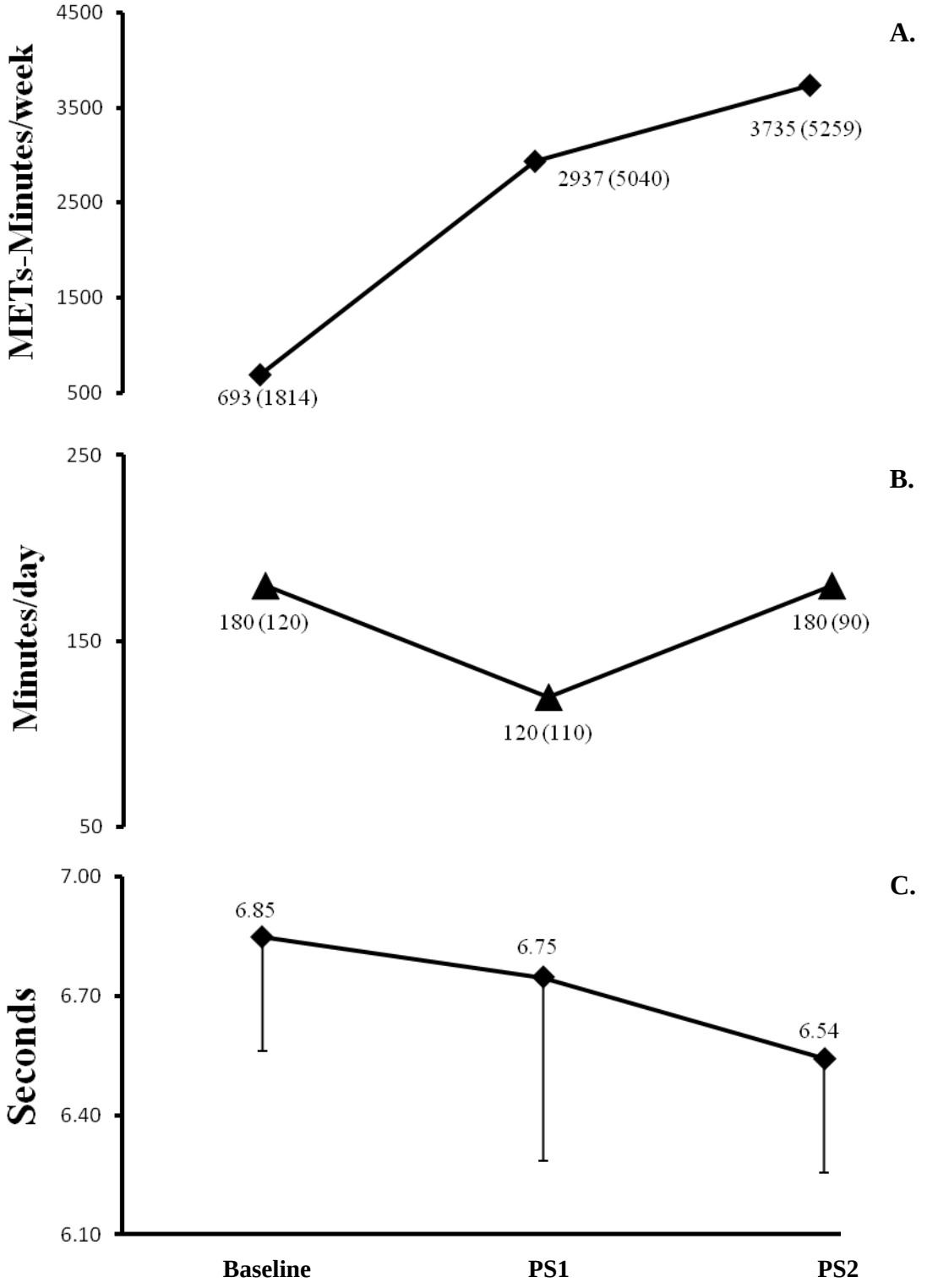
The present pilot research aimed to investigate the use of peer educator delivered seminars to increase physical activity among older adults. Data collected following the seminar showed a majority of attendees intended to "move" more, indicating a raised awareness of the need for a more active lifestyle. However, while a trend emerged for greater levels of activity, no statistical change was found two months post the seminar for any measure of function, activity, balance confidence or quality of life. A number of factors must be considered with this data, including the level of activity undertaken by an individual prior to the seminar and the barriers to activity encountered by older adults. Nevertheless, the primary focus of this investigation was to examine means of increasing the uptake and adherence to physical activity and exercise among the older generation. While the data shows promise, the importance of peer educator delivery alone, or in combination with other tactics, to promote behavioural change among this population remains to be determined.

Among older adults, sedentary lifestyles are associated with decreased physical health and chronic disease (Chodzko-Zajko *et al.* 2009b; Heinrich *et al.* 2008). While the benefits of a physically active lifestyle are undisputable (Bauman & Smith, 2000), still insufficient numbers of older adults are becoming involved (Marquez *et al.* 2009). In the present study, post-seminar data showed individuals gained a raised awareness of the need to be more active, even though some felt they were active enough already. This general perception of sufficient activity engagement has been reported before. In Crombie et al. (2004) it was shown that of 409 Scottish adults aged 65 – 84 years who reported doing enough physical activity, 36% did no activity at all and another 17% did less than two hours per week. Another consideration is that older adults often lack variety in the physical activity regimes, choosing to walk for example, but neglecting balance, flexibility and strengthening exercise. Research shows that walking alone has a limited effect on continued wellbeing (Stevens *et al.* 2010), and that for prolonged health to prevail individuals must engage in a variety of activities (Chodzko-Zajko *et al.* 2009b; Sims *et al.* 2006). The peer educator delivered seminar studied here aimed to give adults a broader understanding of their activity needs, which may have been reflected in the post- seminar need for more movement and an indication that individuals would join an exercise group.

In the present study, those who volunteered to the assessment cohort displayed better than normal Total METs-minutes per week and Timed up and go ability than their age group (Bohannon, 2006; Heinrich *et al.* 2008) suggesting they were already high functioning individuals. A ceiling effect due to the higher functioning nature of these individuals, may explain why no change in balance confidence or quality of life was observed. Even so a trend towards improved function and energy output was observed among this cohort. In addition, sitting time decreased significantly four weeks post –seminar, but then increased at the second follow-up. Still, among this cohort sitting time was noticeably lower than that report among similarly aged adults (Katzmarzyk *et al.* 2009), reinforcing the above average activity levels undertaken among this cohort. These outcomes, while preliminary are supportive of the concept that peer educator delivered information can encourage older individuals to commence or even increase an already active lifestyle.

Layne et al. (2008) advocated the use of peer educators to deliver information for the uptake of strength training among older adults. While this has been reinforced in other publications, it is reported that peer education alone is a weak stimulus to change (Hopman-Rock & Westhoff, 2002; Peel & Warburton, 2009). Moreover, little research is available investigating non-group based activity. The present seminars encouraged a variety of activity modes for improved health and over 50% of attendees suggested an intention to join a group or consult their doctor about training opportunities. However, it is regularly reported self-motivated training is associated with decreased adherence (Cress *et al.* 2005). To overcome this, behaviour modification combined with ongoing support are suggested means of decreasing activity cessation among the older generation (Brawley & Culos-Reed, 2000; Cress *et al.* 2005). In addition, education awareness and allowance for the known barriers and motivators to ongoing physical activity are also valid considerations if adherence is to be achieved (Brawley *et al.* 2003; Newson & Kemps, 2007). Therefore, while peer educator dissemination appeared effective in the present investigation, it is potentially one of many tactics that must be considered if more older adults nationally are to become engaged.

Figure 1: The figure shows the trends in Total METs-minutes/wk (A), sitting time in minutes/day (B) and timed up and go (TUG) in seconds (C) between baseline (Baseline), 4 and 8 weeks post peer educator seminar (PS1 and PS2, respectively). Each variable is set against its own vertical axis and share the common horizontal axis. For variable A and B data are group median (inter-quartile range), and for C data are means ± standard error. * Sitting time is significantly different between baseline and PS1 (p = 0.046).



Reinforcing the problems encountered with activity uptake are reports that previous habits do not predict intention to exercise (Stiggelbout *et al.* 2006) supporting behavioural modification and education as primary means of increasing physical activity in the population (Brawley *et al.* 2003; Cohen-Mansfield *et al.* 2003; Layne *et al.* 2008). Recently, Heinrich et al. (2008) reported a need for activity options that addressed self-efficacy and which are developed with social norms in mind. This underlines the need for options specific to the individual, and which account for the plethora of factors inhibiting participation. The introduction of social-ecological modelling to account for factors external to the reported barriers and motivators is a new concept being trial with some success (Bergman *et al.* 2008). These acknowledge concepts such as physical environment, policy and social norms. Data from this study support the use of peer educator seminars to increase activity levels in older adults. However, while this may be an important component of future successful models, education delivery may need to be flexible to account specifically for the individual. The present research is limited in its availability to make concrete assertions about the role of peer education information dissemination to enhance activity uptake in older adults. Of primary concern is the small Cohort participant numbers and that these individuals appeared already of a high functioning nature. Given these reasons, it is difficult to suggest these results are reflective of all older adults. However, in defence of these results, it is established that older adults have a broad knowledge of the benefits of physical activity (Manini *et al.* 2005). So if peer educator delivery is able to increase the activity levels of already active individuals, peer educator knowledge reinforcement among older adults less activity individual may be a primary step in behavioural modification (Brawley *et al.* 2003). The data is also limited in that it does not account for older individuals with dependency and disability needs or suffering with chronic disease. While research shows that the positive benefits of a physical activity are available to all adults, independent of age, disease and disability, varied delivery considerations which account for the individual's social-ecological situation are required to achieve positive results. In addition, a number of factors were not considered in this assessment. Financial security, social networks and level of education are all factors in successful ageing, and reinforce the need for broad multifactorial modelling (Marquez *et al.* 2009). In the present study, individuals were members of a social network of independently funded retirees which may explain their physically active lifestyle when compared to the norm for their age group. However, these factors were not measured, nor accounted for in any of the data analysis.

In the present research, a peer educator delivered seminar informing and encouraging older adults to become more physically active had a noteworthy effect on increasing the individual's awareness of, and involvement in activity. Specifically, this positive trend was observed in an already active cohort. The benefits of a physical activity lifestyle for prolonged wellbeing among the older population are well established. However, tactics that encourage greater levels of participation need to be identified. While further research is needed, peer educator delivered information may be an essential component to the behaviour modification required to increase the physical activity involvement of the older generation. The key message from this investigation is that peer education can have an important impact on physical activity levels for older adults, but would be of the greatest value when incorporated into a broader behaviour change model.

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APPENDIX

EAT WELL BE ACTIVE

Consumer Feedback: CONFIDENTIAL

Date of session: / /

1) Overall, how was this session? Please mark your rating for each item.

a)	Confusing	1	2	3	4	Clear
b)	Boring	1	2	3	4	Interesting
c)	☹	1	2	3	4	☺
d)	Too long	1	2	3	4	Too short

2) What did you find most useful?

3) What did you find least useful?

4) After today, will you: (*tick as many as apply*)

☐ Share what you have learned with others ☐ Move more
☐ Join an exercise / walking group ☐ Keep doing what you do now
☐ Talk to your doctor about your physical activity
☐ Other _____

5) How would you describe your activity levels now?

Not active at all 1 2 3 4 Very active in many ways

6) Any other comments you would like to make?

Thank you for your feedback. Please write further comments on the back of this form if you wish. If you would like a response, please put your name and phone number there too!

