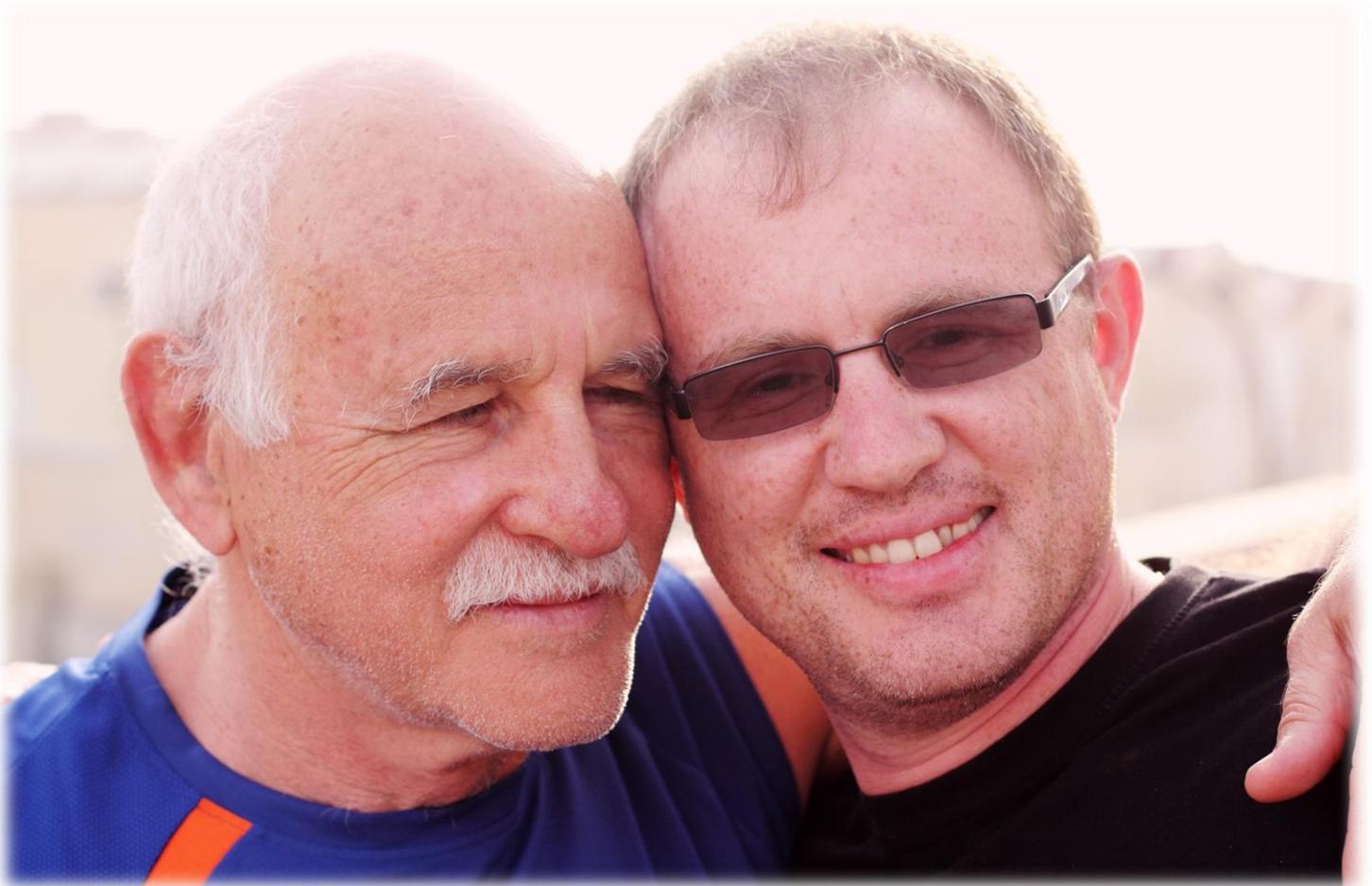


Victorian Active Ageing Partnership - Models and strategies to engage carers in physical activity



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Background

Informal carers play a vital role in attending to the needs of family and friends with physical, cognitive and mental health conditions. The Australian Bureau of Statistics Survey of Disability, Ageing and Carers (SDAC) conducted in 2018-19, found that 11% of people in Victoria (approximately 703,000) are in a caring role, with 3.5% (approximately 221,000) being primary carers, meaning they provide most of the assistance for someone with a disability or age-related condition.¹ While individuals may take on caregiving roles at all stages of life, the 2018-19 SDAC estimated the average age of carers to be 51 years, and 54 years for those who are primary carers. In Victoria, approximately one-in-four carers are aged 65 years and over (about 167,000 persons).

Many who become carers do so as an expression of the bond that they have with the person(s) they are supporting and find this to be an enriching experience. Yet, there is also abundant evidence that carers make substantial sacrifices and may incur significant social, psychological, physical and economic consequences as a result of taking on this role.² While there is a lack of consensus about the physical health impacts of being a caregiver,³ which may include cardiovascular disease and premature death, there is a substantial body of literature which shows that carers are a greater risk of psychological distress and depression. Among the contributors to this are the high levels of social isolation, and the difficulties that carers experience in taking part in activities outside of the home, including leisure, work and physical activities.

In recognition of the enormous contribution to health and welfare that is made by informal carers, the Victorian Government has made a commitment to developing programs and services for this significant segment of the population. The priorities and actions that it has adopted are stated in *Recognising and supporting Victoria's carers: Victorian carer strategy 2018–22*.⁴ Based on wide ranging consultations with carers, peak bodies and service providers, this strategy identifies five outcome priorities for carers, namely: better health and wellbeing; support in education and work environments; access to relevant support services; lower financial stress; and recognition and respect.

One of the action priorities within the strategy in relation to carer health and wellbeing is to: “Increase the opportunities for carers to participate in physical and social activities and programs through revising the Support for Carers Program guidelines and including carers in the Victorian Active Ageing Partnership”.⁴ The Victorian Government has identified an alignment between the

carers strategy and the work of the Victorian Active Ageing Partnership (VAAP), which it has funded since 2015. VAAP has been lead by Musculoskeletal Australia and has brought together a broad constituency of physical activity (PA) program providers and peak agencies for older people to increase opportunities for PA for older Victorians, especially those experiencing social disadvantage, isolation or loneliness. Given the emerging evidence that PA is associated with lower stress, depression,⁵ and subjective burden, as well as improved sleep and blood pressure among carers,⁶ there is a need to identify how PA participation can be supported in this population group.

This report aims to identify approaches and program delivery methods that can be used to enable PA participation among carers. It has been undertaken by VAAP to guide PA program providers for older people in Victoria, including leisure and fitness centres, University of the Third Age, Neighbourhood Houses and Community Centres, Community Health Services and sporting organisations. The evidence provided here will also assist carers support agencies in relation to how PA may be incorporated into the programs they offer.

Methods

The evidence presented in this report was collected through a search of peer-reviewed and grey literature, and interviews with a selection of carers support agencies in Victoria to compile case studies of PA programs being provided for this population group. The steps entailed in each these components of the information gathering are described below.

Review of peer reviewed literature

A literature search was undertaken to identify trials and evaluations of PA strategies that were conducted to improve well-being among carers aged 60 years and over.

The databases of peer-reviewed literature searched were Ovid Medline, PsycINFO, Cinahl, Health Source Nursing/Academic Edition, SPORTDiscus, and Rehabilitation and Sports Medicine Source. A Boolean search was performed combining three groups of terms; i) carers OR caregivers OR informal carers; AND ii) physical activity, OR exercise, OR fitness, OR physical exercise, OR sport; AND iii) programs, OR services, OR strategies, OR interventions, OR classes, OR groups. Examination of the reference lists and citations (on Google Scholar) of retrieved articles was used as a supplementary technique to identify relevant publications. A wide-ranging Google search was conducted to find grey literature reports of programs for carers that included physical activity.

Only English language articles and reports, published between 1999 and 2019, were included. All research and evaluation designs were eligible for inclusion, and no limitations were placed upon the types of outcomes which could be reported. Publications which did not focus on caregivers who were within the age range of interest were excluded, as were review articles, and process evaluations.

Case studies of carers support programs

Key informants within the Victorian Department of Health and Human Services and Carers Victoria assisted with the identification of agencies which were providing wellbeing and support programs for carers that included some type of PA. Telephone and email follow-up of the organisations recommended to recruit providers willing to give information about the nature and delivery of programs for carers that incorporated PA.

Information was collected from the carers support agencies through a structured telephone interview, which was audio recorded. The questions asked in this interview examined: the types of PA offered; types of carers involved; how PA is integrated alongside other program elements; nature of any temporary supervision and support provided to usual care recipient; methods of program delivery, including duration, frequency, cost, venue and promotion; observed program impacts among carers; and, insights gained concerning how to successfully engage carers in physical activity.

Findings from the literature review

All of the trials and evaluations that met the inclusion criteria were retrieved from the peer-reviewed literature. These comprised 14 studies which were published between 1997 and 2019. Five of these were conducted in the United States, two were conducted in Australia, Brazil and Canada, respectively, and one each in Japan, Netherlands and the United Kingdom. Information extracted from each of the studies is presented in Table 1.

Study populations

The study samples of carers ranged in size from 15 to 318, with most (9/14) having samples of 100 or less participants. It was notable that the majority of studies (11/14) involved carers of people with Alzheimer's Disease or dementia. The three that did not focus on this sub-group, included carers of people with cancer, or who had suffered a stroke, or were not described as having particular conditions. The mean age of carers in the studies ranges from 53 to 77 years, with the majority

(11/14) having an average age of 60 years or greater. Study participants were predominantly female, with 11 of the study populations comprising two-thirds or more women. Another notable feature of the study populations was the limited social and cultural diversity. Only one study reported that a substantial proportion of participants were non-White, and one study reported participants as being of low socioeconomic status.

Study methods

The majority of studies (9/14) were randomised controlled trials (RCTs), while one used a controlled quasi-experimental design, and three an observational before-and-after design. The most common outcome measured, in 10 studies, was mental health status, including depression, anxiety and distress. Caregiver burden was measured in eight studies, physical performance or functioning in five studies, and PA participation in five studies. The maximum duration of follow-up measurement was 12 months (three studies), with seven completing follow-up at 5-6 months, and four at 2-3 months.

Physical activity interventions

Most of the interventions (8/14) were delivered to carers in their homes, while five were conducted in groups or had both group and home-based components. In one instance it was not stipulated where the intervention was undertaken.

Five of the eight home-based interventions involved telephone counselling and support⁷⁻¹¹ which was usually provided on a weekly basis at first, and then tapered to less frequent, monthly contacts. In three of these studies telephone contacts lasted for 4-6 months, and in the remaining two they were maintained over 12 months. Two of the eight home-based interventions were dyadic,^{12,13} in which a carer and person with dementia received PA supervision together (for 6-8 weeks in both studies), with the expectation that the dyad would continue to undertake the PA independently after this. The one study where the location of the intervention was unclear was also dyadic,¹⁴ involving a person with dementia and their carer. The remaining home-based intervention appeared to entail the provision of PA advice only, without supervision or telephone support.

The group-based interventions tended to be of shorter duration, with four out of five being conducted over 8-12 weeks,¹⁵⁻¹⁸ and just one lasting for 6 months.¹⁹ Three of these entailed one group session per week, while the other two involved two sessions per week. The PA conducted in the classes was generally mixed, including aerobic, strength, balance and flexibility exercises, although one study offered yoga only. All of the group-based interventions incorporated additional

well-being and support activities for carers, including education, meditation and time for socialising. One of these offered respite care to facilitate attendance. There was one group-based program that was dyadic, for people with dementia and their carers, and this incorporated mental stimulation activities along with PA.

Outcomes

Rates of follow-up were provided for all studies and ranged from 75% to 96% in those where outcomes were measured for up to 6 months, and between 83.3% and 85% in those that collected follow-up measures after 12 months. There was consistent evidence that participation in the PA resulted in improved mental health among caregivers, with significant intervention effects reported in seven of the eight studies measuring these outcomes for up to 6 months, and two of the three in which they were measured after 12 months. A less consistent outcome was a reduction in carer burden, which was found in four of seven studies after 6 months, and one of the two which measured this after 12 months or more. PA participation was found to increase in two of the four instances where it was assessed for up to 6 months and in the one study where it was assessed after 12 months. At least one component of physical performance (e.g., strength, balance, flexibility) was reported to have improved in four of the five of the studies which assessed outcomes of this type at up to 6 months. Quality of life was measured at up to 6 months in three studies and reported to improve in only one instance.

The limited number of studies did not allow assessment of whether methodological factors or intervention elements were associated with more positive outcomes. It appeared that significant mental health improvements were reported in RCTs, quasi-experimental and observational studies, and in those where PA was conducted in the home environment or in groups.

Table 1. Findings from studies investigating the impact of physical activity programs for carers

Author Country	Study population	Study design	Program design	Outcome measures	Results
King and Brassington, 1997 ¹¹ United States	24 carers of Alzheimer's patients; 88% women mean age 60 yrs; higher socioeconomic status.	Randomised controlled trial	4-month home-based moderate- intensity endurance training program (brisk walking); four 30 to 40-minute exercise sessions per week.	Post-test at 4 mths: PA; Anger expression; Caregiver burden; Ambulatory systolic blood pressure	Adherence: 79% 4 mths follow-up: 96% Significant effects after 4 mths: ↑ PA (p<0.05); ↓ anger expression (p<0.05); ↓ caregiver burden (p<0.01).
King, Baumann, O'Sullivan, 2002 ¹⁰ United States	100 carers of Alzheimer's patients; 47 adult children caregivers and 53 spousal caregivers; 100% women; mean age 63 yrs; 86% white.	Randomised controlled trial.	12-month home-based, telephone- supervised, moderate-intensity PA training program (brisk walking); four 30- to 40-minute endurance PA sessions (brisk walking) prescribed per week at 60% to 75% of maximum heart rate.	Post-tests at 12 mths: Energy expenditure; Stress-induced cardiovascular reactivity levels; Sleep quality; Psychological distress.	Adherence: 73.4% Follow-up at 12 mths: 85% Significant effects after 12 mths: ↑ energy expenditure; ↑ sleep quality; ↓ stress-induced blood pressure.
Castro, Wilcox, O'Sullivan et al., 2002 ⁷ United States	100 carers of dementia patients; mean age 62 yrs; 86% White, 5% Black, 4% Hispanic.	Randomised controlled trial.	12-month home-based exercise counselling program (brisk walking, leisurely walking and gardening); individual PA program; four 30- to 40-minute exercise sessions per week.	Post-test at 12mths: Stress; Depression; Anxiety; Carer burden; Social support.	Adherence: 74% Follow-up at 12 mths: 85% Significant (p<0.01) after 12 mths: ↓ depression; ↓ stress;

Author Country	Study population	Study design	Program design	Outcome measures	Results
			Exercise intensity gradually increased over a 6-week period to 60 to 75% of heart rate. Participation in a minimum of one telephone-based health promotion counselling.		↓ subjective burden. No improvements in social support, anxiety, or objective burden.
Hill, Smith, Fearn et al, 2007 ¹⁹ Australia	116 carers; 85% women; mean age 64 yrs.	Observational, pre-and post-test.	6-month center-based program (strength training, yoga, or Tai Chi); 1-2 times/wk; opportunity to socialise after sessions; respite offered.	Post-test at 6 mths: Quality of life; Carer burden; Daily functioning; Depression; Balance; Walking speed; Endurance; Strength; Self-rated health.	Adherence: 75% Follow-up at 6 mths: 76% Significant (p<0.05) after 6 mths: ↑ balance; ↑ strength; ↑ endurance; ↓ depression; ↑ physical health status.
Farran, Staffileno, Gilley, 2008 ⁹ United States	15 carers of Alzheimer's Patients; 53% women; mean age 65 yrs; 53% Caucasian, 40% African American; 7% Hispanic.	Observational, pre-test/multiple post-test design.	6-month home-based program of lifestyle physical activity (walking, gardening, stretching/flexibility). weekly and monthly telephone counselling calls; 14 contacts over 6 months (1 baseline home visit and 13 telephone contacts, approximately 20 minutes long).	Post-test at 6 mths: Lifestyle PA.	Follow-up at 6 mths: 93% Non-significant effects after 6 mths: 50% of participants increased total PA; 42% increased moderate PA; Significant decreases in waist-monitored light and moderate PA.

Author Country	Study population	Study design	Program design	Outcome measures	Results
Connell and Janevic, 2009 ⁸ United States	156 carers (women caring for a spouse with dementia); mean age 66.8 yrs; White/Caucasian 93%; low socioeconomic status.	Randomised controlled trial.	6-month telephone-based exercise program (aerobic exercise, stretching and strengthening); individual PA program; 30 minutes of low-to-moderate intensity aerobic exercise at least three times a week, supplemented by stretching and strength training. Participants set both short and long-term PA goals.	Post-test at 6 and 12 mths: Depression; Self-rated physical health; Objective caregiving burden; PA self-efficacy; PA.	Follow-up at 12 mths: 83.3% Significant (p<0.01) after 6 mths: ↑ PA self-efficacy; ↑ PA; ↓ depression; Significant (p<0.05) after 12 mths: ↑ PA self-efficacy;
Marsden, Quinn, Pond, 2010 ¹⁷ Australia	42 dyads (25 chronic stroke survivors, 17 carers); carers 88% women; mean age 68 yrs; 94% White.	Randomised controlled trial.	12-week multidisciplinary group program (PA, education and social interaction); weekly 2½-hour group session for seven weeks at a local public health hospital; sessions included a 1-hour PA component followed by a 1-hour education via presentations, group discussions, group activities. Opportunity to participate in a 'healthy options' morning tea to learn about healthy eating.	Post-test at 2 and 5 mths: Quality of life; Functional performance.	Follow-up at 5 mths: 88% Adherence: 76% high (6+ sessions) Effects after 12 weeks (no test of significance): ↑ quality of life (carers).
Hirano, Suzuki, Kuzuya, 2011 ²⁰ Japan	31 carers of Alzheimer's patients; 68% women; mean age 77 yrs.	Randomised controlled trial.	12-week moderate intensity PA (3 times per week).	Post-test at 12 wks: Sleep quality; Fatigue; Caregiver burden; Depression.	Follow-up at 12 wks: 86% Significant (p<0.05) after 12 weeks: ↑ sleep quality ↓ caregiver burden; ↓ fatigue.

Author Country	Study population	Study design	Program design	Outcome measures	Results
Canonicy, Andrade, Gobbi et al. 2012 ¹⁴ Brazil	32 carers of Alzheimer's patients; 94% women; mean age 54.2 yrs.	Quasi- experimental, equivalent control group.	6-month motor intervention program; individual PA program; 60 minutes of exercises, three times per week. Intervention consisted of five components: (i) initial warm up; (ii) initial stretching; (iii) flexibility, strength, agility and balance; (iv) return to physical calm; and (v) final stretching.	Post-test at 6 mths: Daily functioning; Flexibility; Strength; Agility; Balance; Mobility; Self-care; Caregiver distress Carer burden.	Adherence: 70% and over Follow-up at 6 mths: 81.3% Significant (p<0.01) after 6 mths: Functionality: ↑ strength; ↑ self-care; ↑ mobility; ↑ communication; ↑ social cognition; ↑ balance; ↓ Caregiver distress; ↓ Carer burden.
Danucalov, Kozasa, Ribas, 2013 ¹⁶ Brazil	53 carers of Alzheimer's patients; 89% women; mean age 56 yrs (intervention group); higher socioeconomic status.	Quasi- experimental, controlled before-and-after study.	8-week yoga and compassion meditation program. Components (a) yoga body poses (25min); (b) exercises involving awareness and voluntary regulation of breath; (c) meditational practices. Attendance at 1 live session per week, and 2 weekly sessions performed at home with the aid of a DVD.	Post-tests at 2 mths: Stress; Anxiety; Depression; Salivary cortisol;	Adherence: 100% Follow-up at 2 mths: 86.8% Significant after 2 mths: ↓ depression (p<0.001); ↓ anxiety (p<0.001); ↓ stress (p<0.05); ↓ salivary cortisol (p<0.05).

Author Country	Study population	Study design	Program design	Outcome measures	Results
Lowery, Erga-Pashoja, Iliffe, 2013 ¹² United Kingdom	131 dyads (person with dementia, and their main carer); carers 67% women; carers mean age 65 yrs.	Randomised controlled trial.	12-week dyadic PA regimen (tailored walking); individually tailored walking regimen 20–30 min, five times per week; support from exercise therapist in the first 2 weeks.	Post-tests at 6 and 12 wks: Caregiver burden; Behavioural and psychological symptoms of dementia.	Adherence: 30.8% met target of 5 walking sessions/wk Follow-up at 12 wks: 89% Effects after 12 weeks: ↓caregiver burden. No significant effect on behavioural and psychological symptoms of dementia.
Prick, de Lange, Twisk et al. 2015 ¹³ Netherlands	111 dyads (dementia patients and carers) carers 72% women; mean age 72 yrs; carers had high socioeconomic status.	Randomised controlled trial.	6-month multi-component dyadic intervention (combining PA and support); PA comprised 30 min at least 3 days/week (flexibility, strengthening, balance, and endurance exercises); support includes psycho-education, communication skills training, pleasant activities training; 8 home visits with coach.	Post-test at 3 and 6 mths: Caregivers' mood; Caregiver burden; General health; Salivary cortisol levels.	Adherence: 68.5% undertook PA 1-3 sessions/wk Follow-up at 6 mths: 90% No benefits of the intervention over time on any of the outcomes.
Cuthbert, King-Shier, Ruether, 2018 ¹⁵ Canada	77 carers of cancer patients; 61% women; mean age 53 yrs; higher socioeconomic status.	Randomised controlled trial.	Group-based PA program; 12 weeks duration. Intervention components: (a) twice weekly resistance PA group classes; (b) weekly independent aerobic PA sessions to reach 150 min per week; and (c) seven group-based education sessions during the 12-week intervention.	Pos-test at 12 wks: Quality of life; Depression; Anxiety; PA; Fitness.	Adherence: 69% Follow-up at 12 wks: 89.6% Significant (p<0.05) after 12 weeks: ↑fitness; ↑PA; ↑quality of life; ↓depression (small effect);

Author Country	Study population	Study design	Program design	Outcome measures	Results
					↓anxiety (small effect).
Regan, White, Harvey et al. 2019 ¹⁸ Canada	343 dementia patients and 318 carers; carers 78% women; mean age 70 yrs.	Observational – pre-and post-test design	8-week dyadic PA and mental activity program; group PA class (moderate-intensity aerobic exercise, functional strength, balance, coordination, and flexibility training); 50 min/ session. Weekly mental stimulation (group activities and games with a goal of stimulating communication, thinking, memory, and visuospatial skills); 50 min/ session.	Post-test at 12 wks: Physical function; PA; PA self-efficacy; Mental well-being.	Adherence: 80% Follow-up at 12 wks: 75% Both patients and carers: ↑ physical function (endurance, upper and lower body strength, upper body flexibility) (p<0.01); ↑ mental well-being (p<0.001);

Case studies of physical activity programs for carers in Victoria

There were three case studies of PA programs for carers that were collected, and each is summarised below.

City of Moonee Valley Caring for Carers program

This local Council offers a weekly PA class and a monthly walking group within its Caring for Carers program. The weekly class is held for one hour at a Neighbourhood Centre, and includes strength, yoga and Pilates exercises, and meditation. The monthly walking group meets for one hour and makes use of a local riverside trail. Both activities are open to carers of all types who live in the City of Moonee Valley, and the average age of attendees is 55 years (60% female). Each is free of charge and available on an ongoing basis, and refreshments are offered afterwards to provide an opportunity for participants to socialise. Carers learn about the programs by word of mouth, newsletter advertisements, and through their contact with other support services offered by the organisation. The success of the activities has been improved by piloting different types of PA and getting feedback from carers to determine their preferences. The formation of friendships has been the most obvious benefit that participants have gained, and this, along with active consultation with participants, has contributed to their ongoing engagement. Challenges faced have included limited confidence among some carers to undertake PA, and the varying activity interests that carers of different ages have.

Villa Maria Support for Carers Program

The PA and wellness activities offered by this organisation within its Support for Carers program include gym-based exercises and yoga and mindfulness classes. The gym exercises are supervised by an Exercise Physiologist for one hour, and participants can choose between one of two timeslots that are available each week. Each participant undergoes a preliminary assessment and a tailored program is designed for them that may incorporate different elements of cardiovascular and resistance exercise. The yoga and mindfulness classes are conducted in time limited blocks over several weeks and are adapted by the facilitator to meet the needs of the group. Both programs are available to carers of all types who live in the Eastern Metropolitan Region of Melbourne, are free of charge, and respite care is offered to support their participation. Participants most often learn about these opportunities through word-of-mouth from other carers, while some are referred by Aged Care Assessment Services and other agencies, or receive information via a quarterly booklet distributed to carers. While there are not social activities that are included within the PA programs,

participants build friendships networks as they interact with other carers. These friendships, together with the programs being offered free of charge, and on a flexible basis so that carers can attend when they are able, are considered to be the major facilitators of ongoing participation.

Maroondah City Council Pathways for Carer's Program

The walking group conducted by this organization sets out to promote well-being, education and peer support among carers. The walks are held twice per month, for one hour, and intentionally make use of a local bush trail so that carers can engage with nature and be refreshed in body and mind. The program is offered to carers of people with a disability or mental illness and, while participants are of all ages, they tend to be middle and older aged, and mostly female. There is no cost to participants, and refreshments are provided at a café after each walk, allowing further opportunities to socialize. An innovative feature of the program is that guest walkers, who come from agencies that offer different types of support for carers, are invited to attend so participants have an opportunity to learn about these services during the walks. The walking group is promoted by email, Facebook, flyers and word-of-mouth, with carers being free to attend whenever they are able. The program is generating social connection and support among carers, fostering an understanding that they aren't alone in their struggles and challenges. The organisers have found that the informal environment of the walking group helps carers to feel comfortable and meet others, and the flexibility of the program suits those who are not always able to attend due to other demands in their life.

Discussion

The intervention literature and program case studies examined here show growing awareness that PA programs offer a promising avenue for the promotion of carer well-being. There was consistent evidence that these contribute to improved mental health, which has been widely recognised to be a priority among carers. Given that many carers are aged 60 years and over, it was encouraging that most interventions which assessed physical performance and functioning outcomes also showed improvements, which highlights the potential for PA programs to support mobility, independence and participation in this population group. A less consistent outcome in the intervention literature was a reduction in self-reported carer burden, which is understandable given that PA programs do not usually have a practical impact upon the day-to-day responsibilities that carers hold.

It was notable that most of the interventions reported in the literature were home-based, delivered one-to-one and in some instances in dyads involving carers and the person they are attending to. By contrast, all of the program case studies examined in Victoria were group-based. It may be that home-based programs are being offered in Victoria, but the project team was not informed of any examples of these by the leading funding bodies, the Department of Health and Human Services and Carers Victoria. A benefit of home-based programs is that they can be provided more flexibly, taking into account the varied responsibilities and time limitations of carers. The intervention literature also reveals that after an introductory period of face-to-face supervision, these can be continued by telephone, which reduces their costs. Nevertheless, it is likely that group-based programs which may involve up to 10-15 carers per session, are less resource intensive on a per-head basis. A significant benefit that is also afforded by group-based programs is the development of friendships and social support between carers.

The published studies concerning PA interventions for carers tended to mostly involve carers of people with dementia and to have very limited diversity in their study populations by gender (mostly women), social background (predominantly advantaged) and culture (majority White). Just two of the studies were undertaken in Australia. Conversely, the program case studies examined did not set limits of the types of carers that were included, which is likely to have been motivated by the need to ensure that groups of viable size were enrolled. Future research should examine the impacts of PA programs upon mixed, socially diverse groups of carers. All of the case study programs were being undertaken by organisations which delivered a range of education and support opportunities,

which indicates that it would also be relevant in future research to examine whether PA program can facilitate greater use of additional support services by carers.

The case studies collected of PA programs in Victoria highlighted elements of program design and delivery that contribute to reach and ongoing engagement by carers. These showed the multiple promotional opportunities that can be used, including newsletters, direct mail, referral from aged care assessment services and other agencies and, of course, word-of-mouth. The latter was reported to be the most common pathway of recruitment. Factors which facilitated reach were offering programs at no cost, allowing flexibility for carers to attend when they are able, and consulting participants about the types of PA that they would enjoy undertaking. Given that friendship and mutual support is a major benefit that carers report from these PA programs, it is valuable to put in place opportunities for social interaction so that this can develop.

Based on this examination of strategies to enable PA participation among carers it is recommended that funding agencies in Victoria, including the Department of Health and Human Services and Carers Victoria, support the delivery and expansion of these programs. Providers of PA opportunities for older people, such as Neighbourhood Houses and Community Centres, Community Health Services and fitness and leisure centres, should take steps to reach and engage carers. Actions to build partnerships between agencies that are providing support for carers, and organisations which are delivering PA programs of different types, will assist information sharing and referral. Given the evidence about the benefits that can be achieved from PA strategies that are delivered to carers at home, and the potential for these to engage those with obstacles to attending group programs, providers of PA opportunities should consider how individual, home based support models could be adopted. The limited evidence base about approaches and program delivery methods that can be used to enable PA participation among carers indicates that investment needs to be made into research and evaluation of PA strategies for this priority population group.

References

1. Australian Bureau of Statistics. 4430.0 - Disability, Ageing and Carers, Australia: Summary of Findings, 2018. 2019.
2. Pinquart M, Sörensen S. Differences between caregivers and noncaregivers in psychological health and physical health: a meta-analysis. *Psychology and Aging*. 2003;18:250.
3. Roth DL, Fredman L, Haley WE. Informal caregiving and its impact on health: A reappraisal from population-based studies. *The Gerontologist*. 2015;55:309-319.
4. Victoria State Government. Recognising and Supporting Victoria's Carers. Victorian Carer Strategy 2018–22. 2018.

5. Loi SM, Dow B, Ames D, et al. Physical activity in caregivers: What are the psychological benefits? *Archives of Gerontology and Geriatrics*. 2014;59:204-210.
6. Cuthbert CA, King-Shier K, Ruether D, Tapp DM, Culos-Reed SN. What is the state of the science on physical activity interventions for family caregivers? A systematic review and RE-AIM evaluation. *Journal of Physical Activity and Health*. 2017;14:578-595.
7. Castro CM, Wilcox S, O'sullivan P, Baumann K, King AC. An exercise program for women who are caring for relatives with dementia. *Psychosomatic Medicine*. 2002;64:458-468.
8. Connell CM, Janevic MR. Effects of a telephone-based exercise intervention for dementia caregiving wives: A randomized controlled trial. *Journal of Applied Gerontology*. 2009;28:171-194.
9. Farran CJ, Staffileno BA, Gilley DW, et al. A lifestyle physical activity intervention for caregivers of persons with Alzheimer's disease. *American Journal of Alzheimer's Disease and Other Dementias*. 2008;23:132-142.
10. King AC, Baumann K, O'Sullivan P, Wilcox S, Castro C. Effects of moderate-intensity exercise on physiological, behavioral, and emotional responses to family caregiving: a randomized controlled trial. *The Journals of Gerontology Series A: Biological Sciences and Medical Sciences*. 2002;57:M26-M36.
11. King AC, Brassington G. Enhancing physical and psychological functioning in older family caregivers: The role of regular physical activity. *Annals of Behavioral Medicine*. 1997;19:91-100.
12. Lowery D, Cerga-Pashoja A, Iliffe S, et al. The effect of exercise on behavioural and psychological symptoms of dementia: the EVIDEM-E randomised controlled clinical trial. *International Journal of Geriatric Psychiatry*. 2014;29:819-827.
13. Prick A-E, de Lange J, Twisk J, Pot AM. The effects of a multi-component dyadic intervention on the psychological distress of family caregivers providing care to people with dementia: a randomized controlled trial. *International Psychogeriatrics*. 2015;27:2031-2044.
14. Canonici AP, de Andrade LP, Gobbi S, Santos-Galduroz RF, Gobbi LTB, Stella F. Functional dependence and caregiver burden in Alzheimer's disease: a controlled trial on the benefits of motor intervention. *Psychogeriatrics*. 2012;12:186-192.
15. Cuthbert CA, King-Shier KM, Ruether JD, et al. The Effects of Exercise on Physical and Psychological Outcomes in Cancer Caregivers: Results From the RECHARGE Randomized Controlled Trial. *Annals of Behavioral Medicine*. 2018;52:645-661.
16. Danucalov MAD, Kozasa E, Ribas K, et al. A yoga and compassion meditation program reduces stress in familial caregivers of Alzheimer's disease patients. *Evidence-Based Complementary and Alternative Medicine*. 2013;2013: 513149.
17. Marsden D, Quinn R, Pond N, et al. A multidisciplinary group programme in rural settings for community-dwelling chronic stroke survivors and their carers: a pilot randomized controlled trial. *Clinical rehabilitation*. 2010;24:328-341.
18. Regan K, White F, Harvey D, Middleton LE. Effects of an Exercise and Mental Activity Program for People With Dementia and Their Care Partners. *Journal of Aging and Physical Activity*. 2019;27:276-283.
19. Hill K, Smith R, Fearn M, Rydberg M, Oliphant R. Physical and Psychological Outcomes of a Supported Physical Activity Program for Older Carers. *Journal of Aging and Physical Activity*. 2007;15:257-271.
20. Hirano A, Suzuki Y, Kuzuya M, Onishi J, Ban N, Umegaki H. Influence of regular exercise on subjective sense of burden and physical symptoms in community-dwelling caregivers of dementia patients: a randomized controlled trial. *Archives of Gerontology and Geriatrics*. 2011;53:e158-e163.