Technical Report
**14 December 2021**

THE UNIVERSITY OF QUEENSLAND
AUSTRALIA
CREATE CHANGE

# Active Choices: A ‘stepped-down’ program to promote self-managed physical activity in DVA clients

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# Abbreviations

| | |
|---|---|
| ADF | Australian Defence Force |
| AHP | Allied Health Professional |
| APA | Australian Physiotherapy Association |
| APSS | Adult Pre-Exercise Screening System |
| BCT | Behaviour Change Technique |
| DVA | Department of Veterans' Affairs |
| EOI | Expression of Interest |
| EP | Exercise Physiologist |
| ESSA | Exercise and Sports Science Australia |
| GMRF | Gallipoli Medical Research Foundation |
| PA | Physical Activity |
| PTSD | Post-Traumatic Stress Disorder |
| RCT | Randomised Controlled Trial |
| REA | Rapid Evidence Assessment |

# 1. Introduction

## 1.1 Project Background

Allied health professionals (AHPs) such as osteopaths, chiropractors, occupational therapists, podiatrists, exercise physiologists (EPs) and physiotherapists play an essential role in preventing, diagnosing and treating a range of conditions and illnesses. In Australia there has been significant growth in the provision of allied health services to *Department of Veterans' Affairs* (DVA) clients (i.e., Australian Defence Force [ADF] veterans and their dependants), especially those directed to improving musculoskeletal outcomes. Data from the DVA indicate that from the period of 2011/12 to 2016/17, there was a 59% growth in the average cost per patient for musculoskeletal services, and a 51% increase in the number of services each patient received, despite a 19% reduction in the number of patients who accessed musculoskeletal health services.[1] Service uptake and cost growth were significantly underpinned by large increases in the number of DVA clients who saw an EP or physiotherapist for treatments involving physical activity (PA).

Most DVA clients are older Australians[2], and the increasing number of these clients seeing AHPs and presumably becoming more physically active as a result, is testament to the success of DVA strategies for promoting better health for ADF veterans and their dependants. However, one limitation of this approach to PA promotion is that many patients fail to maintain their PA regimes once discharged from treatment.[3,4] This is problematic as the health benefits attained during treatment may be lost when an individual is no longer active. Studies have found that patients commonly experience challenges in transitioning to un-supervised PA, and report difficulties in maintaining motivation and finding confidence to be active without expert supervision.[5,6] Thus, these patients have failed to self-manage their PA regimes.

A stepped-down program supports clients as they transition from allied health treatment to self-management of their health conditions. Therefore, a self-managed PA program involves individuals taking responsibility for initiating and maintaining their own PA regimes, instead of being dependent on the supervision of an AHP. Assisting DVA clients in 'stepping down' to self-managed PA may promote a range of positive health outcomes that are associated with regular PA. These include reduced risk of illness from chronic diseases (e.g., Type II diabetes, heart disease, dementia), improved physical function, reduced risk of falls and fall-related injuries, improved quality of life, enhanced cognitive function and reduced symptoms of depression and anxiety.[7,8] Stepped-down PA programs may also help in sustaining the health benefits achieved through allied health treatment and improve social connectedness through promoting engagement in group-based interactions and networks. This is important given the range of health disparities between veterans and the general population.[9]

[1] Australian Government Department of Veterans Affairs. *Review of DVA Dental & Allied Health Arrangements*. Canberra: Commonwealth of Australia, 2018. Available from: https://www.dva.gov.au/sites/default/files/2021-10/dentalalliedreport.pdf
[2] Australian Government Department of Veterans' Affairs. *Treatment Population Statistics: June 2018*. Canberra: Commonwealth of Australia, 2018. Available from: https://www.dva.gov.au/sites/default/files/files/about%20dva/stat/tpopjun2018.pdf
[3] Campbell F, Holmes M, Everson-Hock E, et al. A systematic review and economic evaluation of exercise referral schemes in primary care: a short report. *Health Technol Assess.* 2015;19(60):1-110. doi: 10.3310/hta19600
[4] Moore SM, Dolansky MA, Ruland CM, Pashkow FJ, Blackburn GG. Predictors of Women's Exercise Maintenance After Cardiac Rehabilitation. *Journal of Cardiopulmonary Rehabilitation.* 2003;23(1):40-49. doi: 10.1097/00008483-200301000-00008
[5] Casey D, De Civita M, Dasgupta K. Understanding physical activity facilitators and barriers during and following a supervised exercise programme in Type 2 diabetes: a qualitative study. *Diabet Med.* 2010;27(1):79-84. doi: 10.1111/j.1464-5491.2009.02873.x
[6] Wycherley TP, Mohr P, Noakes M, Clifton PM, Brinkworth GD. Self-reported facilitators of, and impediments to maintenance of healthy lifestyle behaviours following a supervised research-based lifestyle intervention programme in patients with type 2 diabetes. *Diabet Med.* 2012;29(5):632-639. doi: 10.1111/j.1464-5491.2011.03451.x
[7] U.S. Department of Health and Human Services. *Physical Activity and Health: A Report of the Surgeon General.* Atlanta, GA: US Department of Health and Human Services, Centres for Disease Control and Prevention, National Centre for Chronic Disease Prevention and Health Promotion, 1996. Available from: https://www.cdc.gov/nccdphp/sgr/pdf/sgrfull.pdf
[8] 2018 Physical Activity Guidelines Advisory Committee. *2018 Physical Activity Guidelines Advisory Committee Scientific Report*. Washington, DC: US Department of Health and Human Services, 2018. Available from: https://health.gov/paguidelines/second-edition/report/pdf/PAG_Advisory_Committee_Report.pdf
[9] Haibach JP, Haibach MA, Hall KS et al. Military and veteran health behaviour research and practice: challenges and opportunities. *J Behav Med* 2017; 40(1):175-193. doi: 10.1007/s10865-016-9794-y.

Self-management is challenging, and greater support for sustainability of self-managed PA is observed through engagement in PA with others.[10] This social interaction may have the added benefit of helping DVA clients deal with challenges of disconnection that can come from losing long-standing connections with peers and military support networks that enable positive health behaviours.[11] Engaging DVA clients in a stepped-down program that emphasises social connectivity through PA may be an effective strategy not only for sustainability of PA, but also for re-establishing social support networks that can help counter feelings of isolation and ill health.[12]

## 1.2 Project Aims

Given that very little is known about stepped-down models of care and appropriate strategies to transition DVA clients to self-managed PA following treatment from an AHP, the overarching aims of this project were to:

**Aim 1.** Critically and systematically review existing stepped-down models of care relating to PA, with a specific focus on military service veterans and their dependents.

**Aim 2.** Consult with a national sample of EPs and physiotherapists to understand their experiences in supporting DVA clients to self-manage PA.

**Aim 3.** Use findings from the review and consultation process to develop *Active Choices*, a stepped-down program to support DVA clients as they transition from allied health treatment to self-managed PA.

**Aim 4**. Implement a trial of the *Active Choices* program and evaluate its potential impacts on PA, social connectedness, psychological wellbeing and allied health service utilisation and costs in a recruited sample of DVA clients.

## 1.3 Project Stages and Milestones

This project was completed in three stages:

- **Stage 1: Program Development (July 2019 – July 2020)**. The review of stepped-down PA programs (Aim 1) and stakeholder consultations with EPs and physiotherapists (Aim 2) were completed. Guided by the findings of this work, the *Active Choices* program was developed (Aim 3). Program materials were designed and then finalised in preparation for Stage 2.
- **Stage 2**: **Program Implementation and Evaluation (August 2020 – October 2021).** Participants were recruited and a trial of the *Active Choices* program was implemented. Data were collected from study participants to evaluate the program's impacts (Aim 4).
- **Stage 3**: **Analysis and Reports (October 2021 – December 2021).** Data collected in Stage 2 were analysed, and the reports of project findings prepared.

The project milestones delivered to date are described in **Table 1.1.**

This report is the final milestone for the project (**Milestone 10**).

[10] Kanamori S, Takamiya T, Inoue S et al. Exercising alone versus with others and associations with subjective health status in older Japanese: the JAGES Cohort Study. *Sci Rep* 2016; 6:39151. doi: 10.1038/srep39151.
[11] Hatch SL, Harvey SB, Dandeker C et al. Life in and after the armed forces: social networks and mental health in the UK military. *Sociol Health Illn* 2013; 35(7):1045-1064. doi: 10.1111/1467-9566.12022.
[12] Schrempft S, Jackowska M, Hamer M et al. Associations between social isolation, loneliness, and objective physical activity in older men and women. *BMC Public Health* 2019;19(1):74. doi: 10.1186/s12889-019-6424-y.

**Table 1.1. Project Milestones.**

| Milestone | Description | Status |
|---|---|---|
| M1 | Project Plan | Delivered 29th May 2019 |
| M2 | Rapid Evidence Assessment: Draft Report | Delivered 30th August 2019 |
| M3 | DVA and UQ Ethics Approvals | Delivered 31st January 2020 |
| M4 | Rapid Evidence Assessment: Final Report | Delivered 15th November 2019 |
| M5 | Progress Report 1 | Delivered 11th December 2019 |
| M6 | Progress Report 2 | Delivered 15th April 2020 |
| M7 | Progress Report 3 | Delivered 27th November 2020 |
| M8 | Progress Report 4 | Delivered 24th June 2021 |
| M9a | Draft Report | Delivered 12th November 2021 |
| M9b | Presentation of Findings to DVA | Delivered 17th November 2021 |
| M10 | Final Report | Delivered 14th December 2021 |

## 1.4 Structure of Report

The key purpose of this draft report is to present the findings from the project's main study which evaluated the impacts of the *Active Choices* program on PA, social connectivity, psychological wellbeing, and allied health service utilisation and costs in a recruited sample of DVA clients (Aim 4). It also summarises the formative research work completed (i.e., stakeholder consultations and review of existing programs) that informed the development of the program. This formative work has been delivered through existing, delivered milestones.

The structure of this draft report is as follows:

- **Chapter 2** – Summarises the key findings from the Rapid Evidence Assessment which systematically reviewed the evidence for the effectiveness of stepped-down programs to promote self-managed physical activity in veterans and their dependants.
- **Chapter 3** – Presents the key findings from the stakeholder consultations that were completed with EPs and physiotherapists to canvas their experiences in supporting DVA clients to self-manage PA.
- **Chapter 4** – Provides a detailed overview of the *Active Choices* program.
- **Chapter 5** – Presents the methodology for the project's main evaluation study.
- **Chapter 6** – Describes the sample DVA clients involved in the study, and comments on the success of the strategies used to recruit these participants.
- **Chapter 7** – Presents the findings from the evaluation of the *Active Choices* program.
- **Chapter 8** – Provides a summary of the key findings and conclusions.

## 1.5 Impacts of COVID-19 Pandemic

The research project was completed during the COVID-19 pandemic. The impact of the pandemic on the project were as follows:

- **Project timeline and deliverables:** Government restrictions and venue closures, social distancing measures, and suspension of face-to-face research activities by UQ on 20th March 2020 resulted in the target date of commencement for project implementation (April 2020) being delayed until 3rd August 2020. During this pause, the stakeholder consultations were completed to value-add to the project's outcomes.
- **Participant recruitment rates:** The rate of participant sign-up was lower than initially expected. Feedback from industry stakeholders attributed this to lower numbers of DVA clients seeing an EP or physiotherapist during the pandemic, and client concerns about being out in the community. To accommodate a smaller sample size, the research design was changed from a cluster randomised controlled trial to a single-group design, which is an appropriate design for a proof-of-concept study. The recruitment period was also extended by 3-months, with participants signing up to the program during this extension phase having a shorter follow-up period.
- **Project findings:** The pandemic has presented unique barriers to engaging in self-managed PA and experiencing social connectedness. This may have reduced the impacts of the *Active Choices* program on these outcomes. Data collected from participants provide insights into the impacts of the pandemic and are presented in this report.

## 1.6 Peer Review

In alignment with the project's Work Order requirements, the findings presented in this report have been peer-reviewed by project's Steering Group. The members of the Steering Group comprise academics from the *University of Queensland* (UQ), as well as representatives from *Exercise and Sports Science Australia* (ESSA) and the *Australian Physiotherapy Association* (APA). These members are:

- **Associate Professor Nicholas Gilson (Chair)**, Associate Professor of Physical Activity and Health at UQ
- **Professor Wendy Brown**, Professor of Physical Activity and Health at UQ
- **Professor Catherine Haslam**, Professor of Clinical Psychology at UQ
- **Dr Gregore Iven Mielke**, Research Fellow at UQ
- **Dr Zoe Papinczak**, Senior Research Assistant at UQ
- **Ms Anita Hobson-Powell**, Chief Executive Officer of ESSA
- **Ms Carly Ryan**, Standards Manager at ESSA
- **Mr Daniel Miles**, Deputy General Manager of Policy and Government Relations at APA

In addition, the findings from the systematic review (see **Chapter 2**) and the research protocol for the main evaluation study (see **Chapter 5**) have been peer-reviewed by other academics as part of the journal publication process.

# 2. Rapid Evidence Assessment

A Rapid Evidence Assessment (REA) that systematically reviewed the evidence for the effectiveness of stepped-down programs to promote self-managed PA in veterans and their dependants was completed. The overarching purpose of this review was to inform the development of the *Active Choices* program, including the selection of key behaviour change techniques (BCTs). A summary of review findings are presented in this chapter of the report.

This REA was project milestone 4 and was delivered to the DVA on 15th November 2019. A full version of this review is available on the DVA's website at the following link: https://www.dva.gov.au/documents-and-publications/stepped-down-intervention-programs-promote-self-managed-physical

The findings from this systematic review were also published as a peer-reviewed journal article in the *Journal of Science and Medicine in Sport* (see **Appendix A**).[13]

## 2.1 Background

The aims of this review were to:

1. Examine the scientific literature for evidence of the effectiveness of interventions to promote self-managed PA in veterans and/or their dependants.
2. Assess studies that compared the effectiveness of stepped-down models of PA self-management to usual care controls.
3. Identify key BCTs that have been used in these studies to successfully promote PA change.

## 2.2 Method

Systematic searches of 11 databases were completed to identify randomised controlled trials (RCTs) that assessed self-managed interventions to promote PA and/or physical function/ fitness with participants who were veterans and/or their dependants (e.g., spouses).

Data were extracted on study characteristics, intervention strategies (which were assessed against a taxonomy of BCTs[14]), primary outcomes (PA and physical function/ fitness), and where available, secondary outcomes of interest (psychological wellbeing, social support and healthcare costs).

The overall strength of the evidence base was assessed on study quality (poor, fair or good), the direction of change in study outcomes (positive, negative or no effect) and the generalisability of the findings to the Australian context. These elements were used to rate the evidence based as 'supportive, promising, unknown or unsupportive'.

## 2.3 Results

### 2.3.1 Study Characteristics

28 papers were identified through the systematic searches which met the inclusion criteria, all of which were conducted in the USA. Across studies, participants ($n$ = 45 to $n$ = 1092) were typically older-aged (mean age 55+ years), male veterans with high-risk comorbidities (e.g., PTSD, diabetes), with only one study examining the dependants of veterans.

[13] Gilson ND, Papinczak ZE, Mielke GI et al. Stepped-down intervention programs to promote self-managed physical activity in military service veterans: A systematic review of randomised controlled trials. *J Sci Med Sport* 2021. doi: 10.1016/j.jsams.2021.06.008

[14] Michie S, Ashford S, Sniehotta FF et al. A refined taxonomy of behaviour change techniques to help people change their physical activity and healthy eating behaviours: the CALO-RE taxonomy. *Psychol Health* 2011; 26:1479-1498. doi: 10.1080/08870446.2010.540664.

### 2.3.2 Study Outcomes and Measures

The primary outcomes of PA and physical function/ fitness were assessed in 93% and 36% of selected studies, respectively. The secondary outcomes of psychological wellbeing (21%), social support (4%) and healthcare costs (7%) were assessed in fewer studies.

Of the 26 studies that measured PA, 65% used self-report measures, and the remaining studies used objective measures that included pedometers (23%) and accelerometers (12%). Of the 10 studies that measured physical function/ fitness, 90% measured this with an objective performance test.

### 2.3.3 Intervention Strategies

When considering the 19 unique intervention programs, 63% implemented PA specific interventions, while the others used broader approaches that targeted multiple health behaviours which included PA. Stepped-down programs commonly used expert counselling to transition participants from usual care to self-managed PA regimes. Intervention duration ranged between 3 to 12 months, with the majority (74%) implemented over a 6+ month period.

The selected studies utilised a total of 21 different BCTs from Michie's (2011) taxonomy.[14] Education, goal setting and goal review were among the common strategies evident across the 19 intervention programs. Self-monitoring, social support and objects to facilitate behaviour change (e.g., pedometers) were also common.

When considering only those studies that compared stepped-down interventions to usual care controls, a positive intervention effect was found ($n$ = 5), with education, social support, goal setting and goal review among the most commonly used BCTs. Other BCTs used in effective programs included self-monitoring, problem-solving and action planning.

### 2.3.4 Program Effectiveness

More than half (58%) of studies that reported PA data observed positive intervention effects. The mean magnitude of change was 53 minutes/week of self-reported moderate-intensity PA, while pedometer studies observed a mean increase of 849 steps/day. When considering only those studies that compared a stepped-down intervention to usual care ($n$ = 14), 79% observed a positive between-group intervention effect in the primary outcome of PA.

There was less evidence for the impact of these programs on other outcomes of interest, with fewer than half (40%) reporting positive effects on physical function/fitness. Similarly, only one study reported a positive effect for psychological health, and no studies found an effect for social support or healthcare costs.

Overall, 64% of included studies found positive intervention effects for at least one of the outcomes of interest. However, these positive intervention effects were only found in studies that included veterans as participants.

### 2.3.5 Evidence Quality

Overall, the quality of the evidence base was rated as 'good'. This, in conjunction with the finding that a positive intervention effect was observed in the majority of studies, led to the overall effectiveness of self-managed PA interventions for veterans being rated as:

***Promising – evidence suggestive of beneficial effect but further research required.***

Given that the review identified no Australian-based studies that met inclusion criteria and found no positive intervention effects for the dependants of service veterans (noting that only one study was included in this review), the generalisability of the findings to DVA clients (both service veterans and their dependents) was rated as:

***Unknown – insufficient evidence of beneficial effect, and further research required.***

## 2.4 Review: Take-Away Messages

- The review concluded that stepped-down programs have the potential to help veterans' transition from allied health care to effective self-management of PA.
- Findings identified key BCTs that should be embedded within stepped-down programs. These include social support, goal setting, goal review, self-monitoring and education.
- As a pre-requisite to larger, scalable studies, the findings emphasise the need for well-controlled, proof of concept research with DVA clients in the Australian context.
- The evaluation of the *Active Choices* program will contribute much needed evidence for the effectiveness of stepped-down programs which seek to promote self-managed PA in DVA clients. It will be among the first studies to examine the effectiveness of such programs in an Australian context and for dependants of service veterans globally.

# 3. Stakeholder Consultations

This chapter presents the findings from the stakeholder consultations that were completed with exercise physiologists (EPs) and physiotherapists to canvas their experiences of supporting DVA clients to self-manage physical activity (PA). This aspect of the project was undertaken in addition to the original set of deliverables and was developed in response to the suspension of face-to-face research activities due to COVID-19. Along with the review data presented in the previous chapter, the findings from stakeholder consultations were used to further inform the design and delivery of the *Active Choices* program.

## 3.1 Background and Aims

EPs and physiotherapists play a critical role in facilitating DVA clients' participation in self-managed PA.[15,16] However, there is currently little knowledge around the specific behaviour change techniques (BCTs) and strategies they use, or the barriers and facilitators that help or hinder DVA clients transition to self-managed PA. To date, there have been limited studies conducted with physiotherapists[17,18] and no studies with EPs. Furthermore, no studies have examined these questions in the context of veterans, who are likely to have unique treatment considerations. More research in this area is needed to guide the development of effective stepped-down programs for veterans, and to inform best practice approaches for allied health professionals (AHPs) and organisations seeking to support DVA clients as they transition from guided treatment to self-managed PA.

To address limitations in the current knowledge base, and to inform the delivery of the *Active Choices* program, this research undertook stakeholder consultations with Australian EPs and physiotherapists who deliver DVA-funded health treatment to Australian Defence Force (ADF) veterans and their dependants. The aims of the study were to:

1. Identify the BCTs and strategies which EPs and physiotherapists use to assist DVA clients in self-managing PA.
2. Identify the unique barriers, facilitators, and issues that DVA clients and AHPs encounter in engaging with, and promoting, self-managed PA.

## 3.2 Method

### 3.2.1 Design

The study utilised a mixed-methods design involving an online survey followed by a focus group interview with a sub-sample of volunteers who completed the survey. The study protocol was approved by the *University of Queensland Human Research Ethics Committee* (#2020000034) and *Department of Defence and Veterans' Affairs Human Research Ethics* Committee (DDVAHREC/OUT/2019/BN11979933).

### 3.2.2 Recruitment

The study sought to recruit a convenience sample of Australian EPs and physiotherapists involved in the delivery of DVA-funded treatment. The online survey was advertised nationally through *Exercise and Sports Science Australia* (ESSA) and *Australian Physiotherapy Association* (APA) communication channels, including

[15] Shirley D, van der Ploeg HP, Bauman AE. Physical Activity Promotion in the Physical Therapy Setting: Perspectives From Practitioners and Students. *Phys Ther.* 2010: 90: 1311-1322. doi: 10.2522/ptj.20090383
[16] Gillam I. Success story: how exercise physiologists improve the health of Australians. *Br J Sports Med* 2015; 49: 1028. doi: 10.1136/bjsports-2015-094687
[17] Kunstler BE, Cook JL, Kepm JL et al. The behaviour change techniques used by Australian physiotherapists to promote non-treatment physical activity to patients with musculoskeletal conditions. *J Sci Med Sport* 2019; 2-10. doi: 10.1016/j.jsams.2018.06.002
[18] Kunstler BE, Cook JL, Freene N et al. Physiotherapists use a small number of behaviour change techniques when promoting physical activity: A systematic review comparing experimental and observational studies. *J Sci Med Sport* 2018; 609-615. Doi: 10.1016/j.jsams.2017.10.027

social media posts (*Facebook* and *Linked-In*) and e-newsletters distributed to members and advocacy groups. Recruitment took place between July and September 2020, with study advertisements shared monthly. An expression of interest form for the focus group interview was included on the final page of the survey, which participants could opt to complete.

### 3.2.3 Survey Procedures

Survey items were developed in consultation with content experts, including representatives from ESSA, APA and DVA, and informed by our systematic review of self-managed PA programs. The survey comprised both closed and open-ended items and was designed to explore the following key themes:

- The BCTs and strategies which EPs and physiotherapists use to support DVA clients in their transition to self-managed PA.
- The factors that act as facilitators and barriers to self-managed PA in DVA clients.
- The support and resources which EPs and physiotherapists have accessed to help them transition DVA clients to self-managed PA.
- The impact COVID-19 has had on EPs' and physiotherapists' clinical practice, including any adaptations this required for service provision.
- Suggestions for DVA support to help EPs and physiotherapists promote self-managed PA with DVA clients.

The survey items were pilot tested with two EPs to confirm that the language used was suitable and appropriate and that the survey's usability was sound. The final survey consisted of five sections (see **Appendix B**).

Participants completed the online survey using the *Qualtrics* platform from July to September 2020. All survey items were optional, with items randomised to mitigate response bias. Responses were anonymous, and the survey took on average 10 minutes to complete.

### 3.2.4 Focus Group Procedures

The focus group was conducted in November 2020 with the overarching aim of informing recommendations for practice. The questions asked enabled further exploration of key issues which emerged from the survey:

- How EPs and physiotherapists support their DVA clients to self-manage PA, including what BCTs they find to be most effective.
- At what point in treatment do EPs and physiotherapists start to use BCTs with DVA clients to help them self-manage PA.
- What resources are needed to improve EPs' and physiotherapists' uptake and use of BCTs to support DVA clients in self-managing PA.

The focus group interview was completed using Zoom teleconferencing software and ran for one hour. One facilitator and note-taker from the research team were present. The interview was recorded and later transcribed in full.

### 3.2.5 Analyses

Descriptive statistics (frequencies, means [M], standard deviations [SD] and rank orders) were calculated using STATA to summarise participant demographics, BCTs, barriers and facilitators, support resources and COVID-19 impacts. Independent samples t-tests were used to identify any differences in the responses between EPs and physiotherapists.

Thematic analysis was used to code and analyse responses to the free-text survey items and the focus group data. Responses were independently analysed by two coders, who then met to agree upon emergent themes and select illustrative quotes.

## 3.3 Results

### 3.3.1 Participants

Sixty-five AHPs completed the online survey. **Table 3.1** shows the demographic characteristics of survey respondents. The majority of participants were physiotherapists (58%), and over half of EPs and physiotherapists worked within a private practice facility (66%) that was located in a capital city or large metropolitan area (68%). AHPs reported practicing in their chosen profession for 16 years on average (range = 1 to 44 years). Physiotherapists had worked for significantly more years than EPs, with a mean difference of 12.9 years ($p$<.001). No other significant differences were found between professions across the survey items.

**Table 3.1 Characteristics of EPs and physiotherapists who completed the online survey (*N* = 65).**

| Characteristic | N | % |
|---|---|---|
| Primary profession [a] | | |
| Physiotherapist | 37 | 57.8 |
| Exercise physiologist | 27 | 42.2 |
| Workplace setting | | |
| Private practice facility | 43 | 66.2 |
| Fitness centre/ gym | 5 | 7.7 |
| Community healthcare service | 4 | 6.2 |
| Other | 13 | 19.9 |
| Workplace location | | |
| Capital city / large metropolitan area | 44 | 67.7 |
| Rural / remote area | 14 | 21.5 |
| Large regional town | 7 | 10.8 |
| | ***M*** | ***SD*** |
| Years spent working in primary profession | 16.0 | 13.0 |
| Physiotherapist | 21.4 | 13.5 |
| Exercise physiologist | 8.5 | 7.9 |

***Note.*** [a] Data missing from one participant.

Three physiotherapists and two EPs who completed the survey volunteered to participate in the focus group. Three worked in a capital city or large metropolitan area, and two worked in regional or rural Australia. Time spent working as a health professional ranged from five to 35 years.

### 3.3.2 Survey Findings

#### 3.3.2.1 Use of Behaviour Change Techniques

Only one participant reported that self-management support was not something they incorporated in their treatment plans for DVA clients. The remaining 64 participants reported the frequency with which they used seven different BCTs in their clinical practice to support their DVA clients in transitioning to self-managed PA (see **Table 3.2**). The majority of participants reported using each of the seven BCTs 'always' or 'most of the time'. Education and goal setting strategies were the most frequently used, with 95% using education and 91% using goal setting 'always' or 'most of the time' during their clinical practice. Social support and action planning were the BCTs used the least, with 61% using social support and 70% using action planning 'always' or 'most of the time' with DVA clients.

In the open-response item, six participants reported using additional BCTs from Michie's (2011) taxonomy[14] to support their DVA clients in transitioning to self-managed PA. These were motivational interviewing ($n$ = 2), relapse prevention ($n$ = 1), rewarding achievements ($n$ = 2) and behavioural reminders ($n$ = 1).

**Table 3.2. Survey respondents use of behaviour change techniques (*N* = 64).**

| Strategy | Always (5) | Most of the time (4) | Sometimes (3) | Rarely (2) | Never (1) | Survey score M (SD) |
|---|---|---|---|---|---|---|
| Education | 45 (70.3%) | 16 (25.0%) | 3 (4.7%) | - | - | 4.7 (0.6) |
| Goal setting | 27 (42.2%) | 28 (43.8%) | 8 (12.5%) | 1 (1.6%) | - | 4.3 (0.7) |
| Self-monitoring | 27 (42.2%) | 23 (35.9%) | 11(17.2%) | 3 (4.7%) | - | 4.2 (0.9) |
| Barrier identification | 25 (39.1%) | 29 (45.3%) | 8 (12.5%) | 2 (3.1%) | - | 4.2 (0.8) |
| Goal review | 19 (29.7%) | 29 (45.3%) | 13 (20.3%) | 3 (4.7%) | - | 4.0 (0.8) |
| Action planning [a] | 15 (23.8%) | 29 (46.0%) | 17 (27.0%) | 2 (3.2%) | - | 3.9 (0.8) |
| Social support [a] | 14 (21.9%) | 25 (39.1%) | 20 (31.3%) | 5 (7.8%) | - | 3.8 (0.9) |

***Note*. [a]** Data missing from one participant.

Overall, survey participants reported high levels of confidence in providing self-management support to their DVA clients. Thirty-one percent of participants reported they were extremely confident, with a further 46% reporting that they were very confident, and 20% reporting that they were moderately confident.

#### 3.3.2.2 Barriers and Facilitators to Self-Managed Physical Activity

Participants were asked to rank the importance of seven barriers and seven facilitators for self-managed physical activity in DVA clients from the most (score 1) to least (score 7) important, based on a list of options provided. These findings are presented in **Table 3.3**.

The presence of a chronic health problem that makes self-management difficult was ranked by AHPs as the most important barrier to self-management overall, followed by client's lack of interest in self-managing PA. More than 30% of respondents rated these two barriers as being most important, and less than 10% ranked them as least important. Clinician's fear that clients may injure themselves while doing physical activity outside of supervised treatment sessions was the barrier rated as the least important, with 45% of respondents ranking this barrier last.

Client confidence to self-manage PA, and the presence of social support were ranked as the most important facilitators of self-managed PA, with very few respondents considering these to be of lowest importance (1.6% and 0%, respectively). The least important facilitator was that client's treatment services are tapered, which was ranked as being the least important by more than a third of respondents.

**Table 3.3. Rankings of barriers and facilitators to self-managed physical activity (*N* = 65).**

| | Rank Score *M* (*SD*) | % ranked 'most important' | % ranked 'least important' |
|---|---|---|---|
| ***Barriers*** | | | |
| Client has chronic health condition that makes self-management difficult | 2.8 (1.8) | 31.3 | 3.1 |
| Client isn't interested in self-managing their physical activity | 3.0 (2.1) | 34.4 | 7.8 |
| Client lacks social support to be physically active | 3.8 (1.7) | 6.3 | 4.7 |
| DVA pays for treatment but not self-managed physical activity options | 4.2 (2.1) | 15.6 | 14.1 |
| Client doesn't have access to suitable facilities to be active outside of treatment | 4.2 (1.6) | 6.3 | 10.9 |
| There are insufficient programs to help DVA clients self-manage their physical activity | 4.5 (1.8) | 3.1 | 14.1 |
| Clinician is worried the client may injure themselves through physical activity performed outside of treatment sessions | 5.5 (1.8) | 3.1 | 45.3 |
| ***Facilitators*** | | | |
| Client is confident they can self-manage physical activity | 2.6 (1.8) | 37.5 | 1.6 |
| Client has social support | 3.4 (1.6) | 14.1 | 0.0 |
| Client has access to ongoing physical activity support services | 3.8 (1.9) | 6.3 | 14.1 |
| Client exercises with others | 4.0 (2.0) | 15.6 | 10.9 |
| Client receives consistent messaging from all stakeholders | 4.2 (2.2) | 17.2 | 21.9 |
| Client is held accountable for physical activity | 4.2 (1.8) | 9.4 | 12.5 |
| Client's treatment services are tapered | 5.7 (1.4) | 3.1 | 39.1 |

In the open-response item, additional barriers reported were low client motivation (*n* = 5), client's lack of time (*n* = 2) and client's anxiety that they may injure themselves during self-managed PA (*n* = 3). No additional facilitators were described.

#### 3.3.2.3 Use of Support Resources

Participants indicated which support resources they had used to help them promote self-managed PA with their DVA clients and rated how helpful they had found the resources they used (see **Table 3.4**). Only two AHPs (3%) reported not using any support resources. Exercise equipment resources to offer DVA clients for use at home (e.g., *TheraBand*) were accessed by almost all participants (92%). More than 75% of AHPs had accessed behavioural support materials (e.g., worksheets, logbooks) and educational materials (e.g., practical and informational guides) to give clients, while 65% had referred their clients to community-based PA programs. Training workshops (17%) and professional development courses (37%) to upskill in the delivery of BCTs were the resources accessed the least.

In addition to being the most accessed resource, exercise equipment was rated as the most useful resource overall, with 75% of users ranking them as 'extremely' or 'very' helpful. Community-based PA programs were perceived as the second most useful resource, with over half (56%) of users finding them to be 'extremely' or 'very' helpful. The remaining resources were considered to be 'very' or 'moderately' helpful by the majority of users.

**Table 3.4. Survey respondents use of support resources and ratings of helpfulness (N = 63).**

| Support Resource | Used | Extremely helpful | Very helpful | Moderately helpful | Slightly helpful | Not at all helpful |
|---|---|---|---|---|---|---|
| Exercise equipment | 92.3% | 35.0% | 40.0% | 35.0% | 0.0% | 0.0% |
| Behavioural support materials | 78.5% | 10.0% | 34.0% | 40.0% | 14.0% | 2.0% |
| Educational materials | 75.4% | 10.2% | 44.9% | 36.7% | 8.2% | 0.0% |
| Community-based PA programs | 64.6% | 24.4% | 31.7% | 34.1% | 9.8% | 0.0% |
| Professional development courses | 36.9% | 17.4% | 30.4% | 43.5% | 8.7% | 0.0% |
| Training workshops | 16.9% | 9.1% | 36.4% | 45.5% | 9.1% | 0.0% |

Nearly half the respondents (48%) reported that the resources they had accessed were provided by ESSA; while 43% accessed resources provided by the APA. Only 29% of respondents reported they had accessed resources provided by the DVA to help promote self-managed PA with DVA clients. There was a strong theme that participants commonly self-sourced the support resources they had accessed, and often developed their own resources for DVA clients.

#### 3.3.2.4 Impacts of COVID-19 on Clinical Practice

Participants reported the extent to which the self-management support strategies they used with DVA clients changed in response to the COVID-19 pandemic. Almost all (95%) indicated they had changed their support strategies. One in three AHPs (33%) reported that their strategies had substantially changed (rated 'very' or 'extremely' changed), while a further 32% reported that their strategies had moderately changed.

With respect to how AHPs had changed their support strategies, the majority (87%) reported that they had emphasised the use of the home environment for PA. Sixty percent also reported more regularly checking in with their DVA clients about their progress and 50% had emphasised the use of walking paths for exercise. Forty-five percent placed more emphasis on exercising with family and household members and 42% encouraged the use of parks and outdoor spaces for exercise. Only 18% offered non-funded online exercise classes to clients.

#### 3.3.2.5 DVA Support to Promote DVA Client Self-Management

Survey participants offered their recommendations for how the DVA could provide additional support for client self-management. One third of participants (*n* = 21) suggested that the DVA funds more ongoing services that can help its clients to self-manage PA. Of particular importance were community-based PA opportunities and programs. Respondents commonly described how their DVA clients would be better able to self-manage if they had funded access to group exercise classes, gym memberships, pools and local clubs/ sporting interests. In addition, they commonly felt that their DVA clients would be better able to self-manage PA if they had greater access to DVA-funded exercise equipment, which they could use at home (e.g., dumbbells, ankle weights). Several participants (*n* = 8) identified the need to better educate stakeholders involved in DVA client care on the range of DVA-funded support services that are available, noting that this information is difficult to find. In addition, participants felt the need for better education around the use of BCTs which they can use to support their clients in transitioning to self-management.

### 3.3.3 Focus Group Findings

#### 3.3.3.1 Theme 1: Facilitating Social Support

Focus group participants strongly agreed with survey data identifying social support as a key facilitator of self-managed PA in DVA clients. As the following quotes illustrate, two interviewees explained that the reason why social support was so critical for veterans is that many experience social isolation, and that isolation from others needs to be effectively addressed before self-management of PA can realistically be achieved.

> "*The people I see who aren't interested in self-managing, the reason for that is that they're socially isolated*." (EP, Interviewee 1)

> "*It's about addressing those social factors. Yes, the intervention needs to be high quality, but we also need to have a structure that facilitates those psychological factors that influence participation in physical activity, like social support and interaction."* (EP, Interviewee 2)

Encouraging clients to engage in group-based PA was highlighted as a mechanism for facilitating social support and promoting self-managed PA. For example:

> *"Social support is our hidden agenda. That is one of the things we want to achieve in a group setting, and that is the reason we encourage our clients to be in a group setting."* (Physiotherapist, Interviewee 5)

Other strategies to promote social connectedness included pairing low with highly motivated clients as exercise partners, and linking clients to community-based social groups outside of PA contexts:

> *"We pair clients with low motivation to engage in physical activity with those high in motivation. If you have positive role models who are very motivated, that influences people who have less motivation to participate in physical activity."* (EP, Interviewee 2)

> *"We link participants to other community members with a shared experience, and that can range from physical activity groups to computer skills groups."* (EP, Interviewee 2)

#### 3.3.3.2 Theme: Building Self-Confidence

Aligned with the survey data, interviewees stressed the importance of self-confidence in facilitating self-managed PA. In terms of developing self-confidence, focus group discussions centred on identifying activities

clients considered unachievable and then building physical capability to improve self-efficacy for those specific activities. It was interesting to note EPs and physiotherapists commenting that higher self-confidence matched to physical capability in a supervised setting then acted as the catalyst for transition into self-managed PA. The following quotes illustrate these points:

> *"We love to find out what they think they can't do and then prove to them they actually can do it."* (Physiotherapist, Interviewee 4)

> "*We identify things they think they can't do, then work on that in treatment, and then transitioning that."* (EP, Interviewee 1)

Two focus group participants identified the value of using graded exercise programs during treatment, which gradually increased in difficulty as physical capability and self-confidence progressed. Linked to this, three focus group members highlighted the importance of assessing improvements in functional fitness, and how tangible outcomes through treatment provide a strong platform for PA self-management. For example:

> *"It's essentially an exposure hierarchy for anxiety, but with physical activity. We do a lot of information seeking to find out what they are worried about, what they can and can't do and what they'd like to do – and then challenging that through providing a graded exercise program which is safe."* (EP, Interviewee 2)

> *"There's all sorts of ways to affirm that there has been improvement and building confidence – all those physical outcome measures, patients love them. I think they are extremely valid and powerful to use."* (Physiotherapist, Interviewee 4)

#### 3.3.3.3 Theme 3: Transitioning to Self-Management

All focus group participants agreed that it was important to start using BCTs from the beginning of treatment and felt that this was critical in establishing expectations with clients that they must take responsibility for self-managing their health. As the following quotes highlight:

> *"It starts at the very first visit when you're doing the patient interview. You're really establishing early on what your expectations are."* (Physiotherapist, Interviewee 4)

> *"It's about self-management as soon as they walk through the door. They know from the outset that they're expected to do something for themselves."* (EP, Interviewee 2)

Two focus group participants discussed how they transitioned their clients to self-managed PA over time, and felt it was important to provide ongoing support while clients were in the process of building self-management skills. One EP highlighted the value of offering group exercise classes as part of the transition process to unsupervised PA. For example:

> "*It's not like a thing where you say 'OK they're ready for self-management now, see you later'. It's a weaning off of your services. It's important not to go 'chop, that's it'. It's a matter of them gradually improving their self-management skills over time."* (EP, Interviewee 1)

> "*We also offer an ongoing option that is a $5 group class that they can come to. It's good having an ongoing, transitional option that still offers some support, but where they don't need us."* (EP, Interviewee 2).

#### 3.3.3.4 Theme 4: Barriers to Promoting Self-Management

Reinforcing the survey findings, three focus group participants felt that EPs and physiotherapists needed more education on using BCTs to promote self-managed PA during treatment, with one physiotherapist noting that more educational resources and materials are needed:

> "*Having some resources available for allied health professionals and perhaps some of the more relevant outcome measures and recommendations. Things that are readily accessible for a less experienced physio."* (Physiotherapist, Interviewee 4)

In addition, one focus group participant questioned whether it was beyond their remit as an EP to encourage clients to foster social connections for their clients as a strategy to promote self-managed PA, given their view that the profession is provided with limited instruction on the use and implementation of BCTs such as social support:

> *I question if it's something we are fully responsible for or equipped to do. I remember when I was at university, I received no training on how to facilitate social networking. I wonder if it may be a bit too much of an ask."* (EP, Interviewee 2)

Two participants identified that a focus on PA self-management during treatment is a concern for EPs who were worried about loss of clientele. The group thought this was particularly true for health professionals in private practice who treat "*health as business"*:

> "*When you work in private practice, the barrier to self-management is that this is going to steal my patients."* (EP, Interviewee 1)

> "*A lot of service providers I know see 40-50 clients a week, so huge low value care and a huge focus on money. So say here's a program that is going to make your clients better so you can't see them anymore, that's going to be a huge problem for them."* (EP, Interviewee 2).

Two participants commented on it being difficult to find the time during treatment to sufficiently promote self-management due to time limits surrounding the length of appointments and number of appointments that DVA clients can receive. As the following quote illustrates:

> "*I think self-management is often part of the consultation time, but to be able to address all of those things is often quite hard to have enough time*." (Physiotherapist, Interviewee 3).

## 3.4 Stakeholder Consultations: Take-Away Messages

- EPs and physiotherapists use a range of BCTs to promote self-managed PA with DVA clients. The majority of survey participants reported using the following BCTs 'always' or 'most of the time': education, goal setting, self-monitoring, barrier identification, goal review, action planning and social support.
- Social support and client confidence to self-manage PA are the most important facilitators of self-managed PA for DVA clients, while the presence of a chronic health condition that makes self-management difficult and a lack of interest in self-managing PA are the most significant barriers. Stepped-down programs should consider how they can enhance these facilitators and reduce these barriers to PA.
- EPs and physiotherapists find exercise equipment (e.g., TheraBand, ankle weights) and community-based PA programs (e.g., group exercise classes) to be the most helpful resources for promoting self-managed PA with DVA clients. Participants commonly felt that having greater access to these types of resources would help them to better support their DVA clients in self-managing PA.
- EPs and physiotherapists believe that DVA clients would be better able to self-manage PA if they had funded access to group exercise classes, gym memberships, pools and local clubs/ sporting interests. Therefore, stepped-down programs should consider offering financial support for participants to access these types of community-based PA opportunities.
- EPs and physiotherapists feel that more education concerning the use of BCTs to promote self-managed PA during treatment is needed for their professions. While behaviour change is a clinical competency taught in Australian EP degrees, it is not taught in physiotherapy degrees. Therefore, professional organisations and tertiary institutions may need to consider how undergraduate programs can better emphasise training in the use of appropriate BCTs to support patient self-management.

- EPs and physiotherapists report that it can be challenging to find sufficient time during treatment sessions to adequately cover self-management. This highlights the potential value of a program like *Active Choices*, which can work in tandem with allied health treatment to assist DVA clients in transitioning to self-managed PA.

# 4. *Active Choices* Program

This chapter presents an overview of the *Active Choices* program that was developed, implemented and evaluated through the project.

## 4.1 Program Development

Formative research was completed during Stage 1 of the project to guide the design, content and delivery of the *Active Choices* program. These activities were a systematic review of stepped-down PA programs for veterans and their dependants (see **Chapter 2);** stakeholder consultations with EPs and physiotherapists (see **Chapter 3**); a scan of existing behaviour change resources targeting self-managed PA; and feedback sought from the Steering Group, DVA, and veterans. The resulting program is evidence-based and fit-for-purpose.

### 4.1.1 Theoretical Framework

The *Active Choices* program is based in Michie's (2012) *COM-B Model*[19]*,* which is a widely used and validated framework for designing behaviour change interventions. This model identifies three elements which influence behaviour: capability, opportunity and motivation. Capability is defined as the psychological and physical capacities needed to perform the behaviour; opportunity captures the external social and environmental factors that encourage behaviour change; and motivation refers to the cognitive processes that energise and direct behaviour.

The *Active Choices* program targets motivation, capability, and opportunity to increase self-managed PA. For instance, it influences opportunity to be physically active through linking participants into local active communities, and provides financial support to access these activities. The program also improves capability and motivation to be physically active by providing a range of psychological skills to self-manage PA regimes through consultations.

### 4.1.2 Selection of BCTs

The *Active Choices* program incorporates evidence based BCTs from Michie's CALO-RE taxonomy[14], including education, goal setting, goal review, self-monitoring, social support, action planning and problem solving. These BCTs are used to promote sustainable behaviour change.

The selection of these program BCTs was informed by the systematic review of stepped-down PA programs that was completed. Those BCTs identified as being commonly used in effective stepped-down programs were selected for inclusion in the *Active Choices* program. In addition, findings from the stakeholder consultations reinforced BCT selection, with those strategies frequently used by EPs and physiotherapists to promote self-managed PA included in the program.

## 4.2 Overview of Program

The primary goal of the *Active Choices* program is to support DVA clients as they transition from allied health treatment into self-managed PA. The secondary goals of the program are to improve social connectivity and psychological wellbeing for DVA clients.

A key focus of the *Active Choices* program is on individual preferences. The program connects participants into local PA opportunities that align with their preferences and suit their individual needs. With the support of the program team, clients find and participate in PA that they enjoy, and which fits with their life. This should in turn, promote long-term engagement with self-managed PA through minimising barriers to participation and promoting intrinsic motivation to be physically active.[20]

[19] Michie S, van Stralen MM, West R. The behaviour change wheel: a new method for characterising and designing behaviour change interventions. *Implement Sci* 2011 Apr 23; 6:42 doi: 10.1186/1748-5908-6-42

[20] Eynon M, Foad J, Downey J et al. Assessing the psychosocial factors associated with adherence to exercise referral schemes: A systematic review. *Scand J Med Sci Sports*. 2019; 29: 638-650. doi:10.111/sms.13408

A second key focus of the program is on social connectivity. The program links clients into group-based PA opportunities (when this aligns with their preferences) and runs regular social gatherings for participants to get to know one another. The purpose of this is to facilitate new social connections for clients and reduce feelings of social isolation. This should also promote sustained engagement in self-managed PA, with past research consultations finding that social support is a key predictor of PA participation.[21] In addition, findings from the stakeholder consultations (see **Chapter 3**) found that social support is a key facilitator of self-managed PA for DVA clients.

### 4.2.1 Consultation Sessions

The 12-week *Active Choices* program comprises four consultation sessions held with an *Active Choices* consultant at Weeks 1, 4, 8 and 12. The client's individualised *Active Choices* program is developed with the support of the *Active Choices* consultant in Week 1, 4, and 8; and a plan for the participant to continue self-managing their PA beyond the program is set at Week 12. An overview of the structure and content of these *Active Choices* consultation sessions is summarised below in **Table 4.1**.

**Table 4.1. Overview of the *Active Choices* program.**

| Session | Intervention Content and Activities |
|---|---|
| Week 1 – Initial Consultation | 1-hour face-to-face consultation to:<br>• Provide education about PA guidelines, PA benefits and PA safety.<br>• Provide information about local opportunities for participant's PA choices.<br>• Set PA goals for weeks 1 to 4.<br>• Create PA plan for weeks 1 to 4.<br>• Identify PA barriers and problem-solve strategies to overcome them. |
| Week 4 – Check-In | 30-minute telephone consultation to:<br>• Review goal progress and achievements from weeks 1 to 4.<br>• Identify PA barriers experienced during weeks 1 to 4 and problem-solve solutions.<br>• Review PA choices from weeks 1 to 4 and identify choices for weeks 5 to 8.<br>• Set PA goals for weeks 5 to 8.<br>• Create PA plan for weeks 5 to 8. |
| Week 8 – Check-In | 30-minute telephone consultation to:<br>• Review goal progress and achievements from weeks 5 to 8.<br>• Identify PA barriers experienced during weeks 5 to 8 and problem-solve solutions.<br>• Review PA choices from weeks 5 to 8 and identify choices for weeks 9 to 12.<br>• Set PA goals for weeks 9 to 12.<br>• Create PA plan for weeks 9 to 12. |

[21] Gray KE, Hoerster KD, Reiber GE et al. Multiple domains of social support are associated with diabetes self-management among Veterans. *Chronic Illness*, 2019, 15(4): 264-275. doi: 10.1177/1742395318763489

| | |
|---|---|
| Week 12 – Final Consultation | 1-hour face-to-face consultation to:<br>• Review goal progress and program achievements during weeks 9 to 12.<br>• Identify benefits experienced during program.<br>• Identify PA choices for beyond the program.<br>• Set PA goals for beyond the program.<br>• Create PA plan for beyond the program.<br>• Identify best strategies for overcoming PA barriers and preventing relapse. |

#### 4.2.1.1 Personalised Activities

Prior to the client's Week 1 Consultation, the *Active Choices* consultant receives expert advice from the client's AHP concerning the types of PA that are safe and suitable for the client to do in an unsupervised, self-managed context. A discussion is then held between the *Active Choices* consultant and the client concerning which activities they might like to try during their *Active Choices* program. Clients are presented with a list of options for PA that are consistent with the advice received from their AHP, and then select from this list the activities they are interested in doing. This discussion also involves collecting information from the client on factors that will impact which local opportunities for PA will be suitable for them, including how far they want to travel to get to their activities, what their availability is during the week and what they can afford to spend on PA (should there be costs involved).

Using this information, the *Active Choices* consultant completes a comprehensive internet search to find local opportunities for the client's PA choices that meet their individual needs (i.e., are close to their home, on offer when the client is available, and the types of activities that fit their budget). A document is then prepared that presents the client with detailed information about these suitable PA opportunities, and these options are discussed during the Week 1 Consultation.

### 4.2.2 Resource Booklet

Participants receive a resource booklet that contains educational and behavioural support materials (e.g., goal setting worksheets, PA logbooks). This booklet is used during each of the four program consultation sessions and supports each of the activities described in **Table 4.1** It is also used by participants during the 12-week program at home to self-monitor their PA. This involves recording in the booklet the PA they do each day. A copy of this resource booklet is provided in **Appendix C**.

### 4.2.3 Financial Support

Throughout the 12-week program, participants are eligible to receive financial support (maximum of $20/week) to assist them in accessing their PA choices, should there be associated costs. In addition, participants had access to this financial support during the follow-up period in which they were still engaged as part of the research study. Given that cost can be a barrier for veterans accessing community-based PA opportunities, and drawing upon lessons learned through the stakeholder consultations (see **Chapter 3**), this financial support was included in the program to help overcome this barrier.

### 4.2.4 Meet-and-Greet Sessions

Monthly, optional meet-and-greet sessions are held to provide an opportunity for program participants to meet one another and form new social connections. During this trial, these sessions were held during office hours and attended by an *Active Choices* consultant who facilitated introductions and conversations between attendees.

# 5. Methods

This chapter presents the methodology for the project's main study which implemented a trial of the *Active Choices* program and evaluated its impacts on PA, social connectedness, psychological wellbeing, and allied health service utilisation costs in a recruited sample of DVA clients.

The study's methodology was published as a protocol paper in *JMIR Research Protocols* (see **Appendix D**)[22]. Some revisions to this protocol were made post-publication in response to the COVID-19 pandemic (see **Chapter 1, Section 1.5**).

## 5.1 Design and Setting

This study utilised a mixed-methods, pre-post, single-group design, with data collected from participants at three assessment timepoints: baseline (Week 0), end-intervention (Week 12) and where possible, follow-up (Week 16 - 24). The trial was completed in Brisbane, Australia. Program delivery and data collection took place within a consultation room at the *University of Queensland*.

### 5.1.1 Sample Size

The reference parameters used to calculate the sample size were based on a recent large-scale survey conducted by our team, which examined accelerometer-measured PA in nearly 600 adults living in Brisbane, Australia. Assuming an average of 10 minutes/day at baseline, power of 80%, and significance level of 5%, our power analysis determined that a minimum sample size requires 33 participants. To allow for 20% loss to follow-up and 10% non-compliance with PA device use, we aimed to recruit 42 participants into the study.

### 5.1.2 Ethics Approval

Ethics approval for the project was obtained from the *Department of Defence and Veterans' Affairs Human Research Ethics Committee* (DDVAHREC/OUT/2019/BN11979933) and the *University of Queensland's Human Research Ethics Committee* (#2020000034).

### 5.1.3 Registration

The study was pre-registered with the *Australian and New Zealand Clinical Trials Registry*: (ACTRN12620000559910).

## 5.2 Recruitment

### 5.2.1 Eligibility Criteria

The inclusion criteria for the research were:

1. ADF veterans and their dependents (aged 18 years and above) who are DVA Gold or White Cardholders; and
2. Currently receiving DVA-funded allied health treatment from an EP or physiotherapist; and
3. Assessed by the treating EP or physiotherapist as being ready and able to safely transition to self-managed PA.

DVA clients who expressed an interest in the program were excluded if they were:

[22] Gilson ND, Papinczak ZE, Mielke GI et al. Effects of the Active Choices Program on Self-Managed Physical Activity and Social Connectedness in Australian Defence Force Veterans: Protocol for a Cluster-Randomized Trial. *JMIR Res Protoc.* 2021;10(2): e21911. doi:10.2196/21911

1. Under medical management for one of the following complex or chronic conditions and that requires ongoing specialist treatment from a qualified health professional: spinal cord injury, brain injury, chronic pain, stroke, amputation, complicated orthopaedic injury, and several mental health conditions; or
2. Currently participating in another DVA-funded PA program (e.g., *Heart Health*); or
3. Current serving ADF personnel.

### 5.2.2 Recruitment Strategy

A comprehensive recruitment strategy was developed in consultation with the DVA and was implemented from August 2020 until June 2021. A summary of the recruitment activities completed within each strategy is described below and a commentary on the success of these strategies is presented in **Chapter 6**.

#### 5.2.2.1 Primary Recruitment Strategy

The primary strategy for recruiting participants into the study was through enlisting the support of organisations which deliver EP and physiotherapy treatment services in the Greater Brisbane region. These providers acted as 'gatekeepers' for DVA client recruitment, assisting the research through identifying DVA clients at their practice who met the study's inclusion criteria and then inviting them to participate in the research.

From August 2020 until April 2021, the *Active Choices* program was advertised to EPs and physiotherapists across the Greater Brisbane region using *Exercise and Sports Science Australia* (ESSA), *Australian Physiotherapy Association* (APA) and *University of Queensland* (UQ) communication channels, including newsletters and social media posts that were shared with EP and physiotherapist members. A comprehensive list of EP and physiotherapy practices from across the Greater Brisbane region was collated using Google searches, ESSA and APA member directories and an email was sent out to these practices in August 2020.

This recruitment strategy was expanded in September 2020 to include GP practices and occupational rehabilitation providers who regularly work with DVA clients. Google searches were used to identity relevant practices. These practices were then contacted via email and phone call to provide details about the program.

Through these recruitment efforts, partnerships were formed with 21 organisations who assisted with recruitment for the study**.** Eleven of these organisations provide EP treatment services, three provide physiotherapy treatment services, four provide both EP and physiotherapy treatment services, and one provides social work services. In addition, partnerships were formed with two occupational rehabilitation providers who support ADF veterans.

#### 5.2.2.2 Secondary Recruitment Strategy

The secondary strategy involved directly advertising the project to DVA clients in the Greater Brisbane region. To assist, the DVA advertised the project in DVA's *e-News*, *Vet Affairs* and *Latest News* publications and via their social media pages from August 2020 until June 2021. In addition, the DVA's Brisbane-based *VAN Office* was asked to share information about the program with eligible DVA clients who visited their site.

A range of ex-service and defence community organisations were contacted to request their support in advertising the project to DVA clients. *Gallipoli Medical Research Foundation*, *War Widows Australia*, *RSL Queensland* and *Solider On* agreed to assist recruitment for the project and advertising the program via their communication channels (e.g., newsletters, social media pages) from March until April 2021.

Last, a 'snowball' recruitment strategy was used to encourage DVA clients participating in the program to recruit eligible friends and acquaintances.

### 5.2.3 Consent and Screening Process

DVA clients who expressed an interest in the project were contacted by a member of the research team who provided a full briefing of the study's aims, expectations, eligibility criteria, benefits and risks, and gave them a

copy of the *Participant Information Sheet and Consent Form*. Interested clients who believed they met the eligibility criteria then provided their informed consent. After consent was obtained, participants completed the *Adult Pre-Exercise Screening System* (APSS), which assessed for the presence of risk factors for PA, and provided their GP's and AHP's contact details.

A letter was then sent to their GP to notify them of the client's intention to participate in the study. This letter offered GPs the opportunity to contact the research team if they had any concerns about study participation. A similar letter was sent to the participant's AHP requesting confirmation that the client was ready and able to safely transition into self-managed PA. A form was included with this letter to the AHP, which asked them to indicate the types of activities that were safe and suitable for the client. This information was then used to guide the activities that the participant engaged with through *Active Choices*.

## 5.3 Intervention

Participants received the 12-week *Active Choices* program consisting of two 1-hour face-to-face consultations (held in Weeks 1 and 12) and two 30-minute telephone consultations (held in Weeks 4 and 8), which they completed individually with an *Active Choices* consultant. A detailed overview of the program is presented in **Chapter 4**. Involvement in this research did not replace existing treatment plans. Participants engaged in the program were able to continue with accessing allied health treatment from their EP or physiotherapist during the study period.

## 5.4 Outcome Measures

### 5.4.1 Overview

The primary outcome of PA, and secondary outcomes of psychological well-being and social connectedness, were assessed at baseline (Week 0), end-intervention (Week 12), and follow-up (Weeks 16 – 24). In addition, physical measurements of height and weight, and a lifestyle survey assessing quality of life and health behaviours (nutrition, exercise, smoking, PA and alcohol use) were completed at these time points. Standard demographic items assessing age, gender, education, employment, and household status were administered at baseline. Participants completed semi-structured interviews at end-intervention and follow-up.

Measures were administered by trained researchers and standardised with calibration of devices and equipment prior to measurement sessions. A $50 Coles grocery voucher was offered to incentivise participants to complete follow-up measures.

### 5.4.2 Physical Activity

The primary outcome of PA was assessed using accelerometer devices and the *Active Australia Survey* at the three assessment timepoints.

A triaxial accelerometer (wGT3X+, ActiGraph) was used to assess PA. Participants wore the device on their non-dominant wrist for seven consecutive days (24 hours) and kept a diary to record times when they attended treatment with their EP or physiotherapist, when the device was removed, and sleep hours. Accelerometers are now widely recognized as an affordable, practical, and highly accurate means of assessing PA.[23]

The *Active Australia Survey*[24] was included in the lifestyle survey. This survey consists of eight items which ask participants to report the frequency (number of sessions) and duration (number of minutes) of PA in the past week, including walking, moderate and vigorous leisure activities, vigorous gardening and strength-based activities.

[23] Eslinger DW, Tremblay MS. Physical activity and inactivity profiling: the next generation. *Can J Public Health* 2006; 98 Suppl 2: S195-S207.

[24] Australian Institute of Health and Welfare. *The Active Australia Survey: A guide and manual for implementation, analysis and reporting.* 2003. Available from: https://www.aihw.gov.au/getmedia/ff25c134-5df2-45ba-b4e1-6c214ed157e6/aas.pdf.aspx?inline=true

### 5.4.3 Social Connectedness

The secondary outcome of social connectedness was assessed using the *New Group Membership Scale*, *Social Identity Mapping*, and *Loneliness Scale* at the three assessment timepoints.

The *New Group Membership Scale* comprises four items that assess the extent to which people have joined new social groups and has strong internal reliability.[25] Responses were rated using a 7-point Likert scale (1 = strongly disagree; 7 = strongly agree). This scale was used to determine whether engagement in PA provided a platform to extend people's social networks to impact on inclusivity.

*Social Identity Mapping* is a validated online tool of social connectedness assessing the multidimensional and connected nature of people's social group networks (e.g., family, work, arts-based, sports) and associated social identities (e.g., as a veteran, member of a cycling club, or yoga class). Its elements—that comprise group importance, support, positivity, representativeness, and compatibility—are recognized predictors of a range of health and well-being outcomes. This project used the latest online version validated in five studies.[26]

*The Loneliness Scale* is a validated and reliable measure of loneliness and social isolation. It is comprised of three items, with responses made using a 3-point scale (1 = hardly ever; 2 = some of the time; 3 = often).[27]

### 5.4.4 Psychological Wellbeing

The secondary outcome of psychological wellbeing was assessed using the *Satisfaction with Life Scale*, administered at each of the three assessment timepoints. This is a widely used, validated instrument that is comprised of five items.[28] Responses to each item are made using a 7-point Likert scale (1 = strongly disagree; 7 = strongly agree).

### 5.4.5 Quality of Life

Quality of life was measured using the EQ-VAS and EQ-5D-5L[29]. The EQ-VAS is a measure of self-rated health and asks participants to rate their current health on a visual analogue scale that ranges from 0 to 100. The EQ-5D-5L comprises five items, which each assess one of five domains of health and functioning: mobility, self care, usual activities, pain/ discomfort and anxiety/ depression. Participants indicate the severity of problems they are experiencing in each of these domains on a 5-point rating scale (1 = no problems; 5 = extreme problems).

### 5.4.6 Interviews

Interviews were completed with participants at end-intervention and follow-up. The interview on completion of the intervention explored the extent to which program experiences promoted self-managed PA, social connectedness and psychological wellbeing for participants; aspects of the program that participants found beneficial and enjoyed, and those which they did not like; and suggestions for scaling-up the program in future. The interview at follow-up explored whether participants were able to maintain their PA routines post-program, the strategies they used to assist them in managing their PA and whether they had stepped down from allied health treatment. These interviews were recorded and then transcribed in full.

[25] Haslam C, Holme A, Haslam SA et al. Maintaining group memberships: social identity continuity predicts wellbeing after stroke. *Neuropsychol Rehabil* 2008; 18(5-6): 671-691. doi: 10.1080/09602010701643449
[26] Cruwys T, Steffens NK, Haslam SA et al. Social Identity Mapping: A procedure for visual representation of subjective group memberships. *Br J Soc Psychol* 2016 Dec; 55(4): 613-642. doi: 10.111/bjso.12155
[27] Hughes ME, Waite LJ, Hawkley LC, Cacioppo JT. A short scale for measuring loneliness in large surveys: Results from two population-based studies. *Res Aging* 2004; 26(6):655-672. doi: 10.1177/0164027504268574
[28] Diener E, Emmons RA, Larsen RJ, Griffin S. The satisfaction with life scale. *J Pers Assess* 1985 Feb; 49(1): 71-75. doi: 10.1207/s15327752jpa4901_13
[29] Herdman M, Gudex C, Lloyd A et al. Development and preliminary tests of the new five-level version of the EQ-5D (EQ-5D-5L). *Qual Life Res.* 2011; 20(10): 1727-1736. doi: 10.1007/s11136-011-9903-x

### 5.4.7 Process Data

Self-report data logged by participants in the resource booklet captured the quantity (minutes/ week) of PA participants engaged with during the 12-week *Active Choices* program. In addition, notes taken by program facilitators during consultation sessions captured participant activity choices, the barriers participants experienced during the program, the strategies they used to address these barriers, and the benefits they experienced during the program.

### 5.4.8 Health Service Data

De-identified, individual-level data from the DVA was accessed on study participants' use of DVA-funded EP and physiotherapy (PH) treatment services during the period in which they were engaged in the study (inclusive of their time in the program and in follow-up). Data received indexed their health service utilisation during the study period, inclusive of the total number of EP and PH services used, and the total costs of these services to the DVA. Data on the total costs incurred for EP and PH services during the year 2020 was also received. To allow for a comparison of the sample to DVA client service use norms, aggregated normative data were accessed from the DVA on the average, per client costs for EP and PH treatment services in 2020.

## 5.5 Data Analyses

### 5.5.1 Physical Activity

Accelerometer data were downloaded and processed using the R software package GGIR. This included calibration using local gravity as a reference, detection of abnormally high values, detection of non-wear time, calculation of the vector magnitude of acceleration corrected for gravity in milli-gravitational units averaged over 5-s epochs, and invalided data imputed by the average at similar time-points on different days of the week.[30] This validated approach was used to generate data based on the complete 24-h cycle (1440 min) for all participants, and to calculate sleep time, waking time in sedentary behaviour (<30 mg) and moderate-to-vigorous intensity PA (≥100mg), using widely recognised thresholds.[31] Moderate-to-vigorous intensity PA was estimated in bouts of ≥ 10 minutes to determine the proportion of the sample who met the *Australian Physical Activity Guidelines* (i.e., a minimum of 150 minutes/ week of moderate-intensity PA). Only participants with at least one complete 24-h cycle, and at least 4 days with 16 hours of wear duration were included in analyses of accelerometer data ($n$ = 24).

For self-report PA, time spent in the last week walking briskly, doing moderate-intensity PA, and doing vigorous-intensity PA were calculated. The total time (minutes per week) spent in each of these categories was multiplied by a MET value of 3.33 for walking and moderate-intensity PA; and 6.66 for vigorous-intensity PA to compute MET.minutes per week. MET.minutes per week were used to categorise participants as having low (<500 MET.minutes/week); moderate (500—999 MET.minutes/ week) or high (≥1000 MET-minutes/week) activity levels, as described in the report on the revision of *Australia's Physical Activity Guidelines*,[32] and determine the proportion of the sample who met the *Australian Physical Activity Guidelines*.

Quantitative analyses were completed in STATA. Descriptive statistics were generated, and a series of one-way ANOVAs were performed to analyse change over time (T1 = baseline; T2 = end-intervention; T3 = follow-up) on accelerometer-measured and self-reported PA. Follow-up t-tests were performed where significant associations were found. An alpha level of $p$<.05 was set *a priori* as the criterion for statistical significance, which is consistent with standard practice.[33] However, given that the analysis of accelerometer data was underpowered (24 participants met criteria for inclusion, when a minimum sample of 33 participants was

[30] Migueles JH, Rowlands AV, Huber F, et al. GGIR: a research community–driven open-source R package for generating physical activity and sleep outcomes from multi-day raw accelerometer data. *J Meas Phys Behav*. 2019; **2**: 188- 196

[31] Hildebrand M, Van hees VT, Hansen BH, et al. Age group comparability of raw accelerometer output from wrist- and hip-worn monitors. *Med Sci Sport Exerc*. 2014; **46**: 1816- 1824.

[32] Brown W, Bauman A, Bull F, Burton N. *Development of Evidence-Based Physical Activity Recommendations for Adults (18-64 years).* 2012. Available from: https://www.health.gov.au/sites/default/files/documents/2021/03/development-of-evidence-based-physical-activity-for-adults-18-to-64-years.pdf

[33] Andrade C. The p-value and statistical significance: Misunderstandings, explanations, challenges and alternatives. *Indian J Psychol Med,* 2019; **41**(3): 210-215.:

needed) effects falling above *p* =.05 but below *p* =.10 were considered to be 'marginally significant'. Effect sizes were generated to further aid interpretation of 'marginally significant' effects. This same process was applied to the analysis of social connectedness, psychological wellbeing and quality of life data.

### 5.5.2 Social Connectedness

Quantitative analyses were completed in R. Descriptive statistics were generated and a series of one-way ANOVAs were performed to analyse change over time (T1 = baseline; T2 = end-intervention; T3 = follow-up) on social connectedness measures (i.e., *Social Identity Mapping*, *Loneliness Scale* and *New Group Memberships Scale*). Follow-up t-tests were performed where significant associations were found. Additionally, examples of social identity maps created by two participants are provided to illustrate some common patterns observed in the sample in association with their involvement in the *Active Choices* program.

### 5.5.3 Psychological Wellbeing and Quality of Life

Quantitative analyses were completed in SPSS. Descriptive statistics were generated and repeated measures t-tests were completed to examine whether there were differences in scores on the psychological wellbeing (*Satisfaction with Life Scale*) and quality of life (*EQ-VAS and EQ-5D-5L*) measures between the assessment timepoints (T1 = baseline; T2 = end-intervention; T3 = follow-up).

### 5.5.4 Health Service Data

Two measures of health service utilisation and costs were used in this analysis. The first was the sample's total cost to the DVA for EP and PH services in 2020. The second was the total cost that study participants incurred during their involvement in the study. These costs were compared to normative data on the average, per client cost to the DVA for EP and PH services in 2020.

To facilitate comparisons with normative data, and to account for the different lengths of time in which participants were in the study, all costs were calculated on a weekly basis. In addition, the normative DVA cost data were weighted by the age distribution of the study sample. Costs were determined for all participants, as well as for those participants who reported a cost to the DVA during 2020, allowing for better comparison with normative data from all DVA clients who incurred a cost in 2020.

### 5.5.5 Process Data

Descriptive statistics were calculated in Microsoft Excel to summarise average weekly PA levels across the 12-week program. Thematic analysis was performed by a single coder to categorise the barriers, strategies and benefits that were reporting during the program.

### 5.5.6 Interview Data

For the end-program and follow-up interviews, thematic analysis was used. Two researchers read through the interview transcripts and independently coded the data in relation to key interview questions. Similar codes were then grouped together and categorised as themes. The two researchers met to agree upon coding and to select illustrative quotes.

# 6. Participants

This chapter presents an overview of strategies used to recruit participants into the study, and provides a summary of the characteristics of the sample at baseline.

## 6.1 Recruitment

35 participants were recruited into the research from 79 expressions of interest (EOI). This is equivalent to a 44% sign-up rate. **Figure 6.1** shows the total month-by-month EOIs received and converted participant sign-ups during the recruitment period of August 2020 to June 2021.

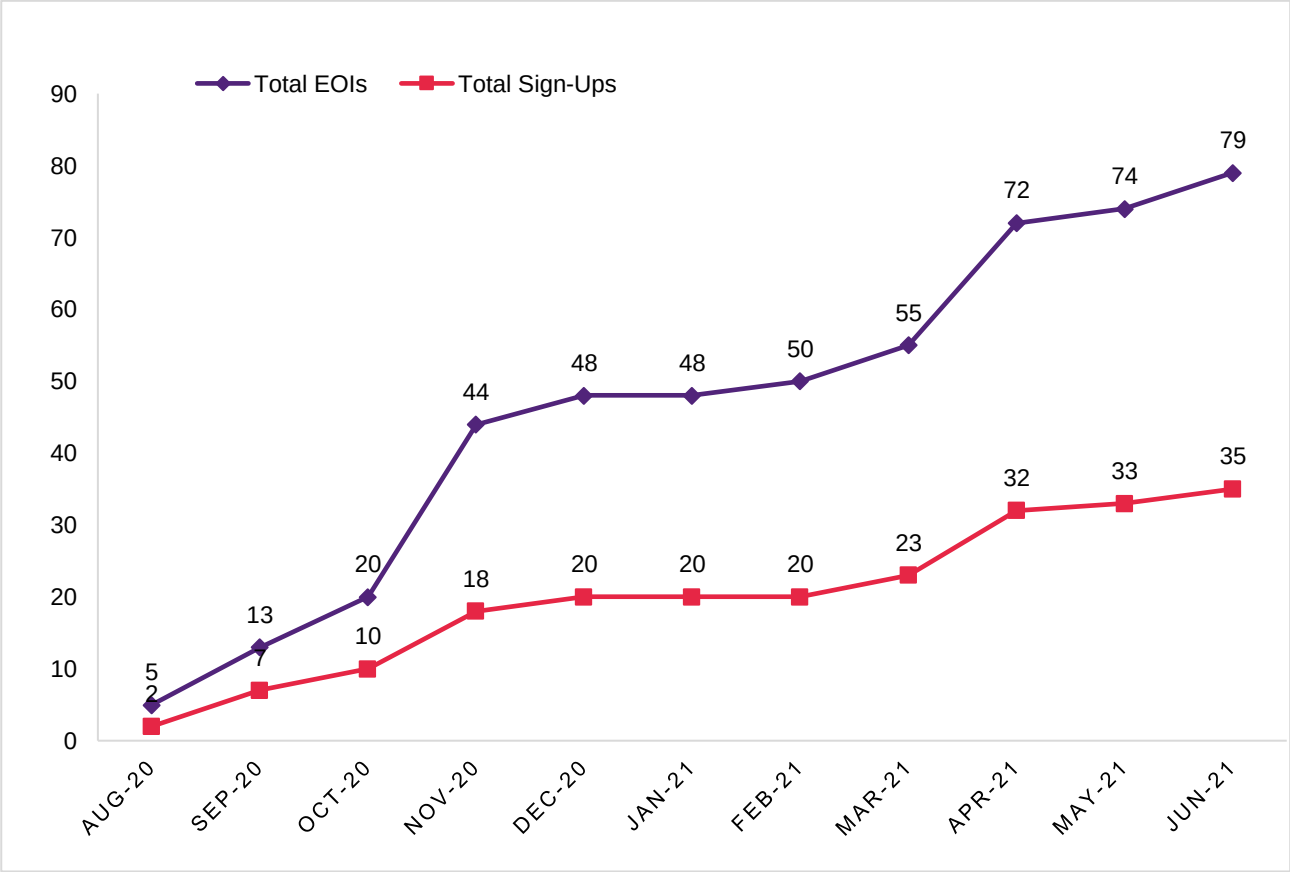



**Figure 6.1. Total month-by-month expressions of interests and participant sign-ups.**

Of the 79 EOIs received, 45 individuals did not enrol in the program (57%). For 20 of these individuals, we were able to establish that ineligibility was the reason for not proceeding to enrolment. The most common reasons for ineligibility were not currently being engaged in treatment with an EP or physiotherapist (*n* = 9), or not residing in Brisbane (*n* = 7). The 25 individuals remaining did not respond after being provided with further information about the program, and so the reasons they chose not to enrol are unknown.

These figures highlight there was strong interest in the *Active Choices* program and that application of strict eligibility criteria emphasised targeted recruitment consistent with program deliverables.

### 6.1.1 Success of Recruitment Strategies

#### 6.1.1.1 Expressions of Interest

EOIs received during the project's recruitment period of August 2020 to June 2021 came from a range of sources, which are shown in **Figure 6.2**. Of the 79 EOIs received, the source of recruitment was unknown for 9 (11%). Therefore, the figures and conclusions expressed in this section use the data from the 70 EOIs for which the source was known.

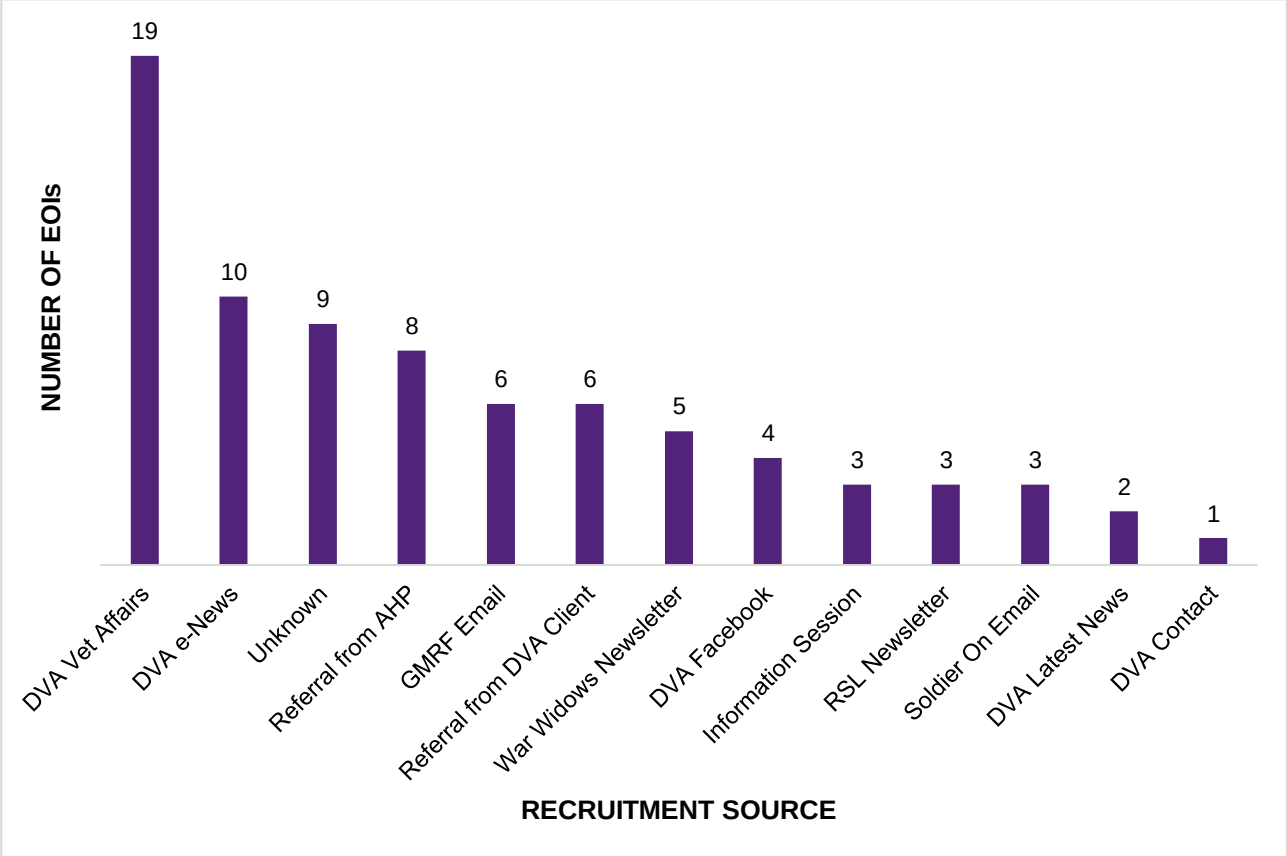



**Figure 6.2. Total number of expressions of interest per recruitment source.**

The most successful strategy for generating EOIs was project advertisements shared by the DVA through their various communication channels, inclusive of *Vet Affairs, e-News, Facebook*, *Latest News* and contact made by the DVA to ex-service organisations. Overall, recruitment materials shared by the DVA through their various communication channels generated 36 EOIs in total (51%). *DVA Vet Affairs* and *e-News* were particularly effective, yielding 19 (27%) and 10 (14%) EOIs respectively.

The second most successful strategy in terms of generating EOIs for the program involved sharing of recruitment materials through ex-service organisations to their networks, including *RSL QLD*, *War Widows Australia*, *Gallipoli Medical Research Foundation* (GMRF) and *Soldier On*. Altogether, recruitment materials shared by ex-service organisations led to 17 EOIs (24%).

Eight client referrals were received through AHPs during the project's recruitment phase (11%). Snow-ball sampling, which involved current program participants sharing information about the program to their family, friends and veteran networks led to six EOIs (9%). In addition, an information session delivered by our team to a group of DVA clients at one of our provider partners' practices resulted in three EOIs (4%).

#### 6.1.1.2 Participant Sign-Ups

35 participants signed-up to the *Active Choices* program. For 33 of 35 participants, the source of recruitment was known, and these data are presented below (see **Figure 6.3**).


**Figure 6.3. Total number of participants sign-ups per recruitment source.**

The most successful strategy for generating participant sign-ups to the program was advertisements shared through DVA communication channels. Fifteen participants (45%) were recruited into the program via advertisements that were shared by the DVA, including in their *Vet Affairs* (*n* = 6), *e-News* (*n* = 5) and *Latest News* (*n* = 2) publications; their *Facebook* page (*n* = 1), and through contact made by the DVA to ex-service organisations (*n* = 1).

The second most successful recruitment strategy involved recruitment materials shared via ex-service organisations, which resulted in ten participant sign-ups (30%). These materials included the *RSL Newsletter* (*n* = 2) and *War Widows Australia Newsletter* (*n* = 3), as well as recruitment emails sent by the *GMRF* (*n* = 2) and *Solider On* (*n* = 3) to their networks.

For the remaining recruitment strategies, referrals from AHPs resulted in five participant sign-ups (15%), while snowball sampling led to three participants being recruited (9%).

### 6.1.2 Recruitment: Take-Away Messages

- The most successful recruitment strategies involved advertising the program directly to clients through DVA and ex-service organisations communication channels. Combined, these were responsible for 75% of the EOIs received, and 75% of the participant sign-ups (that were from a known source of recruitment).
- Despite partnering with 21 allied health practices to support client recruitment, only eight client referrals were received from this source. Service provider feedback suggests that limited recruitment from this strategy could be attributable to the significantly reduced number of DVA clients that partners reported attended their practices in response to COVID-19.
- The number of clients recruited through service provider practices may have benefited from the research team being able to visit provider clinics to market the program directly to DVA clients, as opposed to a layered recruitment approach involving the distribution of materials and flyers downwards to employees through management. This was a process unable to be achieved due to concerns about visiting clinics in the current COVID-19 pandemic environment.

## 6.2 Participant Flow

Of the 35 participants recruited into the study, 29 (83%) completed the *Active Choices* program and 6 participants (17%) disengaged from the program. The reasons for dropout are unknown as these participants did not provide a reason for disengagement. Participants were classified as disengaging when they did not attend their scheduled appointment and failed to respond to any follow-up contact made by the research team.

Among the 29 program completers, 25 (86%) attended a follow-up assessment. The timing of these follow-ups was staggered at 1-, 2-, and 3-months post-program completion. Initially, the research design planned for all participants to complete their follow-up assessment at 3-months, with study recruitment completed in April 2021. However, with 17 participants engaged in the study at this point, the decision was made to extend recruitment by an additional two months to increase the sample size. The impact of this was that participants who commenced their program after April 2021 had a shorter follow-up period of 1- or 2-months (depending on their start point). This allowed recruitment of an additional 12 participants.

The timing for completion of participant follow-up assessments was as follows: 17 participants at 3-months; 5 participants at 2-months; and 3 participants at 1-month. An additional 4 participants completed no follow-up assessment as there was insufficient time to allow this to occur. These participants were initially allocated to a 1-month follow-up but had their program disrupted by consecutive COVID-19 lockdowns.

The average time it took for participants to complete the *Active Choices* program was 14 weeks (range = 11 to 20 weeks). Excluding those with no follow-up, participants were in follow-up for an average of 10 weeks (range = 4 to 14 weeks). Delays in completing the program in 12-weeks were due to COVID-19 lockdowns, and participants having other commitments (e.g., work, holidays) that impacted their ability to attend appointments. This variation in timing reflects the adaptiveness of the program to meet participant's needs and schedules, as well as the flexibility to work around COVID-19 lockdowns.

## 6.3 Sample Characteristics

The sociodemographic characteristics of the sample at baseline are presented below in **Table 6.1**. These data show that the sample largely comprised older male veterans, who were retired and born in Australia. The majority of participants lived with their partner, children or both; and had acquired an educational qualification past high school. Most of the sample were overweight or obese, with an average BMI of 28.6 kg/m².

In terms of their current health behaviours, the majority of participants were non-smokers. Most of the sample met current nutrition guidelines for fruit consumption, but did not meet the guidelines for vegetable consumption. The majority did not engage in hazardous drinking, or only did so occasionally.

**Table 6.1. Socio-demographic characteristics of the sample at baseline (*N* = 34).**

| Characteristic | M (SD) | Range |
|---|---|---|
| Age | 61.4 (15.8) | 31 - 86 |
| BMI | 28.6 (4.9) | 20.5 – 41.4 |
| | **N** | **%** |
| Gender | | |
| Male | 26 | 76.5 |
| Female | 9 | 23.5 |
| DVA Client Type | | |
| Veteran | 29 | 85.3 |
| War Widow | 5 | 14.7 |
| Country of Birth | | |
| Australia | 28 | 82.3 |
| Other English-speaking country | 6 | 17.7 |
| Aboriginal or Torres Strait Islander | | |
| No | 34 | 100.0 |
| Living arrangements | | |
| With partner | 13 | 38.2 |
| With partner and children | 7 | 20.6 |
| With children | 3 | 8.8 |
| Alone | 10 | 29.4 |
| Not specified | 1 | 2.9 |
| Education | | |
| Graduate diploma or certificate | 16 | 47.1 |
| Bachelor's degree or higher | 11 | 32.4 |
| Year 12 or less | 7 | 20.6 |
| Employment | | |

| | | |
|---|---|---|
| Retired | 19 | 55.6 |
| Full-time employment | 8 | 23.5 |
| Unemployed | 3 | 8.8 |
| Home duties | 2 | 5.9 |
| Casual employment | 1 | 2.9 |
| Incapacity payments | 1 | 2.9 |
| Body Mass Index | | |
| Normal | 11 | 32.4 |
| Overweight | 12 | 35.4 |
| Obese | 11 | 32.4 |
| Smoking | | |
| Never smoked | 17 | 50.0 |
| Former smoker | 15 | 44.1 |
| Current smoker | 2 | 5.9 |
| Alcohol Consumption | | |
| Drinks alcohol | 25 | 73.5 |
| Doesn't drink alcohol | 9 | 26.4 |
| Hazardous drinking (>4 standard drinks on one occasion) | | |
| Never | 14 | 41.2 |
| Less than monthly | 9 | 26.5 |
| Monthly | 3 | 8.8 |
| Weekly | 7 | 20.6 |
| Daily or almost daily | 1 | 2.9 |
| Vegetable consumption | | |
| Meets guidelines (5 or more serves per day) | 2 | 5.9 |
| Doesn't meet guidelines (<5 serves per day) | 32 | 94.1 |
| Fruit consumption | | |
| Meets guidelines (2 or more serves per day) | 21 | 61.8 |
| Doesn't meet guidelines (<2 serves per day) | 13 | 38.2 |

# 7. Results

## 7.1 Physical Activity

### 7.1.1 Accelerometer-Measured Physical Activity

Of all participants who agreed to wear the accelerometer, 24 (71%) had at least 4 days of valid wear time. The analytical sample for sleep, sedentary behaviour and PA included 21 participants who provided valid data for an average of 6.4 days (*SD* = 0.9 days). Descriptive statistics for accelerometer-measured PA, sedentary behaviour and sleep for the sample across the assessment timepoints are presented in **Table 7.1**.

There was a marginally significant main effect of time for the proportion of the sample who met the *Australian Physical Activity Guidelines* (*p* =.058). At baseline (T1), this was only 16.4% of the sample. However, at end-program (T2) this proportion had increased to 41.5%. This improvement in PA is consistent with a large effect size, with the proportion of the sample who met the *Australian Physical Activity Guidelines* increasing by 2.53 times from baseline to end-program. Follow-up tests indicated that this change in PA was non-significant. Given that a large effect size was observed, this non-significant result is indicative of an under-powered test (due to the small sample size) rather than the absence of an effect. There were no significant changes observed for sedentary behaviour or sleep.

**Table 7.1. Descriptive statistics for accelerometer-measured PA, sedentary behaviour and sleep across the assessment timepoints.**

| | T1<br>M (SD) | T2<br>M (SD) | T3<br>M (SD) |
|---|---|---|---|
| Physical Activity (% meeting guidelines) | 16.4 | 41.5 | 16.9 |
| Waking-time Sedentary Behaviour (minutes/day) | 706 (90) | 708 (108) | 710 (91) |
| Sleep (minutes/day) | 371 (96) | 367 (71) | 367 (92) |

*Notes.* T1 = baseline; T2 = end-intervention; T3 = follow-up. M = mean; SD = standard deviation.

### 7.1.2 Self-Reported Physical Activity

Descriptive data on self-reported PA across the three assessment timepoints is presented in **Table 7.2**. The study observed a significant main effect of time for weekly PA. Follow-up tests revealed there was a significant increase in PA levels from baseline (T1) to post-program (T2) (*p*<.001), with participants improving their PA levels by an average of 1060 MET.minutes/ week at T2. This improvement in PA levels was sustained at follow-up (T3), with the study also finding a significant increase in PA levels from baseline (T1) to follow-up (T3) (*p* = .004).

**Table 7.2. Descriptive statistics on self-reported PA (MET.minutes/ week) across the assessment time points.**

| | M (SD) | Median |
|---|---|---|
| **MET.minutes/week** | | |
| T1 | 1055 (976) | 799 |
| T2 | 2115 (1112) | 1881 |
| T3 | 1937 (1372) | 1398 |

*Notes.* T1 = baseline; T2 = end-intervention; T3 = follow-up. M = mean; SD = standard deviation.

The sample's PA levels categorised as 'low', 'medium' and 'high' at each of the assessment timepoints are summarised in **Figure 7.1**. Participants with low activity levels (i.e., reporting <500 MET.minutes/week) were classified as not meeting the *Australian PA Guidelines*; while those participants with moderate and high activity levels were classified as meeting them (i.e., reporting ≥500 MET.minutes/ week). These data in **Figure 7.1** show that at baseline (T1), 37% of the sample were in the 'low' category and consequently not meeting PA guidelines. However, the proportion of inactive participants decreased to 10.7% at end-program (T2) and 13.0% at follow-up (T3). In addition, the proportion of highly active participants (i.e., those reporting 1000+ MET.minutes/week) increased from 37% at baseline (T1) to 82.1% at end-program (T2).

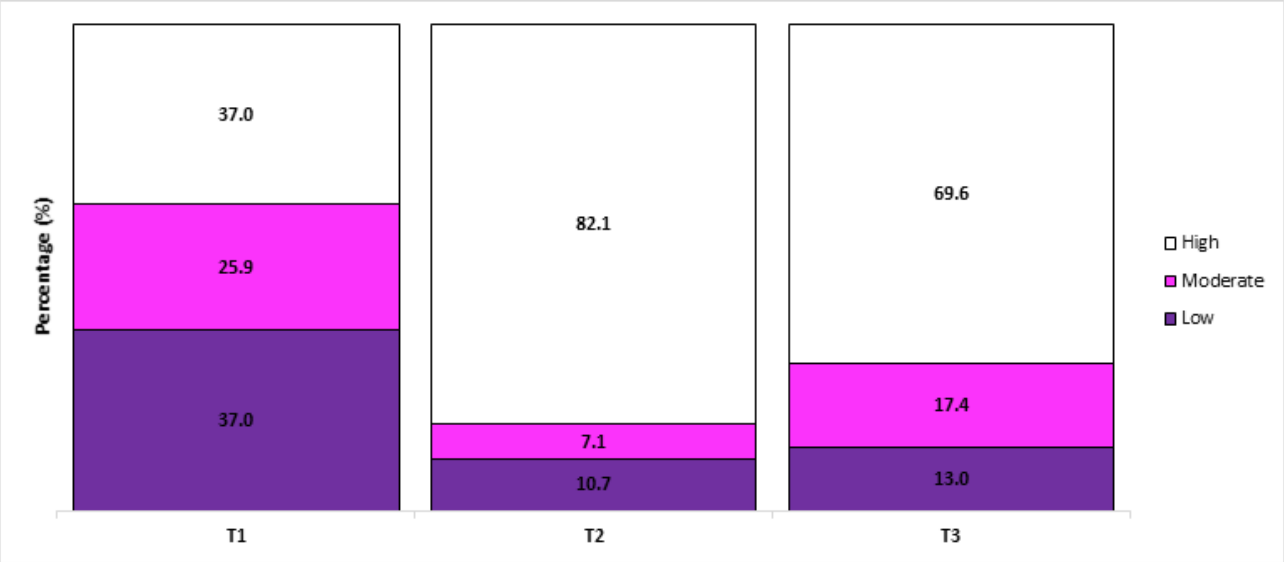



**Figure 7.1 Proportion of the sample meeting the Australian Physical Activity Guidelines at the three assessment timepoints.**

## 7.2 Social Connectivity

### 7.2.1 Social Identity Mapping: Visual Profiles

Social identity maps provide a visual record of participants' social group networks and connections. Participants can use this record to gain a more concrete sense of the groups and supports they can access in their network, and an understanding of their inter-relationships and how well the social group network is working for them. For this purpose, two case illustrations are presented below to show common patterns which were evident across participant maps. For each case there are two maps: one at baseline (T1) and one at follow up (T3). These are illustrated in **Figure 7.2.**

In the case of **Figure 7.2a**, there are clearly important group networks in the person's life prior to taking part in *Active Choices*, but they are few in number, and not particularly well connected. This has improved by follow-up (T3), with the maps showing change from a socially impoverished map to one where there are more groups in the person's life and recognition of the connections between them. In the case of **Figure 7.2b,** the distinction is the greater number of group connections from the start, indicting the person was already well connected before engaging with *Active Choices*, However, the change seen here is in the extent of connectedness between the groups in the network which becomes richer by follow-up (T3).

### 7.2.2 Social Identity Mapping Analysis

In addition to providing a visual map to make sense of participants' social group network (as illustrated earlier in **Section 7.2.1**), quantitative data can be sourced from Social Identity Mapping — notably the total number of groups (an index of social group capital) and supergroups (defined as those groups higher in positivity, support, people's sense of fit within them, and having greater compatibility with other groups in the network). Both these factors are known to be particularly beneficial in supporting and predicting health and well-being outcomes.

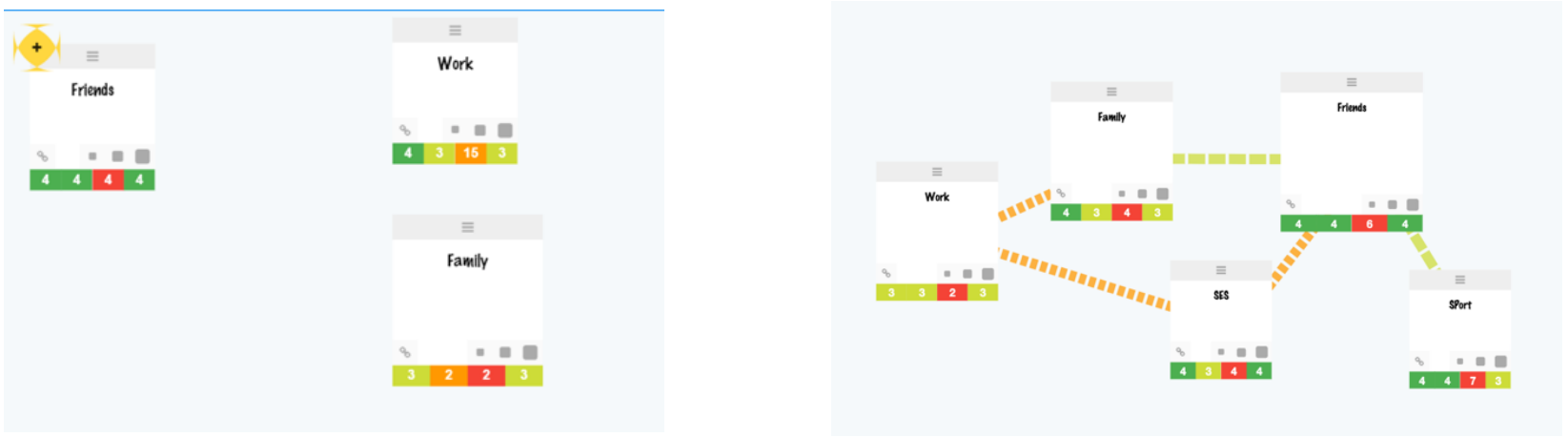
Descriptive data on social connectedness measures are summarised in **Table 7.3.** As these mean data show, there was limited change over time on most measures. Most notable was the mean total score on loneliness of 5.1 (*SD* = 1.7; out of a total possible score of 12), which suggests higher levels of loneliness in the present sample of DVA clients relative to a nationally representative sample of older adults[27] who responded to the *US Health and Retirement Study* (*M* = 3.9, *SD* = 1.3). These loneliness scores reduced slightly over time, but the reduction was not statistically significant.

**Table 7.3. Descriptive statistics on social connectedness measures across the assessment timepoints.**

| Measures | T1<br>M (SD) | T2<br>M (SD) | T3<br>M (SD) |
|---|---|---|---|
| *Social Identity Mapping* | | | |
| Total number of groups | 5.24 (3.01) | 5.39 (2.57) | 5.13 (2.19) |
| Total number of supergroups | 0.66 (0.89) | 0.36 (0.62) | 0.88 (1.03) |
| Proportion of positive groups | 0.80 (0.21) | 0.79 (0.20) | 0.70 (0.28) |
| Proportion of supportive groups | 0.39 (0.24) | 0.43 (0.23) | 0.40 (0.25) |
| Proportion of compatible groups | 0.56 (0.46) | 0.46 (0.46) | 0.60 (0.46) |
| Proportion of fitting groups | 0.53 (0.26) | 0.55 (0.24) | 0.46 (0.24) |
| *Multiple Group Membership* | 3.06 (1.44) | 3.88 (1.46) | 3.87 (1.50) |
| *Loneliness* | 5.12 (1.67) | 4.90 (1.84) | 4.76 (1.92) |

*Note.* T1 = baseline; T2 = end-intervention; T3 = follow-up. M = mean; SD = standard deviation.

(a)




(b)

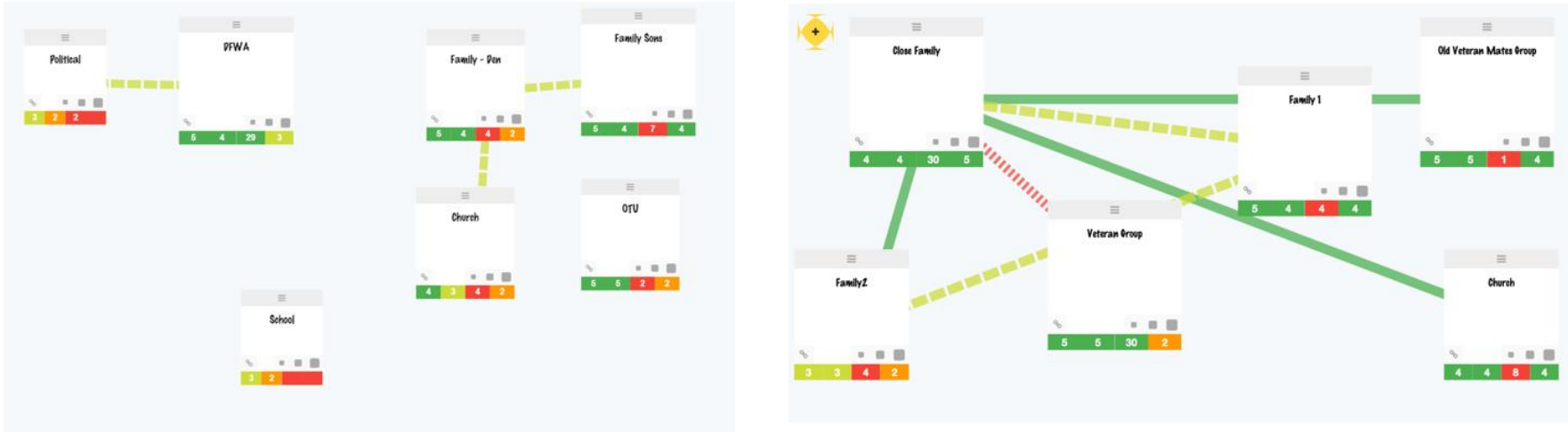


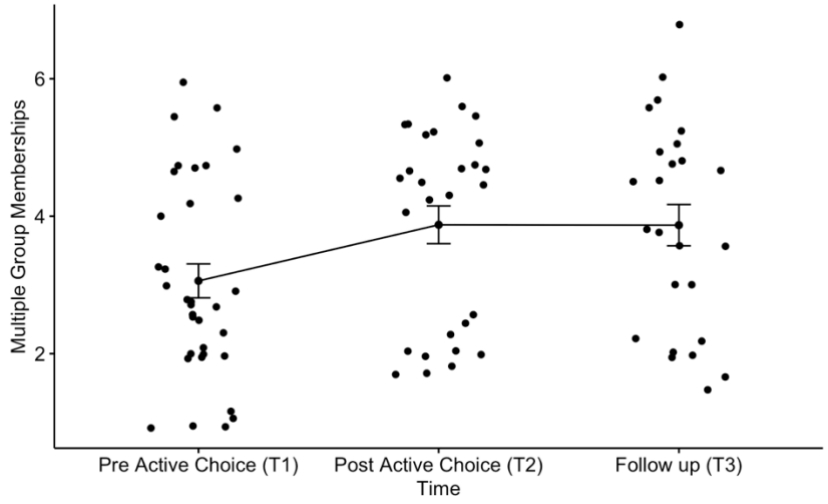

**Figure 7.2. Social Identity Mapping case illustrations showing (a) growth in an originally impoverished map, and (b) greater connectedness in an originally rich map between baseline (T1) and follow up (T3).**

There were, however, two significant findings of note. First, there was a significant main effect of time for multiple group membership ($p$ =.046). Follow-up tests revealed that this effect was due largely to the marginal increase in people's sense of belonging to multiple groups in the period between baseline (T1) and completion of *Active Choices* (T2) ($p$. = .080). Mean data in **Table 7.3** and **Figure 7.3a**, which shows the range in number of group memberships in the sample, indicate that this gain in participants' sense of belonging was largely retained at follow-up (T3).

Second, there was a significant main effect of time for the total number of supergroups ($p$ =.023). Post-hoc testing revealed that this was due to a significant increase in the number of supergroups participants gained in the period between completion of *Active Choices* (T2) and follow-up (T3) ($p$ = .017). Looking at **Figure 7.3b,** which shows the range in the sample's total supergroups, by follow-up (T3) there appears to be a small increase in the number of people in the sample having at least one supergroup in their network and fewer having no supergroups.

Together, these findings indicate that the *Active Choices* program has helped participants to improve the size and quality of their social group networks, with these networks continuing to grow post-program.

(a)

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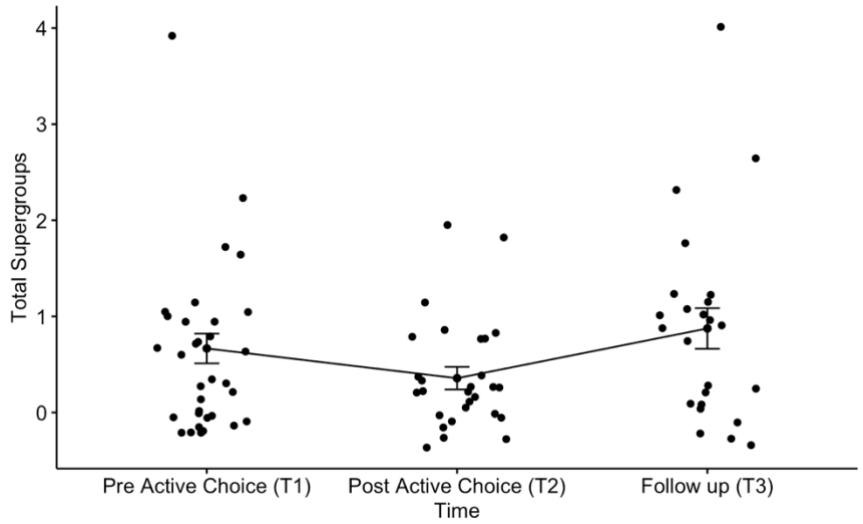


**Figure 7.3. Range in scores on (a) multiple group memberships and (b) the total number of supergroups over time in Social Identity maps.**

## 7.3 Psychological Wellbeing and Quality of Life

Descriptive statistics on the psychological wellbeing measure (*Satisfaction with Life* scale) and quality of life measures (*EQ-VAS* and *EQ-5D-5L)* are presented below in **Table 7.4.**

According to measure guidelines for the *Satisfaction with Life* scale,[34] the mean satisfaction with life scores for the sample indicate that participants were slightly satisfied with their lives across the three assessment timepoints. As shown in **Table 7.4**, there was an increase in their mean scores from baseline (T1) to end-program (T2), although this change was not significant ($p$ = .103).

The study observed a marginally significant improvement in mean anxiety/ depression scores on the EQ-5D-5L from baseline (T1) to follow-up (T3), indicating that the sample experienced less problems with anxiety and depression at follow-up ($p$ =.077). The observed change in mean anxiety/depression scores was indicative of a medium effect size (Cohen's $d$ = 0.48), with the proportion of participants reporting no problems with anxiety and depression improving from 26% at baseline to 40% at follow-up.

No other significant differences were observed for the EQ-5D-5L items, although improvements in mobility, self-care, usual activities and pain/discomfort scores were seen at end-program and follow-up compared to baseline. There was also an improvement in mean self-rated health scores, as indicated by the EQ-VAS, from baseline to end-program and follow-up, although this change was not significant.

**Table 7.4. Descriptive statistics on quality of life and satisfaction with life measures across the assessment timepoints.**

| Measures | T1<br>M (SD) | T2<br>M (SD) | T3<br>M (SD) |
|---|---|---|---|
| *Satisfaction with Life* | 22.34 (5.50) | 25.26 (5.13) | 24.64 (6.37) |
| *EQ-VAS* | 69.06 (18.05) | 73.53 (15.28) | 73.83 (17.22) |
| *EQ-5D-5L* | | | |
| Mobility | 2.00 (1.04) | 1.74 (0.71) | 1.72 (0.89) |
| Self-Care | 1.24 (0.50) | 1.11 (0.32) | 1.08 (0.28) |
| Usual Activities | 1.82 (0.87) | 1.63 (0.79) | 1.56 (0.71) |
| Pain/ Discomfort | 2.59 (0.66) | 2.33 (0.68) | 2.36 (0.70) |
| Anxiety/ Depression | 2.21 (0.91) | 2.04 (0.90) | 1.80 (0.76) |

*Notes.* Lower scores on EQ-5D-5L are better, indicating less impairment in that domain of health. T1 = baseline; T2 = end-intervention; T3 = follow-up. M = mean; SD = standard deviation.

[34] Pavot W & Diener E. The Satisfaction with Life Scale and the emerging construct of life satisfaction. *Journal of Positive Psychology* 2008; 2: 137-152. doi: 10.1080/17439760701756946

## 7.4 Allied Health Service Utilisation and Costs

The average, weekly EP and PH service utilisation and costs for the sample during the study period (inclusive of the time in spent in the *Active Choices* program and follow-up) is reported in **Table 7.5.**

**Table 7.5. Average weekly EP and PH service utilisation and costs for the study sample during the study period (2020/21).**

| | Total (EP + PH) | EP | PH |
|---|---|---|---|
| Services per week | | | |
| All participants | 0.91 | 0.61 | 0.30 |
| Those with a cost[a] | 1.06 | 0.71 | 0.35 |
| Cost per week | | | |
| All participants | $60.51 | $42.16 | $18.35 |
| Those with a cost[a] | $70.59 | $49.19 | $21.41 |

*Notes.* [a]Those with a cost denotes those participants who incurred a cost for accessing DVA-funded EP and/or PH treatment services during the study period.

**Table 7.6** compares normative data from the DVA client population with data from the study's sample on the average number of EP and physiotherapy (PH) services utilised per week, and the average costs of these services in 2020. The average, per client costs incurred by the study sample in 2020 for EP and PH services ($49.36/ week for those participants who incurred a cost in 2020; $42.27/ week for all participants) was less than the average, per client costs of the normative sample ($97.06/ week). This suggests that the study's sample required less resources than the 'average' DVA client in 2020 and are likely to represent those DVA clients who have lower healthcare needs. In addition, the total costs of the services used by participants during the study in 2020/2021 ($60.51/ week for all participants; $70.59 for those participants who incurred a cost during the study) remained lower than the costs of the normative DVA client sample in 2020 ($97.05/ week).

**Table 7.6. Average weekly EP and PH service utilisation and cost for the study sample and normative sample in 2020.**

| | EP utilisation per week | PH utilisation per week | EP costs per week | PH costs per week | Total (EP + PH) costs per week |
|---|---|---|---|---|---|
| Study Sample | | | | | |
| All participants | 0.61 | 0.30 | $27.44 | $14.87 | $42.27 |
| Those with a cost[a] | 0.69 | 0.32 | $51.23 | $23.07 | $49.36 |
| Normative Sample | 0.90 | 0.57 | $61.80 | $35.26 | $97.06 |

*Notes.* [a]Those with a cost denotes those participants who incurred a cost for accessing DVA-funded EP and/or PH treatment services during 2020.

## 7.5 Process Data

### 7.5.1 Physical Activity Choices

Two thirds of participants (68%) expressed an interest in doing a mixture of both group-based physical activities (e.g., walking group) and solo physical activities (e.g., gym training) as part of their *Active Choices* program. All but one participant (97%) expressed an interest in at least one activity which had a group-based component. The number of different activities of interest to participants ranged from one to eight, with participants identifying an average of four activities they wanted to incorporate within their *Active Choices* program.

Twenty-four different physical activity choices were selected by participants (*N* = 34) at baseline for inclusion in their *Active Choices* program (see **Figure 7.4**). Water-based activities were the most popular, with water aerobics and swimming both selected by 14 participants (41%). Walking groups and group fitness classes were the next most popular activities (13 participants; 38%). Holistic health activities such as Pilates (*n* = 11), Yoga (*n* = 9) and Tai Chi (*n* = 8) were also relatively popular, as was bushwalking (*n* = 8), cycling (*n* = 8;) and lawn bowls (*n* = 6). Overall, popular activities tended to be of a moderate intensity and were typically completed in a group-based environment with a class instructor.

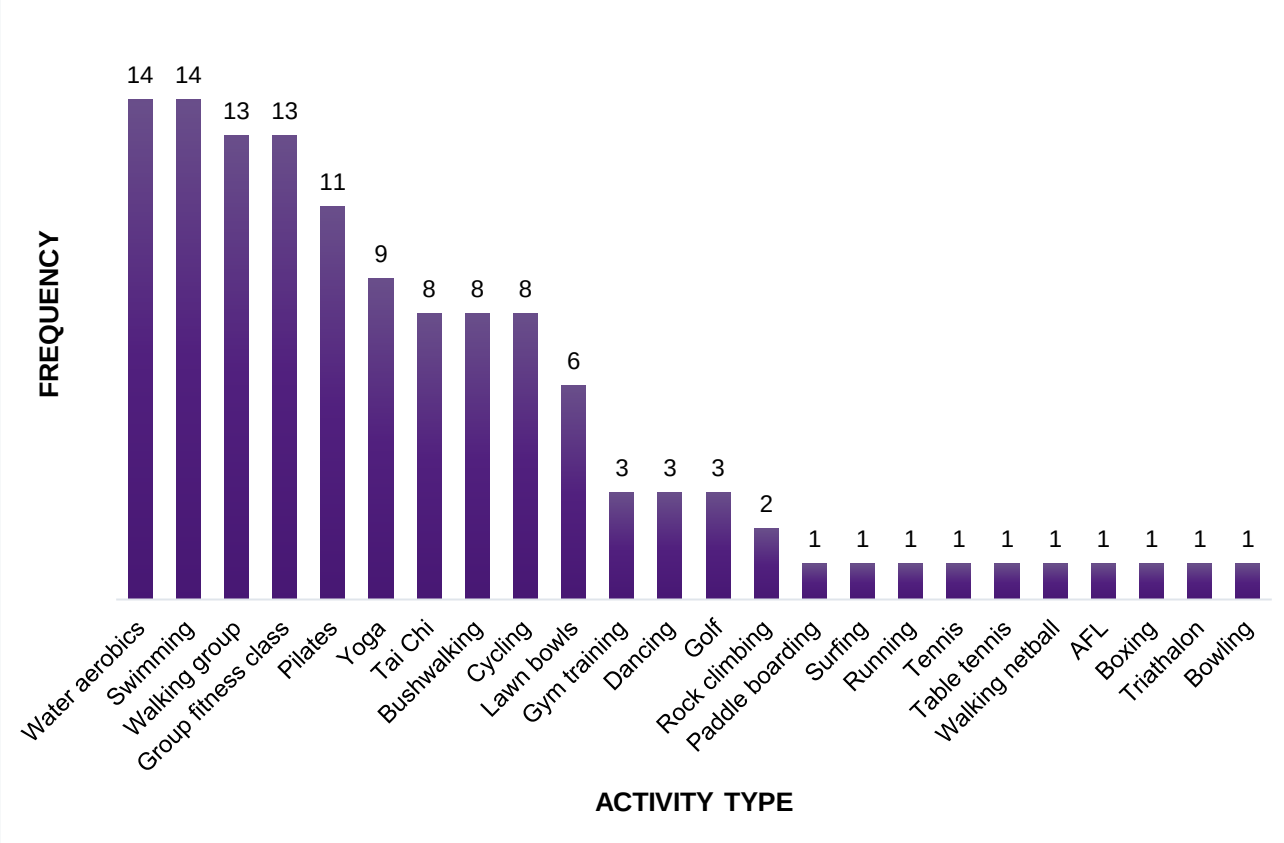


**Figure 7.4. Physical activity choices of participants at baseline.**

### 7.5.2 Barriers to Physical Activity

Participants were highly self-aware of their barriers to PA. At the Week 1 Consultation, participants (N = 29) reported on average two barriers which limited PA in the past and which they anticipated may impact their activity levels during the program (see **Figure 7.5**). The most commonly anticipated barrier was lack of motivation, which was identified by 76% of participants (*n* = 22). Other commonly anticipated barriers were lack of energy (*n* = 11), lack of time (*n* = 7) and poor weather (*n* = 7).

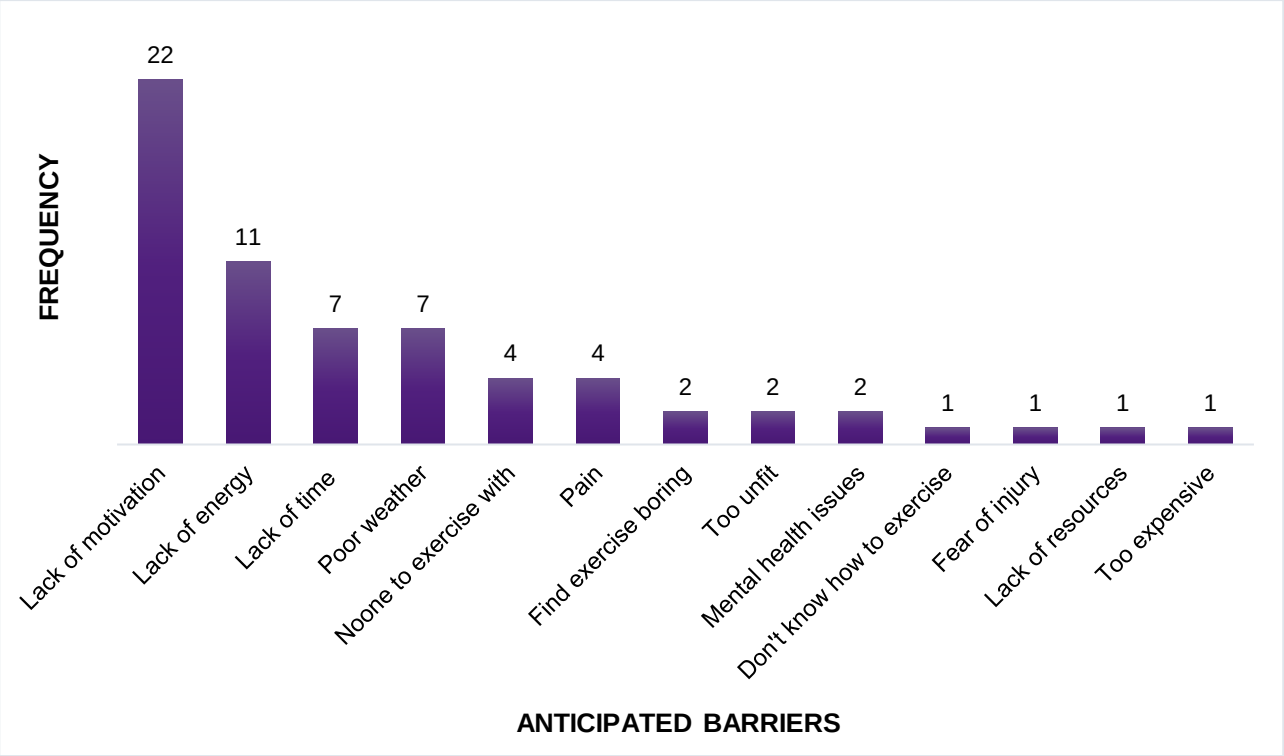


**Figure 7.5. Barriers anticipated by participants at program commencement.**

During program consultations held in Weeks 4 and 8, participants (*N* = 29) reported the PA barriers which they experienced while involved in the *Active Choices* program (see **Figure 7.6**). On average, participants experienced three barriers during their time in the program. Barriers experienced typically included those which participants had anticipated at Week 1, but in addition, more specific barriers that were not anticipated. Importantly, lack of motivation was not commonly reported during the program, with only 4 participants (14%) experiencing this barrier. This finding suggests that the strategies incorporated within the *Active Choices* program were helping to overcome motivational issues.

The most commonly experienced barrier during the program was lack of time. More than half of the participants (*n* = 16; 55%) reported this barrier interfered with their ability to exercise as much as they had planned, and this was typically related to their family and work commitments. Experiencing pain (*n* = 9) and physical health issues (*n* = 7) during the program were also relatively common barriers, in addition to poor weather (*n* = 7) and going on holidays (*n* = 5).

The COVID-19 pandemic presented unique issues, with 12 participants (41%) reporting experiencing barriers related to the pandemic. Seven participants reported that COVID-19 lockdowns were a barrier to their engagement in PA during some weeks of their program. Two participants reported their exercise classes were often booked out well in advance, and this was due to social distancing restrictions limiting class numbers. Two participants chose not to be active while there was a requirement to wear masks at the gym, and one reported a reluctance to be active in the community due to a fear of catching COVID-19.

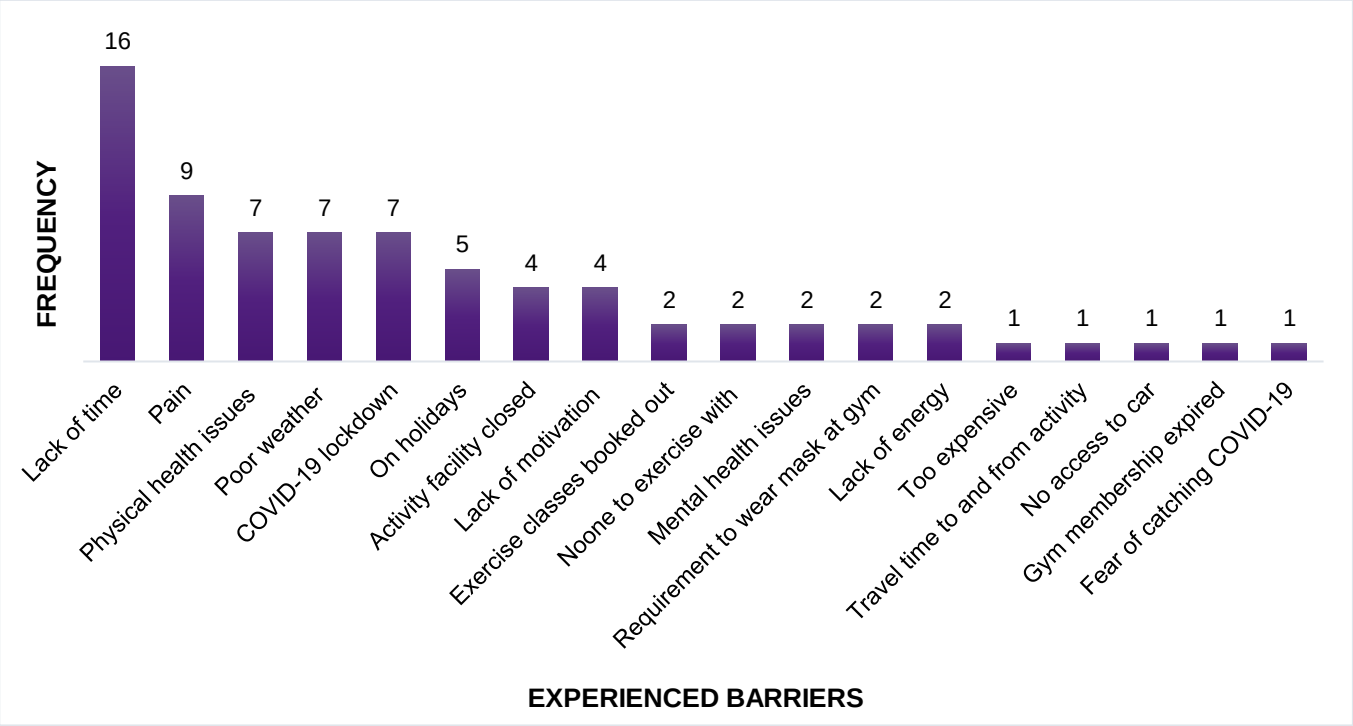


**Figure 7.6. Barriers experienced by participants during program.**

### 7.5.3 Strategies for Physical Activity

At the conclusion of the program, participants (*N* = 29) provided insights into the strategies which they found most helpful for increasing their PA levels during the program (see **Figure 7.7)**. Participants reported on average two strategies which they found helpful, the most common being keeping a record of PA completed (i.e., self-monitoring; *n* = 16; 55%) and creating a PA schedule (i.e., action planning; *n* = 13; 45%).

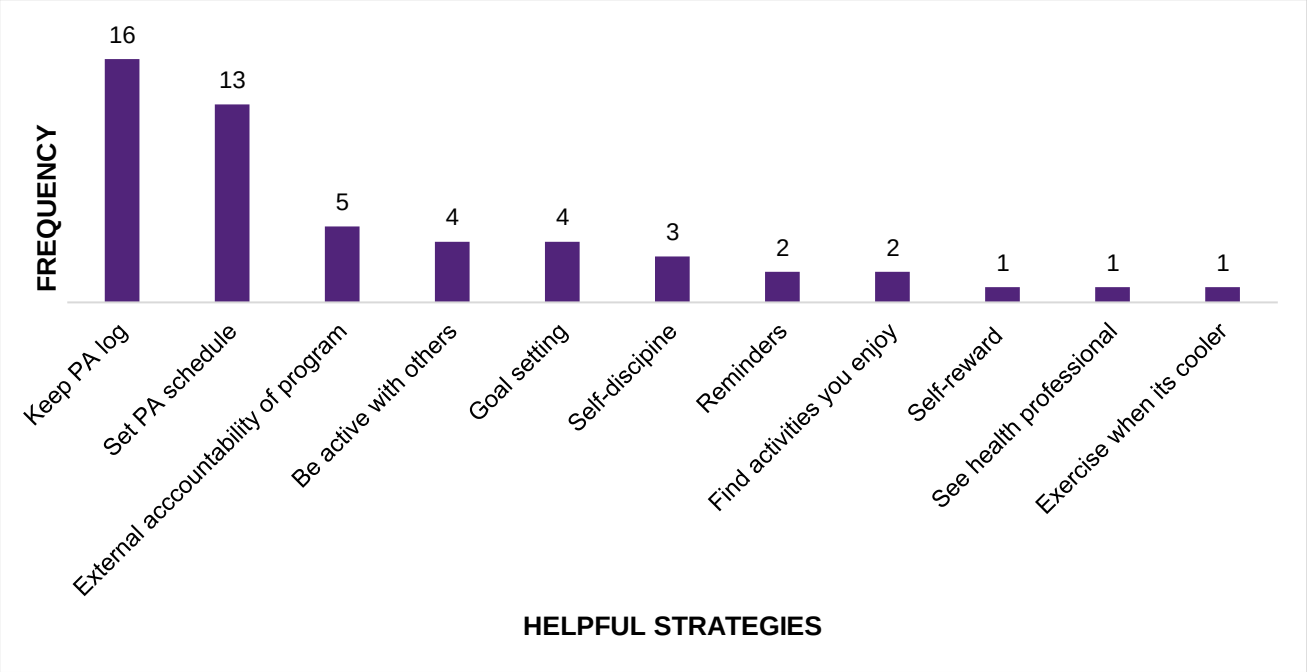


**Figure 7.7. Helpful strategies for increasing physical activity.**

### 7.5.4 Benefits of Physical Activity

During the Week 12 Consultation, participants (*N* = 29) reported a range of benefits which they experienced as a result of participating in the *Active Choices* program (see **Figure 7.8**). The majority (*n* = 26; 90%) reported experiencing at least one benefit, and on average three benefits, at program completion. Participants who completed more PA during the program tended to report more benefits.

The benefits most frequently experienced were related to improvements in psychological wellbeing, with 55% of participants reporting at least one benefit. Improved mood was the most frequently experienced benefit overall. (*n* = 13; 41%). In addition, participants reported improvements in their self-confidence (*n* = 1), stress levels (*n* = 2) and overall sense of wellbeing (*n* = 2).

Improvements in physical function and fitness were also frequently experienced, with 41% of participants reporting positive changes in this domain. These changes included improvements in strength (*n* = 9), fitness (*n* = 5), flexibility (*n* = 3), mobility (*n* = 2) and balance (*n* = 1).

Other health benefits such as weight loss (*n* = 9), reductions in pain (*n* = 5) and improved sleep (n = 7) were often reported. Engaging in PA gave participants a sense of achievement (*n* = 6), provided a sense of fun and enjoyment (*n* = 5) and gave them something to look forward to (*n* = 4).

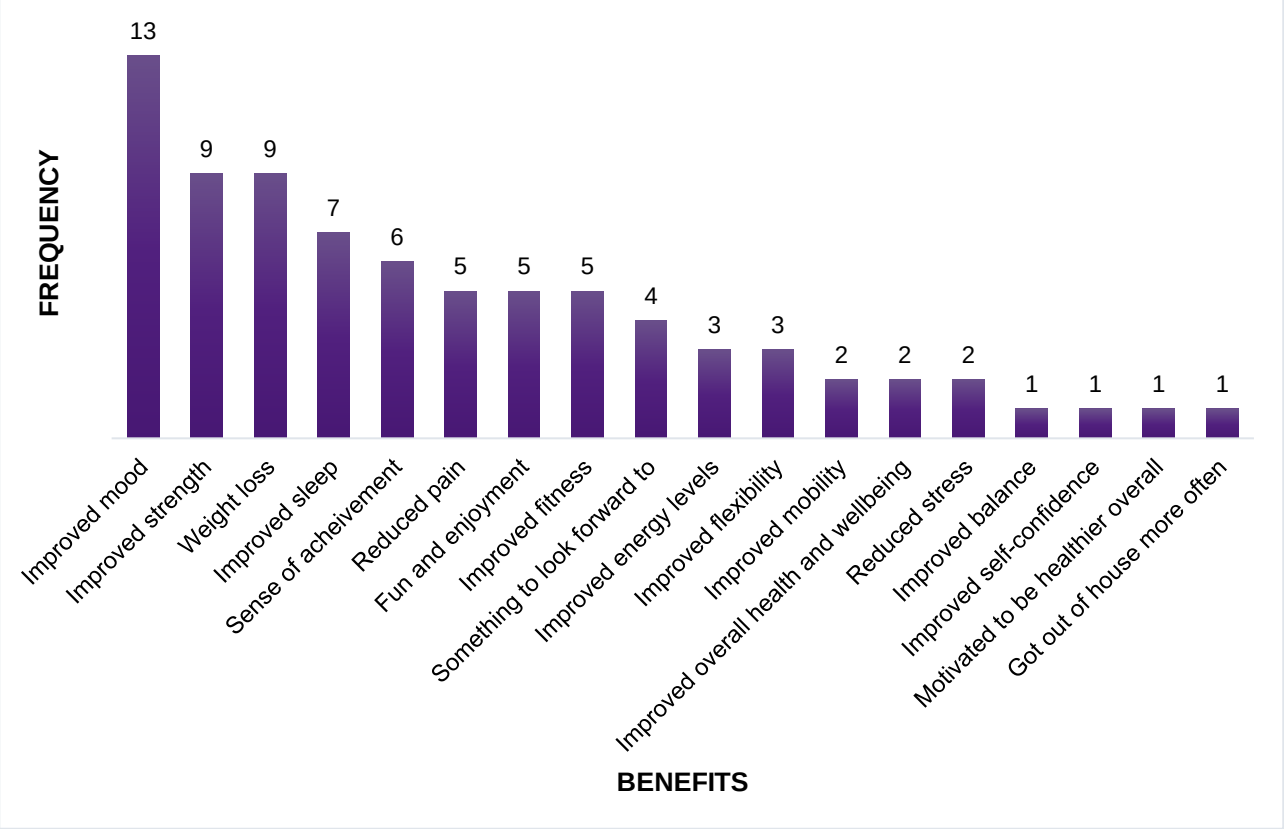


**Figure 7.8. Benefits of the Active Choices program experienced by participants.**

### 7.5.5 Weekly Physical Activity

Twenty-three participants (79%) returned their *Active Choices* resource booklets, allowing for analysis of their PA logbook data. This provided some insight into the level of PA participants completed each week during their time in the program (see **Figure 7.9**). There was a moderate amount of data missing from these logbooks, with 15 participants (51%) providing complete data across the 12 weeks.

The amount of PA which participants reported in their logbooks ranged from 257.50 minutes/ week to 328.71 minutes/ week, with an average of 293.51 minutes/ week. PA levels were highest in Weeks 1, 9 and 10; and lowest in Weeks 4, 7 and 12.

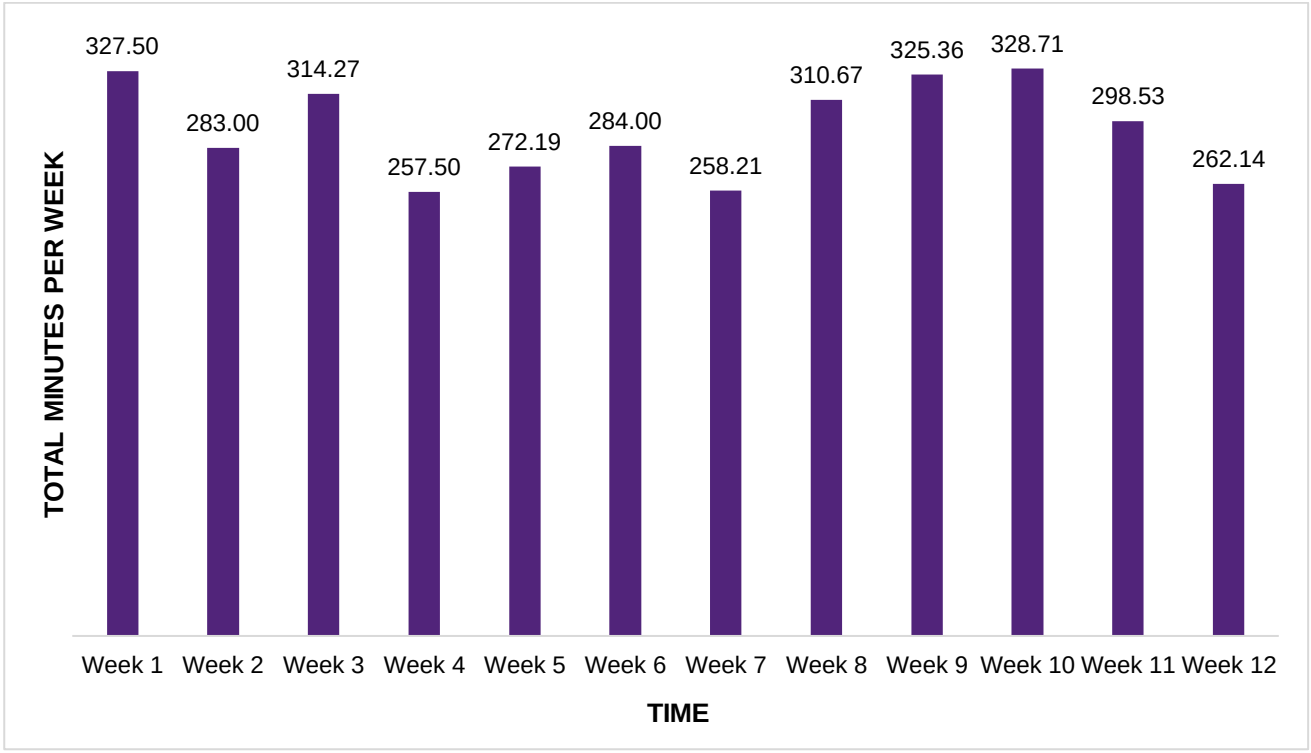


**Figure 7.9. Week-by-week total minutes of physical activity reported in logbooks.**

## 7.6 Interview Data

Interview data collected from participants at the end-program and follow-up consultations provided insights into their motivations to participate in the *Active Choices* program (see **Section 7.6.1**), the effectiveness of the program in terms of impact on self-managed PA, social connectivity and psychological wellbeing (see **Section 7.6.2**) and the acceptability of the program to participants (see **Section 7.6.3**).

### 7.6.1 Motivations to Participate

The majority of participants (21 of 29; 72%) chose to participate in the *Active Choices* program because they saw it as an opportunity that could benefit their health and wellbeing. It was common for participants to report joining the program because they wanted help to improve their PA levels and fitness (*n* = 14), and to increase their motivation for PA (*n* = 9). This is illustrated in the following quotes:

> *"It was marketed through DVA, and I knew that I wasn't investing in my personal health. So, it was an opportunity to see if there were some supports in the program that would encourage me to invest more in my personal health*." (PID 5870)

> "*I read about the program in one of the DVA newsletters, and I thought it would be something that would help me maintain my fitness and healthy lifestyle. Because it was new, there might be something in the program that helped motivate me to do more exercise."* (PID 1585)

> *"I found it on the DVA website as something I could do to get back on track with my fitness and healthy lifestyle. It was something to kick start me getting back to where I was and feeling better about myself and fitness, and to learn different stuff about how to keep on track."* (PID 1930)

It was also common for participants (*n* = 8) to participate in *Active Choices* because they liked being involved in research studies. Some (*n* = 4) felt that doing so was a way in which they could help other veterans and give back to this community. For example:

> *"I've done other trials that help out with other things. I don't mind being the guinea pig if I need to be."* (PID 2590)

> *"I actually thought it might help other veterans in the same situation. I wasn't expecting to get that much out of it myself, but I analysed myself because I thought that might help other people."* (PID 5587)

> *"I received a letter through Gallipoli, and I'd volunteered through them before. I suppose it's my way of giving back to other people*." (PID 4817)

### 7.6.2 Program Effectiveness

Participants discussed during interview whether they had experienced an improvement in their self-managed PA (see **Section 7.6.2.1)**, social connectivity (see **Section 7.6.2.2**) and psychological wellbeing (see **Section 7.6.2.3**) through participation in the *Active Choices*. They also provided an indication on whether they had continued to see their allied health professional for treatment since being engaged in the program (see **Section 7.6.2.4**).

#### 7.6.2.1 Self-Managed Physical Activity

During the Week 12 interview, 86% of participants (25 of 29) reported that their self-managed PA levels had increased as a result of *Active Choices*. For example:

> "*My physical activity levels have definitely increased. I'd say they've more than doubled, actually. I think the program has made me think about it more and take a more structure approach to being active."* (PID 2893)

> "*Yes, my activity levels have definitely improved. I am 30 to 40% more active than I was beforehand*." (PID 2226)

> "*I would not have made the same commitment to physical activity if I had not been in the program. I would say my activity levels have increased by at least 300%."* (PID 5870)

> "*The program has impacted me hugely and in very positive ways. I'm able to run again a couple of times a week and am able to go for a 10km run, which I didn't think was ever going to happen*". (PID 1857)

> "*I think the program has been good in terms of providing a framework for getting into the habit of exercising, and worthwhile exercise too. I've gone from doing nothing, to doing at least 4 days of exercise per week*." (PID 2087)

Participants frequently believed that their PA levels had improved because the *Active Choices* program had increased their motivation to be physically active (*n* = 12). Linked to this, was how the program had improved their sense of accountability to be active (*n* = 13). Participants experienced a sense of accountability both to the program, and to themselves. They commented on how being in the program made them feel more accountable and motivated to be active, as they had to report back on what PA they had done to their program facilitator (*n* =4). They also described how the structured nature of the program, specifically, the requirement to set goals (*n* = 6), create a weekly PA schedule (i.e., action plan; *n* = 5) and record their PA in a logbook (i.e., self-monitor; *n* = 14), had enhanced their sense of accountability to themselves and drove improvements in their motivation. As the following quotes illustrate:

> "*I suppose it's the motivation. I feel more accountable, like I have to do exercise as I'm in the program. I feel like I have to give, and it motivates me to do more. It made me feel more accountable rather than turning up and saying like 'yeah, I haven't done anything.'*" (PID 2893)

> *"I reckon the program has made me more active and much more regular with my activities – because of the accountability. With the program, and writing down the daily activities in the book, and then the communication with you, I reckon it's doubled the amount of activities that I've been doing."* (PID 6447)

> *"Having the logbook to fill in made you feel like you were answering to somebody else as well as yourself. So that was motivation in itself."* (PID 9281)

> *"This program got me on track, whether it be my personality or military background, diarising it and making my activities more disciplined and structured was a big help. I am much more conscious of it now and I feel guilty if I don't exercise each day."* (PID 9506)

Of the four participants who reported no change in their PA levels, three explained that the program had added variety to their usual PA routine. In addition, two participants explained that they were already very active when they entered the program and had maintained their activity levels.

> "*I think the program would have impacted my activity levels if I wasn't already comfortable with my high level of activity. I think it would have, absolutely."* (PID 3142)

> "*My activity levels are probably still on par, but the program has varied the things I've done… like I've started doing Yoga."* (PID 2590)

At the follow-up interview, the majority of participants (16 of 25; 64%) reported they had maintained their PA levels since finishing the program, with three of these participants stating their PA levels had actually increased. These participants had maintained their motivation for PA and had a regular PA routine in place which they were adhering to. As the following quotes illustrate:

> "*It's been going awesome. I'm doing something pretty much every day, and I wasn't doing that before."* (PID 4449)

> "*I think that during the program I've grown in my understanding and capacity of the effort I'm putting into physical activity. My motivation is still at a high level. I recognise the benefits, not just for my physical wellbeing, but for the medical conditions I have as well. I've got a regular routine that I try to maintain, and I think my level of motivation and enthusiasm is really high."* (PID 9636)

> "*It's fallen into a really nice pattern of a combination of longer walks and Pilates classes. It feels like my routine is in a good place."* (PID 5870)

Participants who had maintained their PA levels at follow-up had also kept up with their use of strategies which they had found to be helpful during the program. These strategies included keeping a log of PA (i.e., self-monitoring; *n* = 5), creating a PA schedule that fits around their other commitments (i.e., action planning; *n* = 7) and exercising with others (i.e., social support; *n* = 3). For example:

> "*Yeah, I definitely monitor what I do, and that helps me to keep motivated and focused. I follow an actual regime and I enter it into a little spreadsheet. I keep track of all my weights, and that way you can see your progress. It's very motivating."* (PID 2207)

> *"My wife and I sit down every Sunday night with our calendars, and we put our times and activities in our calendars and on our phones, so we've basically got an appointment. I know if I've got an appointment, I'll turn up, whereas if I haven't got an appointment then I'll put it off. That's been working pretty well and we're in the habit of doing that now*." (PID 6447)

> "*It's been a real benefit for me to have that friend to walk with who is also keen to stay fit. I think the combination of putting the activities in the calendar and having a colleague to go walking with has been really good".* (PID 5870)

Those participants (*n* = 8) who had not maintained their PA levels described a range of barriers they had experienced since the program's completion that had prevented them from being as physically active as they were when the program finished. Several participants reported the occurrence of injury (*n* = 2), illness (*n* = 4), and pain (*n* = 3) which had forced them to reduce their activity levels. Others had experienced significant life events, like starting a new job (*n* = 2) or the birth of a new child (*n* = 1), which meant they had less time available for PA. These participants remained motivated to continue with PA and were doing as much activity as their situations allowed for. As the following quotes illustrate:

> *"I've had an injury flare up in my shoulder and a secondary injury in my ankle. That has basically left me with walking as about all I can do. I'm doing as much of that as I can."* (PID 2590)

> *"The physical activity is probably not as much as it was in the first three months. I do a bit more walking, just with baby in the pram, and Pilates every now and then when we get a chance."* (PID 1930)

> *"It maintained for a little while, but the past few weeks it dropped off heaps because I started a new job and so my hours have totally changed. So, I'm just adjusting to that."* (PID 2226)

#### 7.6.2.2 Social Connectivity

Forty-eight percent (14 of 29) of participants reported at the Week 12 interview that their social connectivity had improved since starting the *Active Choices* program. These participants (*n* = 11) frequently reported having met new people through engaging in group-based activities, like exercises classes and team sports. For example:

> "*By joining the swimming club and the walking group, that's a positive as you sit and have a coffee at the end of it. So socially, things have increased."* (PID 4817)

> "*Through Pilates I've met new people who are going through the same journey as me in terms of trying to get healthier... I've made some new friends through that*." (PID 1930)

Some participants (*n* = 6) also described how they were now doing regular exercise with friends and family members:

> "*I'm now spending regular time with my daughter for our weekly walks, which is excellent in my point of view."* (PID 5763)

Four participants increased their social networks through attending the program's meet-and-greet sessions. This was an aspect of the program which they had particularly enjoyed:

> "*I think the best part of the program is the social thing… meeting other vets for a cup of tea or beer or what have you down at the café. That part I thoroughly enjoyed."* (PID 7673).

Seven participants provided an explanation as to why they had experienced no change in their social connectivity. Some (*n* = 3) chose not to do their activities in a group environment due to the COVID-19 pandemic and their fear of catching the virus:

> *"Because we've been locked down and everything, it's been hard. Because of my age and diabetes. I am at high risk, so I have to be very careful. I think if this virus wasn't around, it might have been a different story*." (PID 6524)

Others (*n* = 2) chose to do solo activities during their *Active Choices* program and were not interested in the group-based component:

> "*It didn't affect that because I did my activities by myself*." (PID 1585)

Two participants mentioned that they did not follow-up with the social groups that were offered to them through the program but noted that they intended to do so sometime in future:

> "*It didn't because I didn't take up the opportunity of reaching out to the groups, such as the walking and cycling groups, that you provided. But I am keeping open the option of reaching out to them in future*." (PID 9996)

#### 7.6.2.3 Psychological Wellbeing

At the Week 12 interview, 72% (21 of 29) of participants reported that their psychological wellbeing had improved as a result of being engaged in the *Active Choices* program. Some participants described significant improvements in their mental health conditions which had been experienced, for example:

> *"I think we know that exercise helps with mental health and this study has proved it. Christmas is usually a time where I go into a depression… this time we came close but I came out of it. I think that discipline of going to the gym at least twice a week, and being conscious of doing something physical and moving around the house, rather than lying under the doonah and hiding, made it easier to get through that*." (PID 2087)

> "*I think it's the confidence in myself again that the program has given me. Also doing the physical activities and Yoga… doing those has decreased my anxiety and improved my depression and PTSD. Even when I have a little bit of a flare up with my back, I don't get as stressed about it. It's not only given me the confidence, but it's given me that mental strength as well."* (PID 1857)

For several participants (*n* = 9), being engaged in regular PA through the program gave them a sense of achievement, which made them feel more positive about themselves. This sense of achievement was often due to doing more PA and achieving their goals. For example:

> *"I feel more alive, more energised and like I have purpose. I've got something to do every day apart from what my normal activities are, and it makes me feel like I'm achieving something."* (PID 9281)

> "*I feel more self- satisfied that I'm doing what I know I should be doing."* (PID 6447)

> "*When the stats look good in the diary, I feel good."* (PID 9506)

For other participants, they believed their psychological wellbeing had improved because of a range of benefits they had experienced through the program, such as improvements in their mood (*n* = 4) and sleep (*n* = 2). Doing more activity (*n* = 3) and getting outdoors to do PA (*n* = 2) were also perceived by some as driving improvements in their psychological wellbeing. As the following quotes illustrate:

> "*I appreciate being outdoors and doing things more, and you get that endorphin rush. So that's helped my mind and thoughts as well, to think more positively*." (PID 9636)

*"Obviously physical activity helps with mental stuff, and it's made me get out more and feel better about myself. I'm over the moon that I can nearly touch my toes. It's helped me heaps and I've even stopped drinking."* (PID 1930)

*"The most noticeable one is that I'm sleeping better."* (PID 4817)

#### 7.6.2.4 Allied Health Service Utilisation

At follow-up, the majority of participants (21 of 25; 84%) reported during interview that they were still seeing their EP and/or physiotherapist for treatment. For many, this treatment involved management of an existing injury (*n* = 7) or chronic condition (*n* = 4) that required ongoing care. For example:

"*So my physio, she does trigger point massages for the injuries I have. She has also given me a whole range of strengthening exercises, especially for my neck, which is particularly bad. And that helps keep everything under control*." (PID 2207)

Nine participants (36%) had begun or completed the process of transitioning from allied health treatment to self-management of their condition. Five participants indicated that although they were still seeing their EP and/or physiotherapist, they were doing so less frequently now, and had started to self-manage at home more regularly.

*"It's getting to a point where I'm seeing less and less of the EP and physio, and just self-managing at home - like stretching and that sort of stuff*." (PID 1930)

Another four participants had stopped seeing their EP and/or physiotherapist altogether, as they felt treatment was no longer needed. For example:

*"I had my final appointment with the surgeon and physio, and everyone is happy with how I'm going, so they are going to leave me to my own devices and see how that goes."* (PID 2226)

One participant believed that the reason why they no longer needed treatment from their physiotherapist was because the increase in PA they had achieved through the *Active Choices* program had got their pain under control:

*"I was seeing a physio for trouble I had with my upper arms and shoulders, because I've got polymyalgia, and I used to go to the physio for exercises for that. But because I'm more active with exercise now, that's probably why my physical pain and everything is better*." (PID 9281)

### 7.6.3 Program Acceptability

Overall, participants largely reported enjoying *Active Choices* and were appreciative of the benefits they had experienced during the program. The following quotes are some examples of comments made by participants during interview that demonstrate the acceptability and value of the program to DVA clients:

*"It's been a pleasure being a part of this program and I have enjoyed it. It's opened up my eyes and motivated me to get out and do more things and become a better citizen".* (PID 9317).

*"I just want to say thank you. Seriously you've really helped me and this has been a really excellent program and you've done a great job. Thank you."* (PID 1857)

*"I think the program is good and I think it's useful in terms of the DVA process. It certainly helped me and coincided with a desire to get back into exercise and you actually helped me to do it and not just talk about it. So for me, it was very good*." (PID 2087)

*"I reckon the program is fantastic, because for me it really did make the routine a habit now. If something causes me not to do an exercise that I was programmed for, I'll fit it in somewhere else. Whereas before, it wasn't so much of a routine and I used to flick it. I think the habit-forming result of the program has been really good for me. I really support the program, I think it's great."* (PID 6447)

*"I think it's a wonderful program, I really do*." (PID 7209)

> *"Thank you for all your work. I think the program is wonderful and I certainly have no doubt that it will be valuable for other veterans."* (PID 3810)

There were several aspects of the program that participants liked (see **Section 7.6.3.1**), and very few which they didn't like (see **Section 7.6.3.2**). In addition, the majority enjoyed using the resource booklet and found it helpful (see **Section 7.6.3.3**).

#### 7.6.3.1 Aspects Liked

Several participants (*n* = 8) liked the personalised information which they received about their local opportunities to participate in their PA choices. This information facilitated the process of getting started with their new program of activities and assisted participants in overcoming barriers. For example:

> "*The list of options you came up with and I followed up, you got me motivated to do that. Sometimes we're in the state of mind where we are not that organised, so that helped to speed up the research process and got me started much quicker."* (PID 2087)

> "*I liked that at the start of the program you went through all the things that were good for me in my circumstances and came up with all the options of different places to go. I think that's good because I can choose what to do as it's all laid out there in front of you, rather than procrastinating, which I tend to do a lot. It's like here are the things they provide you, here's how much, this is what you can do, and it makes it an easy choice instead of having to do that research yourself when you're really not motivated to do it anyway*." (PID 1930)

Six participants appreciated how the program had pushed them out of their comfort zone and got them engaged in new activities. As the following quotes illustrate:

> "*The program made me think about swimming and got me doing something that I wouldn't have done otherwise. It pushed me out of my comfort zone."* (PID 7209)

> "*Exploring new fitness ideas, that was good for me as it got me out of my comfort zone."* (PID 2207)

#### 7.6.3.2 Aspects Not Liked

When asked whether there were any aspects of the program which they did not like or enjoy, the majority (23 of 29; 79%) of participants said there was nothing which they could identify, and often (*n* = 8) commented on how they had enjoyed the experience of participating. For example:

> *"Nah, not really. It's good. I found it nice and enjoyable the whole way.*" (PID 1930)

> "*No, I can't think of anything. It's all been a positive experience."* (PID 1857)

Six participants reported that they did not enjoy completing the research measures which were included in the face-to-face consultation sessions to evaluate the program's effectiveness. As the following quotes illustrate:

> "*Doing those surveys was difficult, but other than that, there's nothing really that's bad. It's just difficult to do them because you got to do a bit of thinking about it. They're not really bad, it's just the worst I could come up with."* (PID 2590)

> *"I thought it was well structured and well run. A really minor thing is the time it takes to capture the data when you're in here in person, like the surveys and creating the link chart. I know it requires time to do that in detail, but that's the only thing about the program I can think of".* (PID 9996)

No other parts of the program were raised by participants as being not liked or not enjoyed.

#### 7.6.3.3 Resource Booklet

The majority of participants (*n* = 19; 66%) valued the *Active Choices* resource booklet. During the Week 12 interview, it was commonly described as good (*n* = 11), easy to follow (*n* = 8) and well structured (*n* = 5). Several participants reported that they particularly liked the goal setting sections (*n* = 4) and the PA logbook

(*n* = 7). The following quotes are examples of positive comments which participants made about the resource booklet:

> "*It was very clearly laid out and it made the planning process really simple. It just made it really simple to follow through and come out with a workable program, and it gives you structure*". (PID 2087)

> "*I liked it. I even had it out and the missus went through it. It was good and easy to read, easy to follow and it just helps you as a good reference to go back and reflect on your goals and whatever from when you started, and your progress and that. It was easy and good*". (PID 1930)

> *"I thought it was good, because everything was explained simply, and it was detailed, and it made you stick to what you were doing*." (PID 4817)

> *"Having the handbook was a really good thing*." (PID 9636)

Some participants felt less positively about the booklet. Two commented that they found the booklet to be confusing, while another felt that the content was too repetitive. For example:

> "*I thought a lot of the questions were repetitive and the information you had to put down was repetitive. I got myself a bit confused between activity goals and activity plans and all that sort of stuff*." (PID 7782)

### 7.6.4 Insights for Scaling-Up

Participants offered their suggestions for scaling-up the *Active Choices* program, should it be rolled out across Australia to DVA clients in future. Key themes emerged around ways to advertise the program to DVA clients (see **Section 7.6.4.1**), and how the program could be delivered at-a-distance and to those in regional and remote communities (see **Section 7.6.4.2**). Participants also made suggestions around broadening the eligibility criteria for the program (see **Section 7.6.4.3**).

#### 7.6.4.1 Advertising

Participants (*n* = 18) provided a range of recommendations as to how the program could be advertised to DVA clients in future. A common suggestion was to advertise through DVA (*n* = 6), and other ex-service organisations (*n* = 10), including *RSL QLD, Legacy, Soldier On, Mates 4 Mates, Women's Veterans Network Australia, War Widows Australia* and *Open Arms*. Groups and organisations which have a high rate of veteran membership were also suggested (*n* = 3), such as *Disaster Recovery Australia, Men's Sheds* and *Sappers Association*, as partners through which the program could be advertised.

In terms of methods of advertising, participants (*n* = 5) suggested the use of DVA and ex-service organisation newsletters. In addition, three recommended advertising through in-person meetings, such as those held at RSL clubs. This was considered as a way to reach those veterans who do not read newsletters.

> "*I think advertising through the DVA and RSL newsletters would be the main two things.*" (PID 5587)

> *"You'll find that most RSL clubs have a monthly meeting. They sometimes bring in an allied health professional who speaks about hearing aids or exercise sessions. That's one way of doing it, is to attend an RSL meeting. Most blokes won't read the magazine properly."* (PID 4817)

Two participants suggested partnering with a network of veteran's centres and RSL clubs across Australia who could advertise the program to their local members. This was recommended as a way of advertising the program to veterans living in regional and remote communities:

> *"If the veteran's centres were aware, they could encourage people to do the program."* (PID 4449)

> *"I think linking up with the local RSLs is the best way to communicate with those in the outer-suburbs and regional communities."* (PID 1857)

Participants (*n* = 4) also recommended advertising the program through veteran's groups on Facebook, noting that there were several peer-led groups on Facebook that had high levels of veteran engagement. They

acknowledged that a challenge with this approach would be finding and gaining access to these groups. For example:

> "*Like a couple of the Facebook groups where people go to get information on how to go about doing DVA paperwork and that, and get into that to do a little post. I don't know how you would tap into that but there are a lot of people in those groups*." (PID 1930)

> *"There's a pretty strong Facebook presence of veteran communities, posting in those Facebook groups. But you need somebody who's in the group to know about them."* (PID 2226)

Regarding the content of the advertising, two participants recommended using testimonials from people who had been through the program to advertise and commented on how this would make the program more appealing and relatable to other veterans:

> "*Capture the experiences of one or more veterans who've participated in the trial, and having them explain the benefits, what they were able to get from it and why it would a be a useful thing for other veterans to get involved in. That would probably make it more relatable."* (PID 9996)

One participant recommended highlighting the program as an opportunity for people to try out new activities which they had been wanting to do, in particular, those activities that might not traditionally be viewed as exercise:

> "*Show them that it's not just exercise. Like the sort of stuff I chose are forms of exercise, but they're not stuff that you would normally think of, like surfing. You can say that you get to try things that, may it's either the money that's been an issue, or time, or whatever. You can try things that you've had on your bucket list that you've wanted to try. Maybe you could sell it that way*." (PID 2590)

#### 7.6.4.2 Remote Delivery

Interviews discussed whether the program could translate to a remote delivery model that comprised entirely of telephone or online consultations. Participants (*n* = 9) believed that the program could work remotely. However, some (*n* = 3) commented that having face-to-face contact would be better wherever possible, while others (*n* = 5) mentioned that although a remote program could work for other people, face-to-face contact is necessary for them. For example:

> "*Yes, because we've proved in the 2020 world that we can do pretty much anything online, but I still think there is a substantive loss to not have face-to-face."* (PID 5870)

> "*I think that would work for some people, but not for me."* (PID 5587)

Some participants provided suggestions as to how the program could be delivered remotely. Three recommended the use of video conferencing (i.e., *Zoom*) to deliver remote appointments as this meant there was still some level of 'face-to-face' interaction.

> "*I guess it could work, like especially via a Zoom call. Then you can see them face-to-face."* (PID 1930)

One participant suggested incorporating an online chat function that would allow participants to ask questions:

> "*A chat or email function where you could ask questions and get very responsive feedback. With that in place, I think it could work remotely*." (PID 9996)

Another recommended that an electronic version of the PA logbook be made available through the DVA's websites, which clients could then download to use:

> *"I don't think it would be a huge job to put together an electronic spreadsheet which is available on the DVA's website. People could download that and could log their activities."* (PID 9506)

Acknowledging the difficulty in delivering a face-to-face program in regional and remote communities of Australia, three participants provided some suggestions as to how this could be achieved. Both suggested the use of local veteran's clubs (e.g., RSLs, veteran's centres) to act as the hub through which the program is

delivered. One recommended delivering an initial face-to-face consultation that is done as a group, with the remaining sessions done via telephone.

> "*You could get the guys involved in the program at the veteran's centres and come out and do a group session there and then do phone consultations after that*." (PID 4449)

Two participants suggested using peer volunteers from the local community to deliver the program:

> *"You could do it in conjunction with the RSL. It might be better if the majority of people who do the face-to-face aren't paid and are fellow veterans. You know, train then trainer. You train them and they go out."* (PID 3142)

#### 7.6.4.3 Eligibility Criteria

Three participants recommended offering the program to all veterans, so that those not currently seeing an exercise physiologist or physiotherapist were eligible to participate. These participants felt that there are veterans who would greatly benefit from the program but are not able to participate due to the eligibility criteria. For example:

> "*I think that by broadening the eligibility, you'd capture more of the veteran community who are potentially interested in the program. I think that some veterans who are struggling the most are the ones who would benefit most from the program*." (PID 9996)

# 8. Key Findings and Conclusions

This project developed, implemented and evaluated *Active Choices*, a stepped-down program designed to support self-managed PA in DVA clients transitioning from treatment by an EP and/or physiotherapist.

A thorough systematic review of the evidence base on the effectiveness of stepped-down PA programs for veterans and their dependants was completed, in addition to consultations with EPs and physiotherapists on current approaches used to facilitate self-managed PA in DVA clients. This work informed the development of *Active Choices*.

A trial of *Active Choices* was implemented and assessed the impact of the program on physical activity (primary outcome), social connectivity, psychological wellbeing and allied health service utilisation and cost (secondary outcomes). The project used a range of research methods (e.g., systematic review, stakeholder consultations, device-based measures, self-report surveys and interviews) to generate a rich and comprehensive data set to inform the project findings.

The following sections provide a summary of the key findings extracted from the detailed data provided in this Technical Report. Specific emphasis is placed on the evidence-base that supports the program, lessons learnt from recruitment, the impact of *Active Choices* on the project's primary and secondary outcomes, and the strengths and limitations inherent in the research process.

## 8.1 An Evidence-Based Program

- Both the systematic review, and the stakeholder consultations undertaken with EPs and physiotherapists, identified the value of utilising social support, goal setting, goal review, self-monitoring, and education as strategies to help veterans in their transition to self-managed PA. These findings reinforce the evidence base for *Active Choices*, and the inclusion of these BCTs within the program's structure.
- All studies that met inclusion criteria for the review were based in the USA. This finding highlights the need for *Active Choices* as the first study to examine the effectiveness of a PA self-management program in Australian veterans.
- Stakeholder consultations also identified the challenges EPs and physiotherapists face in finding sufficient time during treatment sessions to facilitate PA self-management. *Active Choices* is therefore a program that can value-add to traditional treatment services for DVA clients.

## 8.2 Recruitment

- Despite an extensive network of service provider connections, a limited number of DVA client referrals for participation in the project were received through EPs and physiotherapists. Reasons for this vary, and based on our stakeholder consultations, may include a reluctance for service providers to support a PA self-management program in addition to providing treatment. That said, feedback from practices during the recruitment phase of the project did highlight the impact of COVID-19 on client availability and access via practices.
- The most successful recruitment strategies involved advertising the program directly to clients through DVA and ex-service organisations communication channels. Three quarters of expressions of interest and participant involvement came from these sources, highlighting this recruitment process as a preferred option for future work.

## 8.3 The Impacts of *Active Choices*

### 8.3.1 Physical Activity

- Multiple PA measurement methodologies, which included device-based assessment and self-report surveys, highlighted the overall positive impact which the program had on PA participation. It was interesting to note that the recruited sample was generally active at baseline, yet analyses evidenced further increases in PA through the program. This finding highlights the value the intervention may have for low active veterans who enter the program.
- Triangulating PA data with interviews indicated that participants found the program to be helpful in supporting the transition from treatment to self-managed PA.
- Self-accountability seemed to be a key mechanism underpinning PA change. Participants frequently identified three BCTs within the program which they believed drove motivation and accountability, and consequently, improved their PA levels: self-monitoring, action planning and goal setting.

### 8.3.2 Social Connectivity and Psychological Wellbeing

- On average, participants were linked with and experienced four different PA types across the program, with most of these choices being group-based. Survey and interview data indicated that the program's meet-and-greet sessions and involvement with local PA communities facilitated the number and quality of social groups which participants belonged to.
- Survey data also demonstrated small improvements in satisfaction with life and anxiety/depression scores from baseline to follow-up. Linked to this, process and interview data were compelling in highlighting the sense of achievement participants felt from increasing PA levels and the subsequent impact this had on physical self-competence and mental health.

### 8.3.3 Allied Health Service Utilisation and Costs

- Analyses of service utilisation and costs indicated that participants across the study period required less resources than the 'average' DVA client in 2020. However, it remains unclear whether this was due to the program, or whether those recruited were representative of DVA clients who have lower healthcare needs.
- Consistent with the design of *Active Choices,* which seeks to value-add PA self-management support to treatment services, follow-up interviews identified that participants continued to see their EP or physiotherapist for treatment during the program. For many, this treatment involved management of an existing injury or chronic condition that required ongoing care.
- However, it was interesting to note that around a third of participants reported at follow-up that they were seeing their EP or physiotherapist less frequently or not at all and had, through the support of the program, started self-managing their condition more regularly at home.

## 8.4 Strengths and Limitations

- In presenting the findings of the project, it is important to recognise several strengths and limitations that were inherent in the research process.
- Development of the *Active Choices* program from a strong evidence base, both in terms of the identification of key BCTs from the Rapid Evidence Assessment of previously successful interventions, along with consultations with key stakeholder groups, resulted in a fit-for-purpose and practitioner-informed stepped-down program.
- Utilisation of a multi-method research design, that combined quantitative and qualitative data in the evaluation of primary and secondary outcomes, was also a research strength. The findings were broad

and deep, with capture of participant experiences providing rich insights into factors that helped or hindered PA change and self-management practices.

- The use of multiple methods for assessing PA change was valuable in responding to the challenge of capturing both accurate and typical PA behaviour across the assessment timepoints. For example, it was noticeable that follow-up measurement of PA using accelerometers indicated a regression back to baseline PA values. However, triangulating this objective data with self-report and interview findings suggested that this was likely impacted by several participants reducing their PA during that week's measurement window due to injury or illness. Data captured by accelerometers at this timepoint may therefore not have been representative of typical PA behaviour during the follow-up period.
- Lastly, the adoption of a single group, rather than comparative group research design was a limitation. This was unavoidable because of COVID-19, time limitations and the impact that the pandemic had on recruitment, sample size and accessibility to DVA clients. Therefore, the project provides initial proof-of-concept insights, with more research required using a higher quality research design and a larger, more diverse client group.

## 8.5 Conclusions

This research is unique in being the first to explore PA self-management issues in DVA clients. Research activities were also completed against the context of the COVID-19 pandemic, which raised significant challenges for participant recruitment, interaction with clients, and the study timeline and duration. Consequently, the research design of the main study, which originally planned to use a comparative group for analyses, was adapted to a single group study format.

It is important to set the program evaluation findings against the context of this design. Namely, that the findings provide evidence of associations and program benefits, while also highlighting the need for ongoing studies which can further explore cause-effect relationships at larger scale, in more diverse DVA clientele.

The data presented in this Technical Report certainly warrant further investigation given the positive impact *Active Choices* had on those DVA clients who participated in the program. Benefits observed included increases in PA across the intervention period and into follow-up, with participant feedback highlighting a movement towards more self-managed PA and client-centred accountability outside of treatment. Facilitation of group-based PA was a particular aim of the program, given the isolation many veterans experience. It was particularly encouraging to observe improvements in social connectivity, support networks and aspects of psychological wellbeing linked to engagement with local PA communities.

Our work with veterans who participated in the project highlights that self-management of PA is challenging, but greater support for sustainability is obtained through engagement in PA with others. This a central feature of *Active Choices*, whereby social interaction, both with experts and friends, helps veterans deal with the challenges of disconnection. The findings presented in this report illustrate that engaging veterans in a program that emphasises social connectivity through PA is an effective strategy for re-establishing social support networks that can help counter feelings of isolation and ill-health.

Moving forward, key questions emerging concern how *Active Choices* may further develop into an effective stepped-down program that could be deployed to benefit DVA clients across Australia. The proof-of-concept study completed through this research project targeted Brisbane-based DVA clients through an in-person, face-to-face delivery mode. A viable option for future testing at scale would be the transition of the program to an online telehealth program capable of also reaching and providing support for veterans in regional, rural and remote Australia. Such a program would provide a 'living' repository of group support networks for PA self-management, which would grow and evolve with the DVA veteran and service provider community.

THE UNIVERSITY OF QUEENSLAND
AUSTRALIA

CREATE CHANGE

## Contact Details

**A/Prof Nicholas Gilson**
T +61 7 3365 6114
E n.gilson1@uq.edu.au