

1 **A typology of factors influencing seniors' participation in strength training in gyms and**
2 **fitness centers**

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4
5 **Abstract**

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7 Older people are less likely to engage in strength training than their younger counterparts,
8 despite the substantial benefits of this form of exercise for preventing and addressing age-
9 related physical decline. In many countries, strength training programs are available for older
10 people, yet are undersubscribed. The aim of the present study was to identify the factors
11 influencing older people's participation in strength training at gyms and fitness centers to
12 provide insights into potentially effective recruitment and retention strategies for this
13 population. Seventy-nine individuals from four stakeholder groups (seniors, fitness center
14 instructors and managers, health practitioners, and those involved in policy) were interviewed
15 to identify and explicate relevant factors. A detailed typology was developed that provides
16 insights into potential strategies at five ecological system levels: intra-personal, inter-
17 personal, organizational, social, and policy. The typology can be used as a tool for identifying
18 opportunities to encourage strength training participation among older people.

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20 **Key words:** strength training, gyms, fitness centers, barriers, motivators
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Introduction

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Worldwide, the facilitation of healthy aging is a policy priority in an attempt to manage the substantial growth in health system costs forecast to result from population aging (World Health Organization, 2015). Physical activity is critical to healthy aging, and strength training is a particularly important form of exercise in later life due to its capacity to delay age-related decline and enhance the ability to undertake activities of daily living (Beck, Daly, Fiatarone-Singh, & Taaffe; Bherer, Erickson, & Liu-Ambrose, 2013; Hunter, McCarthy, & Bamman, 2004; Liu & Latham, 2009). This is reflected in the inclusion of strength training recommendations in the World Health Organization’s (2011) physical activity guidelines for older people: “Muscle-strengthening activities, involving major muscle groups, should be done on 2 or more days a week”.

Few older adults meet the general physical activity guideline of a minimum of 150 minutes of moderate intensity physical activity per week (World Health Organization, 2011), and even fewer achieve the two recommended weekly sessions of strength training. In Australia, the context of the present study, it is estimated that 25% of older people meet the general activity guideline (Australian Bureau of Statistics, 2015) and 8% meet the strength training guideline (Bennie et al., 2016). There is therefore enormous potential to increase participation in strength training among members of this group to enhance their health and quality of life and to reduce the health system costs associated with age-related illnesses.

Venues that provide strength training facilities for the general public (colloquially known as gyms and fitness centers) are well placed to service older people, yet they can fail to effectively cater to this market segment (Andreasson, Tugetam, & Bergman, 2016;

1 Rydeskog, Frändin, & Hansson Scherman, 2005). Increasing the patronage of older people is
2 beneficial to these venues because of the sheer size of the senior segment and increasing
3 financial independence among older people in many countries resulting from improved
4 retirement planning (Kearney, 2013; World Health Organization, 2015). In addition, actively
5 recruiting older clients has the potential to even out demand cycles by increasing attendance
6 during non-peak times.

7

8 Given low participation rates among older people, there are likely to be substantial barriers
9 among both service providers and seniors that discourage strength training in gyms and
10 fitness centers. Research to date has tended to focus on factors influencing physical activity
11 in general, with relatively little work undertaken specifically on issues relating to strength
12 training, and even less on seniors' perceptions of strength training venues. The small amount
13 of work focusing explicitly on older people's perceptions of strength training in centers has
14 identified intimidating environments, inadequate instruction, and limited access to equipment
15 as factors that seniors find alienating (Andreasson et al., 2016; Bethancourt, Rosenberg,
16 Beatty, & Arterburn, 2014; Lübcke, Martin, & Hellström, 2012; Rydeskog et al., 2005).

17

18 The aim of the present study was to contribute to this limited body of work by identifying and
19 explicating the barriers and motivators relevant to Australian seniors' decisions to engage in
20 strength training in gyms and fitness centers. The results may be of use to those attempting to
21 introduce strategies designed to increase the proportion of older clients using their facilities.
22 Better targeting of older people has the potential to improve both the health of aging
23 populations and the profitability of individual centers.

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Method

1 Consistent with the exploratory approaches adopted in much of the limited prior research on
2 older people's attitudes to gym attendance (Bethancourt et al., 2014; Henwood, Tuckett,
3 Edelstein, & Bartlett, 2011; Lübcke et al., 2012), qualitative data were collected from various
4 stakeholders to identify and explicate the broad range of issues relevant to seniors' decisions
5 to engage in strength training in gyms and fitness centers. The study extends previous work
6 by including stakeholders from four domains: strength training service providers (i.e.,
7 instructors and center managers who run programs that include older people), health and
8 community care practitioners (e.g., physiotherapists and home care eligibility assessors),
9 health policy representatives, and seniors (aged 60+ years) (see Table 1). This multi-
10 stakeholder approach provided data triangulation by accessing perspectives from various
11 types of individuals who could contribute different information and ideas on the topic of
12 interest (Lincoln & Guba, 1985; Mays & Pope, 2000).

13

14 The data collection process involved two phases. The first, conducted in February and
15 March 2016, involved individual interviews with service providers (n = 18 instructors, n = 24
16 center managers) to explore their experiences with older clients. Interviewees were recruited
17 via invitation emails distributed to exercise facilities in Western Australia that offered
18 strength training programs to older people. These programs included both group classes and
19 personal training opportunities. Of the 42 respondents expressing interest in participating in
20 the study, two-thirds were female, which roughly reflects the gender distribution of those
21 working in this industry (Australian Bureau of Statistics, 2012). Interviews with those in the
22 Perth metropolitan area were conducted in person (n = 33), and interviews with those based
23 in regional Western Australia (i.e., outside of the Perth metropolitan area) were conducted by
24 telephone (n = 9). An interview guide was used to ensure all topics of interest were covered
25 in the interview, with these topics including descriptions of their current efforts to cater to

1 older people and the perceived effectiveness of these efforts, suggestions for possible
2 improvements in programs targeting older clients, and potential methods of encouraging
3 older people in general to participate in strength training programs. A funnel approach was
4 used that involved initially asking broad, open-ended questions about the center and its
5 programs to encourage unprompted discussions of key topics prior to their introduction by
6 the interviewer (Gorden, 1969). On average, the instructors' interviews ran for 20 minutes
7 and the center managers' interviews ran for 27 minutes.

8

9 The information obtained from the service providers was used to provide insights for the
10 second phase of data collection (August and September, 2016) that involved one focus group
11 with health/community care practitioners (n = 8), one focus group with individuals who
12 advise on and implement health policies relating to physical activity (n = 5), and two focus
13 groups with seniors (n = 13, n = 11). Consistent with the approach used for the service
14 providers, the practitioners and policy representatives received an email inviting them to
15 participate in a study on older people's health and physical activity. The seniors were
16 recruited via advertisements disseminated on community radio, in senior-specific
17 newspapers, and flyers sent to retirement villages. The substantially larger number of female
18 participants (see Table 1), is in accordance with previous aging research and reflects both the
19 tendency for women to be more willing to participate in research (Galea & Tracy, 2007) and
20 to have greater longevity (World Health Organization, 2014).

21

22 Once again, a funnel approach was used to commence general discussions about older
23 people's physical activity behaviors to allow topics of relevance to the interviewees to be
24 raised spontaneously, followed by more specific questions relating to participants' knowledge
25 of and attitudes towards strength training among older people. The practitioner and policy

1 groups ran for an average of 71 minutes and the seniors focus groups ran for an average of 76
2 minutes. This exploratory approach across both phases of data collection facilitated the
3 identification of a broad range of potential issues that were subsequently synthesized into a
4 typology of factors influencing seniors' participation in strength training in gyms and fitness
5 centers. Ethics clearance for the study was granted by the *blinded for review* University
6 Human Research Ethics Committee, and written informed consent was obtained from all
7 participants prior to the commencement of the interviews and focus groups.

8

9 *Insert Table 1 about here*

10

11 The interviews and focus groups were audio-recorded and the resulting transcripts were
12 imported into NVivo 11 software (QSR International) for coding and analysis. An inductive
13 coding process was used that involved a coding hierarchy comprised of both concepts from
14 the existing literature and topics that progressively emerged from the data (Huberman &
15 Miles, 1994). This inductive approach necessitated the use of a single coder (the first author)
16 to permit new codes to be identified and applied progressively throughout the coding process.
17 The findings were discussed among the author team until a consensus was reached. A
18 reflexive analytic approach was adopted that involved the consideration of numerous
19 alternative interpretations and conceptual explanations for the data (Mays & Pope, 2000;
20 Pope, Ziebland, & Mays, 2000). This process involved considering various conceptual
21 frameworks to assess which provided the closest fit with the data.

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Results

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1 The interview and focus group data indicated the particular relevance of two theoretical
2 frameworks: ecological systems theory as applied to health promotion (McLeroy, Bibeau,
3 Steckler, & Glanz, 1988) and self-determination theory (Ryan & Deci, 2000). Ecological
4 systems theory accounts for human behavior by explicitly documenting the influence of five
5 system levels: intra-personal (individual), interpersonal (small group),
6 institution/organization, community/social, and policy. Self-determination theory focuses on
7 three primary levels of motivation (amotivation [unwillingness], extrinsic motivation
8 [resulting from the influence from others], and intrinsic motivation [resulting from enjoyment
9 or self-actualization]) that influence whether an individual will enact certain behaviors. In
10 combination, these two frameworks provide a useful typology of the factors that can
11 encourage and discourage seniors' participation in strength training. Table 2 depicts this
12 typology, with the category of motivational factors that appeared to be most influential at
13 each ecological level denoted with an asterisk and the positive and negative signs presented
14 in relative influence order. Degree of influence was determined according to the volume of
15 interview content and the intensity of discussion that was invoked by these factors during the
16 interviews and focus groups.

17

18 *Insert Table 2 about here*

19

20 Consistent with low recorded prevalence rates of strength training among older people,
21 factors constituting substantial barriers to participation dominated at almost all ecological
22 levels. The exception was the interpersonal level, where motivating factors relating to social
23 interaction appeared to outweigh barriers at this level. The findings below outline the barriers
24 and motivators that were described by the study participants as operating at each ecological
25 level and example quotes are provided for the most influential factors.

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Intra-personal level

There was strong agreement among all stakeholder groups that individuals' personal characteristics are fundamental to their intentions to participate in strength training. In terms of individuals' health knowledge, many study participants commented that it is common for older people to lack even a basic understanding of the benefits of strength training and the myriad ways in which strength training can be undertaken. Other reported barriers at the individual level included health problems, time constraints, a preference for other forms of physical activity (primarily walking), and a lack of experience with strength training in earlier life. It was noted that for this generation, physical activity in general (and strength training in particular) was largely undertaken in the form of incidental exercise throughout their lives rather than being a consciously planned and enacted activity. As such, many seniors are unaccustomed to scheduling strength-related activities into their daily lives and need to be encouraged to do so. One instructor explained this as follows:

I put a picture up of an old garage where you had the doors that you actually open, you had to pull open. And then it went to the tilter doors, and then it went from there to the roller doors, so there you still had to lift to use them. And now everything is a control, and they actually get the connection then that they were actually doing strength and conditioning work in their normal everyday life, so they didn't consider it exercise but they were actually doing it. So you need to identify those things to them and tell them that that is what you were doing, that is why you remained strong and healthy. You are not doing those things now, they have been taken out of your life. You used to get up and change the channel on the TV, so you

1 *were getting in and out of your chair. You don't do that anymore, you just*
2 *flick the switch on a button (Female, Instructor, Metropolitan area).*

3
4 In combination, these individual-level factors were described as preventing older people from
5 recognizing strength training as a beneficial and feasible option. For the small number of
6 seniors who are motivated to participate in strength training, internal motivation at the
7 individual level was considered to be primarily derived from health and functionality
8 concerns and the recognition that strength training can assist in ameliorating age-related
9 decline. To a lesser degree, concerns about appearance were noted as a potential source of
10 external motivation that can encourage participation.

11

12 ***Interpersonal level***

13 There were more identified positive factors relating to strength training at this ecological
14 level than any other level. In particular, achieving positive social outcomes was reported to be
15 highly motivating, and this motivation operated at both internal and external levels. Internal
16 motivation was socially oriented where gym attendance was at least partially motivated by
17 the desire for the social interaction that can be experienced in these venues. As described by
18 some of the study participants, this form of social motivation was often the strongest
19 influence on attendance.

20

21 *The biggest thing would probably be the social side of it. So a lot of these*
22 *older people are kind of not actually getting out at all. This is the kind of*
23 *only place they come to get any social interaction (Male, Instructor,*
24 *Metropolitan area).*

25

1 Where individuals were externally motivated at the interpersonal level, this could result in
2 either positive or negative impacts on strength training beliefs and behaviors. For example,
3 loved ones can constitute a source of encouragement or discouragement via their comments
4 about the appropriateness of strength training as a form of physical activity for older people.

5

6 *My son offered to pay for (the) gym. "Mum", he said, "this would be a very*
7 *good thing for you" (Female, Seniors focus group (FG)).*

8

9 *I have one lady – her partner is completely against the gym and against her*
10 *going (Female, Instructor, Regional area).*

11

12 Second, where attendance is reliant on friends or partners being present, this can serve as
13 encouragement to participate when these friends are available and a barrier to participation
14 when they no longer attend.

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16 *We have had couples that have joined together and one of the spouses has*
17 *passed away. So now they don't want to come because it is too much of a*
18 *reminder of when they were here with their spouse (Female, Instructor,*
19 *Metropolitan area)*

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21 Finally, the nature of other clients attending the center could serve to either encourage or
22 discourage participation. Some of the seniors discussed how pleasant it was to be able to chat
23 with similar others at the gym, while some bemoaned the presence of other (typically
24 younger) patrons who were described as alienating due to their behavior and/or attire.

25

1 *They get a little bit intimidated by the gym, of the people that are in there*
2 *(Female, Instructor, Regional area).*

3

4 ***Institutional/organization level***

5 The physical environment of gyms and fitness centers was reported to be a major deterrent
6 for many older people. In addition to other patrons potentially constituting a barrier to
7 attendance, noise levels, odors, poor hygiene, and limited equipment availability were raised
8 as aspects of the venue that can be off-putting for older people who have not been
9 accustomed to attending gyms and fitness centers during their younger years.

10

11 *I feel out of place at a gym; I don't want to go there (Male, Seniors FG).*

12

13 *I hate the people that don't wipe the seat down with their towel. You go up*
14 *to it and there's a whole heap of sweat on it (Male, Seniors FG).*

15

16 *Female: The incessant noise puts me off, and also queuing up for machines.*

17 *Male: Yeah. I'm slow at getting there.*

18 *Female: You see them hovering.*

19 *Male: Someone will rush past and get on that machine. That's the one I've*
20 *sort of plotted out in my head of stop there, stop there, stop there and do*
21 *that so I can get in and out as quickly as I can because the noise is getting*
22 *to me and I'm sick of seeing all these really fit people around me (Seniors*
23 *FG).*

24

25

1 Strategies at the organizational level that were described as being potentially capable of
2 increasing external motivation included (i) the efforts of individual instructors to make
3 seniors feel welcome and to ensure appropriate levels of assistance are provided and (ii)
4 promotional activities that highlight affordability and positive health outcomes. In addition,
5 given the identified strong negative feelings about traditional strength training facilities
6 among seniors, it may be the case that new approaches to venue design may be needed to
7 attract this target group:

8

9 *Female: (I would like) a nice, quiet environment where you can pace*
10 *yourself, you can pay attention to what you're doing, you can pay attention*
11 *to how you're doing it. An instructor who's available if you want to ask*
12 *questions or get some information about changes. Somewhere where you*
13 *can focus, which you can't do in the standard gyms (Seniors FG).*

14

15 In terms of internal motivation, where seniors identify as a member of a particular venue they
16 can incorporate this affiliation into their self-identity such that attendance feels like being part
17 of a familiar and family-like community. This in turn can increase loyalty, patronage, and
18 positive word-of-mouth communications, thereby providing benefits to both the individual
19 and the organization.

20 *We have got clients that are our ambassadors. Everyone they speak to,*
21 *“You should be joining this program”, “You should be joining this*
22 *program”. We have people travel from all over to come to our program*
23 *here, not to go to anywhere else (Female, Instructor, Metropolitan area).*

24

25 ***Community level***

1 The primary issue identified at the broader societal level related to social norms about
2 appropriate types and levels of activity for older people. These norms were reflected in an
3 apparent lack of health practitioner advice to patients about the need to incorporate strength
4 training into their weekly schedule. There was general agreement among the study
5 participants that the overwhelming advice to seniors from both medical practitioners and the
6 general community is to walk for health, with little if any communication of the suitability
7 and benefits of strength training in later life.

8

9 *Walking is cheap and convenient, you can almost do it anywhere. I think a*
10 *lot of the messages that have come through over many years have all been*
11 *about cardiac health, probably more than any other form of other issues*
12 *that we know are really significant...I think for many years the focus has*
13 *been about aerobic type of activity (Male, Policy FG).*

14

15 *I don't think we have ever had a referral from the doctor, which is pretty*
16 *stupid. They are pretty quick to hand out tablets and antidepressants, they*
17 *should give out free memberships to the gym is what they should do*
18 *(Female, Instructor, Metropolitan area).*

19

20 ***Policy level***

21 Strong support was expressed for public education campaigns that advise older people and
22 their networks of the importance of strength training for preventing and ameliorating a range
23 of age-related diseases. Such campaigns were seen to be a critical first step in increasing the
24 understanding and acceptance that is required to motivate individuals to change their attitudes
25 and behaviors. It was also noted that it is necessary to supply specific information about the

1 strength training service providers in the local area to facilitate the ability of the target
2 audience to act on the message.

3

4 *We need more advertising on the TV. Like Shire or governmental*
5 *departments need to advertise and say, “Just because you are now 70*
6 *doesn’t mean there isn’t an appropriate fitness program at your gym or*
7 *what have you out there for you” (Female, Instructor, Metropolitan area).*

8

9 A further critical policy-related issue involved external motivation – the provision of
10 appropriate incentives and subsidies to move seniors along the motivation spectrum. It was
11 widely acknowledged that cost is a primary inhibiting factor for older people who are reliant
12 on the government pension, hence the importance of ensuring strength training service fees
13 are affordable for those on limited incomes. Similarly, even those who are internally
14 motivated to participate in strength training can be prevented from doing so if there is a lack
15 of nearby facilities and/or if these facilities are not financially sustainable.

16

17 *We're basically just breaking even, and sometimes we don't even break*
18 *even (Male, Fitness Center Manager, Metropolitan area).*

19

20

Discussion

21

22 The primary aim of this exploratory study was to provide a comprehensive account of the
23 factors that can influence older individuals’ participation in strength training at gyms and
24 fitness centers. The specific research focus on exercise venues is warranted by the very low
25 strength training participation rates among seniors (Bennie et al., 2016) and the urgent need

1 to implement effective strategies to assist in addressing the large forecast increases in health
2 expenditure resulting from population aging (Australian Productivity Commission, 2013).
3 Enhancing the ability of gyms and fitness centers to attract and retain older clients is a
4 potential means of increasing overall participation levels among this important target group.
5
6 The inclusion of a diverse sample of stakeholders in the present study permitted the
7 identification of barriers and motivators that are relevant to all five ecological levels, ranging
8 from individuals' personal characteristics to current and future health policies (McLeroy et
9 al., 1988). Many of the factors listed in Table 2 have been identified in previous research as
10 being relevant to seniors' participation in physical activity more broadly. In particular, the
11 importance of social interaction as a motivator for older people is well recognized
12 (Andreasson et al., 2016; Bampton, Johnson, & Vallance, 2016; Barrett & Smerdely, 2003;
13 Farrance, Tsofliou, & Clark, 2016; Henwood et al., 2011; Lübcke et al., 2012; Rydeskog et
14 al., 2005). Similarly, the relevance of instructor quality (Bethancourt et al., 2014; Burton et
15 al., 2017; Farrance et al., 2016; Lübcke et al., 2012), cost (Barrett & Smerdely, 2003),
16 accessibility (Bethancourt et al., 2014; Lübcke et al., 2012), time constraints (Lübcke et al.,
17 2012; Van Roie, Bautmans, Coudyzer, Boen, & Delecluse, 2015), and the nature of other
18 patrons (Rydeskog et al., 2005) has been noted. In addition, past studies focusing specifically
19 on those engaging in strength training have documented the importance of health and
20 functionality benefits as motivators for seniors' participation (Burton, Farrier, et al., 2016;
21 Burton, Lewin, et al., 2016; Henwood et al., 2011; Lübcke et al., 2012). The value of the
22 developed typology is in its comprehensive coverage of these and other factors, with a
23 specific focus on factors relevant to patronage of the gyms and fitness centers that already
24 exist in the community. This typology is a potential tool for venue managers, health

1 practitioners, and policy makers to use in their efforts to increase strength training
2 participation rates among older people.

3

4 In conjunction with the available previous research, the typology generated in the present
5 study highlights the importance of addressing barriers across multiple domains to increase
6 seniors' motivation to meet current strength training guidelines. At the intra-personal level,
7 knowledge deficits about the benefits of strength training appear to be a primary barrier that
8 needs to be overcome (Henwood et al., 2011; Yardley, Donovan-Hall, Francis, & Todd,
9 2007). This in turn has community- and policy-level implications because of the need to
10 provide this information *en masse* to increase awareness of the importance of strength
11 training among both current and future seniors.

12

13 At the inter-personal ecological level, the leveraging of the social interaction benefits of gym
14 attendance represents a promising strategy due to the critical importance of this participation
15 outcome for seniors (Henwood et al., 2011; Lübcke et al., 2012). There exist examples of
16 successful programs delivered in gyms and fitness centers that incorporate social aspects,
17 such as the Living Longer Living Stronger program in Australia (Vrantsidis et al., 2014) and
18 the EnhancesFitness program in the US (Petrescu-Prahova, Eagen, Fishleder, & Belza, 2017).
19 Another inter-personal aspect that needs to be addressed to optimize older people's
20 participation in strength training involves garnering the support of others in their social
21 networks (Dean, Farrell, Kelley, Taylor, & Rhodes, 2007; Yardley et al., 2007). The public
22 education campaigns noted above are likely to assist in achieving a more supportive social
23 environment by ensuring friends and family members are also aware of the benefits that can
24 accrue to the older person from participation in regular strength training. These programs

1 may also make health practitioners more amenable to prescribing strength training as is
2 increasingly recommended in the literature (for a review see Beck et al., 2016).

3

4 At the organizational level, there is a clear need for alternative forms of service delivery that
5 are better suited to seniors' aesthetic preferences (Rydeskog et al., 2005). To some degree,
6 this need is being met through the increasing availability of outdoor strength equipment, often
7 situated in parks and other walking precincts (Sales, Polman, Hill, Karaharju-Huisman, &
8 Levinger, 2015; Scott, Stride, Neville, & Hua, 2014). This form of strength training may be
9 especially appealing to older people because of the connection with walking as a preferred
10 form of exercise for this population (Stride, Cranney, Scott, & Hua, 2017). Gyms and fitness
11 centers may learn from this development to create exercise environments that are more
12 attuned to seniors' preferences, such as by providing outdoor components to exercise
13 programs and finding alternatives to the loud music that is often a feature of modern centers.
14 A further important consideration is instructor quality (Hawley-Hague et al., 2014; Hawley-
15 Hague, Horne, Skelton, & Todd, 2016). Organizational strategies that aim to attract and retain
16 older clients should include well-designed instructor recruitment, training, and monitoring
17 components to ensure seniors' needs for effective and empathetic instruction are met.

18

19 At the broader community and public policy levels, social norms relating to 'slowing down'
20 in later life need to be changed to address older people's high levels of non-compliance with
21 physical activity guidelines. The results of the present study highlight the potential
22 effectiveness of efforts to ensure older people are (i) aware of the multiple health benefits of
23 strength training in later life and (ii) able to access and afford strength training opportunities
24 in their local areas. Specific strategies can include public education programs about the
25 importance of strength training in later life, health practitioner referrals to gyms and fitness

1 centers, and subsidies where appropriate (e.g., for older people without superannuation
2 reserves who are reliant on government pensions). It may also be beneficial for training
3 institutions to formalize curriculum components that focus on older clients to ensure those
4 working in gyms and fitness centers have the knowledge and skills required to meet the
5 physical and psychological needs of this group.

6

7 **Strengths and limitations**

8 A major strength of this study is the involvement of multiple stakeholder groups. Most of the
9 limited previous research in this area has focused on a single stakeholder group to identify
10 factors influencing seniors' participation in physical activity in general or strength training in
11 particular. In the present study, the consistency in information provided by study participants
12 from the various stakeholder groups increases the trustworthiness of the findings (as per
13 Patton, 1999). The novel combination of the ecological and self-determination frameworks in
14 the context of strength training is another feature of the study.

15

16 Limitations include the exploratory qualitative approach involving a single coder that has
17 implications for the generalizability of the study findings. In addition, there was a strong
18 gender skew towards females and data were not collected relating to the age and exercise
19 histories of the seniors who participated in the study, and results may vary according to these
20 characteristics. Further research is needed to quantitatively test the validity of the typology in
21 Australia and elsewhere.

22

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Conclusion

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1 Gyms and fitness centers can better orient their services to older clients by accommodating
2 the specific needs of this group. The present study extends prior research in this area by
3 focusing specifically on factors influencing attendance at such centers and producing a
4 comprehensive account of relevant factors in the form of a typology covering five ecological
5 levels and three levels of strength training motivation. The results emphasize the need for
6 efforts at multiple ecological levels to optimize strength training participation rates and
7 realize the potential benefits for both individuals and societies. Further research in other
8 national contexts could serve to expand the typology and assess its generalizability to other
9 countries that have available strength training facilities but suboptimal uptake levels among
10 older people.

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