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'I have a renewed enthusiasm for going to the gym': what keeps resistance-trained older adults coming back to the gym?

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ABSTRACT

The purpose of this study was to identify the factors that were responsible for the feelings of satisfaction and the behaviours of adherence to an intense exercise intervention recently completed by resistance-trained older adults. A total of 21 healthy, high functioning, resistance-trained older adults (aged 60–77 years) participated in one of four focus group discussions where qualitative data were collected. Our study utilised a convenience sample of participants who had just completed an eight-week very heavy load resistance training study. As a result of our small focus groups, we found that our cohort of older adults enjoyed training with an expert, enthusiastic trainer who provided a challenging programme and appropriate, timely fitness assessments in a small group setting of like-minded peers. Our findings suggest that high-intensity resistance training is well tolerated and enjoyed by healthy older adults, while also impacting positively on subjective markers of health including improved feelings of strength and functional capacity.

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Introduction

As our population ages, the absolute number of older adults living with one or more chronic conditions has the possibility to overwhelm our social and economic infrastructure (Salomon et al. 2012). Initiating and subsequently maintaining a recommended level of physical activity has been shown to reduce the risk of living with chronic disability and disease, enhance functional capacity and improve quality of life in older adults (Jefferis et al. 2014; Albuquerque et al. 2016; Duncan, Minatto, and Wright 2016). Thus, it is likely that even small, early and sustained efforts to promote an active lifestyle will translate into significant reductions in social and economic burden (Viña et al. 2016).

Structured resistance exercise specifically has been shown to significantly benefit a number of physical, physiological and cognitive domains. Muscular strength as a result of structured resistance training is expected, especially for those with little to no training history, and is associated with a decrease in all cause mortality (Kraschnewski et al. 2016). The beneficial effects of resistance training have also been found for bone density, frailty, falls and fall risk (Giangregorio et al. 2014). Resistance training also benefits both the metabolic and cardiovascular systems (Steele et al. 2012; Ribeiro et al. 2016). Improved mental health and increased cognitive function have also been shown as a result of resistance training

(Kimura et al. 2014; Mavros et al. 2017). Thus, there are numerous benefits of initiating and maintaining a structured resistance exercise programme among older adults both at an individual and societal level.

Although the positive impact of resistance training on clinical markers of physical and physiological health are well known (Shaw, Shaw, and Brown 2015), the effectiveness of this modality as shown in a research setting may not translate into more accessible, 'real-life' settings, such as within a private home or in a commercial gym (Kyrdaalen et al. 2014). Indeed, many promising clinical exercise studies do not account for the complexities and intricacies of the beliefs, attitudes, preferences and underlying driving behaviours of participants, and the impact of such on adherence to particular exercise modalities.

Considering the global importance of maintaining adequate physical activity throughout the ageing process, the translation of findings from research to a 'real life' setting should be a priority during the study design process. An important step in translating findings into meaningful outcomes is understanding the preferences of older adults toward exercise – structured resistance exercise in particular. Thus, in this study, we explore the thoughts and perspectives of older adults at the completion of a highly structured, very heavy-load, resistance training intervention.

Methods

This study is pragmatic in its approach (Bourgeault, Dingwall, and De Vries 2010). While the experiences of those participating in the intervention are their own, they are being reported on by researchers with an interest in understanding the processes that underpin health and well-being. Thus, the intent of the study is problem focused, reporting data that is of value in facilitating similar interventions and understanding adherence. As such, a relatively unsophisticated research question can be approached using Qualitative Descriptive Methods, designed to capture as Neergaard et al. (2009) puts it, the 'why, how and what' of human behaviour. Furthermore, this study is not designed to develop theory or interrogate particular meanings that may be attributed to actions in the world, which positions the work outside the scope of Grounded Theory or Phenomenology. Ontologically speaking, those involved in the study are able to contribute their own perspective on the shared experience of a successful exercise programme and speak to it on their own terms (Neergaard et al. 2009). Consequently, the role of researchers in this case is to best present themes drawn from the data that are of interest to a relevant audience. With this in mind, a simple presentation of data is offered with context placed in the introduction and discussion.

Positioning

The broad purpose of this study is to capture the experiences of participants in an exercise intervention that resulted in unexpectedly high rates of adherence and satisfaction. The original intention of the study from which these data are drawn was to compare three distinct resistance exercise modalities: traditional, eccentric only and eccentrically biased, in healthy, high-functioning, resistance-trained, older adults (Gluchowski et al. 2017). While seeking to be effective in this regard, the intervention was not explicitly designed to examine the efficacy of any given model or theory of adherence. During the training intervention, participants frequently reported their enjoyment and satisfaction with the highly structured and intense training sessions. This daily, and often overwhelming anecdotal evidence, along with a high adherence rate (94%) emphasised the need for a deliberate qualitative assessment. The two authors (AG and IW) who undertook the thematic analysis are, respectively, specialists in medical science and holistic aspects of well-being. All authors maintain first hand, experienced views with respect to what might constitute a successful exercise intervention and are familiar with the culture surrounding prescribed exercise programmes.

Focus groups were conducted in order to allow not only the capture of experiences, but the collective sharing and recall of said experiences. In this way, participants engaged in a constructive interrogation of their experiences that built on each other's knowledge and was able to span the extended time-period over which the study was conducted. The focus groups were drawn from a convenience sample of the first 25 participants who completed the intervention. Wilkinson (1998) argues that focus

groups are a particularly good choice when one wants to elicit people's opinions and views in their own 'naturalistic' way, which mimics 'structured eavesdropping', rather than speaking directly to and being influenced by a researcher. Our focus groups also supported capture of the shared experiences and outcomes that were most important to our participants and allowed us to listen to their shared ways of making sense of those outcomes and experiences (Wilkinson 1998). The strength of creating focus groups immediately following our exercise intervention (2–3 weeks after the completion of the intervention) provided vivid and compelling data on their recent participation in an intense, structured, very heavy load resistance training programme. During our focus groups, our participants (who had come to know each other throughout the previous eight weeks) were able to recall common experiences, bring back forgotten experiences or outcomes in one another, and even defend or challenge their fellow participants (Wilkinson 1998).

Participants

Participants (aged 67 ± 4.5 years) who completed the eight-week training intervention (consisting of two, one hour sessions per week) were invited to take part in focus group discussions. The first 25 participants to complete the training intervention were invited to be involved in the focus group discussions. Four were unable to participate, due to prior travel commitments or were otherwise unavailable during the set dates/times. All participants were independent, community-dwelling (Auckland, New Zealand) adults over the age of 60. All our participants were also healthy, high functioning, physically active and resistance-trained. All participants gave their informed consent prior to being contacted to arrange the small group discussions. The University's Research Ethics Committee approved this study.

Procedures

A total of four small group interviews ($n = 7, 4, 6$ and 4 , respectively) were conducted in a small conference room. The focus group discussions were all conducted by the second author (who had no contact with the participants prior to the interviews) and each lasted approximately one hour. The following questions were used as a guide for the semi-structured discussions:

What was your expectation prior to starting the intervention? Why did you respond to the invitation?

How did you feel about being pushed hard?

How important is it to have others to exercise with?

How did the intervention impact on your health, strength, or any other aspects of your life?

What did you enjoy/not enjoy about the exercises or the program as a whole?

Now that the study is finished, what would you like to see happen going forward? What do you want to see being done with the results?

A flexible approach was used and participants were encouraged to speak freely. Following preliminary analysis at the completion of the fourth group discussion, it was determined that data saturation (that is, each theme was observed multiple times by the end of the fourth focus group session) had been reached, and as a result data collection ceased (van Rijnsoever 2017).

Data analysis

Interviews were digitally recorded, transcribed verbatim by Gluchowski and then coded and analysed using inductive thematic analysis (Clarke and Braun 2013). Although the search for patterns within language does not necessarily require a specific framework (Clarke and Braun 2013), researcher interests and experiences have inherently shaped the analysis processes and the interpretation of data. Analysis of data used the six steps of thematic analysis outlined by Clarke and Braun (2013) consistent with a qualitative descriptive approach (Neergaard et al. 2009). Following several readings of the transcripts, authors independently coded the data, identifying themes and subthemes that occurred most

frequently. Once coding was completed, the authors came together to discuss and review the themes and sub-themes identified and agreed on five dominant themes that emerged from the raw data. It is realised that inter-rater reliability will always be influenced by theoretical proclivities and specifically, power, age, gender, nationality and academic training all were significantly different between coders in the present study, which has most likely influenced the coding (Smith and McGannon 2017). However, we agree with Smith and McGannon (2017) that reliability is of little concern with qualitative data collection, as qualitative researchers, we do not aim to reproduce the data, as this would be counterintuitive to our aim of collecting rich, personal stories as a result of our small focus groups. Finally, the themes were named and raw data extracts were included in the manuscript to give the reader a persuasive story regarding our participants' thoughts and feelings on completing such an intense training programme.

Results

The five themes were each assigned representative phrases: 'Expert Enthusiastic Instructors', 'Appropriate Assessments for Real Life Results', 'Craving Challenge and Savouring Success', 'Accountability To A Cause' and 'Exercise Environment'. Sub-themes fell under one or more of these primary themes. Of note, the five-identified themes are not entirely independent of one another nor must they occur in particular sequence or occupy discernable hierarchy.

Expert, enthusiastic instructors

The most prominent theme to emerge from the data collected during focus group discussions detailed particular characteristics of a trainer believed to be ideal when working with the older adult cohort. When asked to comment on the characteristics they thought were most important, participants commented that it was important for the trainer to have exceptional understanding of anatomy, exercise science and even biogerontology. One participant noted how important it was for the trainer to 'explain the technicalities [of each exercise], the benefits of each exercise and which part of the body is affected.'

Taking the time to explain and reinforce musculature and exercise form was beneficial as participants learned to translate this new information into their everyday activities outside of the gym –

'...the other thing I've learned [from the trainer], is to [contract] your core, when lifting. I have learnt how to lift and engage [my muscles] properly, I found that very helpful, because I have a bit of a funny back.'

Providing education during the training sessions appeared to provide additional motivation and continued adherence to lifelong exercise –

I have a renewed enthusiasm for going to the gym, I was just going through the motions, and now I've learnt something [from the trainer], a lot more [than I would have doing it alone].

In addition to having an expert trainer who provided education, enthusiasm and genuineness were also discussed as ideal characteristics. Enthusiasm for exercise in particular becomes contagious and may cultivate adherence, 'I think we are very fortunate to have a person like [our trainer] to be so focused and enthusiastic about her subject and it rubbed off on all of us.'

Our older adults felt that a genuine interest in each participant's personal safety was essential from their trainer,

I felt safe, you knew that if you tried as hard as you could, [our trainer] wouldn't let you do anything that would cause you damage. She is watching all the time and has the experience that makes you feel safe. You feel confident to push yourself to the limit. I noticed that trying to do exercises at home it is so hard compared to here.

A fine line does exist between an encouraging push out of a comfort zone and feeling threatened. One participant explains,

[Our trainer] is not a pushy person; she doesn't push you but encourages you in an intelligent way ... you need a person who encourages you to go a little farther without feeling threatened. Because at the start, I was afraid of the leg press, but [was comfortable after] having her assistance.

Ultimately, during our discussions, participants confirm the importance of this theme (characteristics of an ideal trainer) with comments similar to that below.

For me, the big thing was just [our trainer], I don't think the results would be as stunning as they were if not for [our trainer]. [Our trainer is a] force of nature person who not only has the personality but also the knowledge. Her manner of dealing with people was extraordinary. I've had Personal Trainers in the past, a series of them but bar none she was the best I've ever worked with. Because she, part of it her energy, demeanour with us, you never thought she thought you were over 60, that's important if you are going to work with certain people. You never thought you were over 60. So you didn't think you were old. You never thought you were over 60. That's one of the reasons everyone got better.

Appropriate assessments for real-life results

Another main theme that emerged from our focus group discussions was how appropriate and relevant the outcomes of the study were to our participants in their everyday life. Many female participants spoke of improving their bone mass content,

I've had bone density scans because I had the condition for a long time and I'm thrilled to bits, first time ever, it increased, not a lot but it did increase. That's been the biggest thing for me, really exciting.

Avoiding pharmaceutical intervention appeared to contribute to their personal health goals and overall feelings of fitness and well-being,

My bone density has increased. I'm now out of that slow decline, that has been the biggest 'coo' of all and I've filled out my skin as well (laughing). The weights have been fantastic but it's the health benefits that come along with it.

Another result relevant to our older adult's everyday life was the significant increase in muscular strength gained during the eight-week study. However, the translation of that strength into improvements in such things as lifting and moving heavy household objects, gardening and grocery shopping all had noticeably improved in this cohort. An improved functional ability came as a surprise to our older adults as they have been told and fully expected to get weaker (not stronger) as they got older.

Most of us are quite a bit stronger [as a result of the intervention], lifting a chair up, and all these other things, as we get a bit older, you generally lose your fitness and strength.

As a result of their improved strength and functional ability, our older adults had a new found confidence, a feeling not experienced in some time for some – 'I feel more confident, I can lift that, and I've been shifting some damn heavy boxes that I never would have touched a couple years ago and I did.'

Our oldest female participant (75 years old), an avid gardener and traveller describes, 'I feel stronger in the garden, lifting heavy pots and all my tools. Lugging heavy cases while travelling is so much easier too.'

It appeared that the intervention also improved chronic injuries. One participant who suffered chronic low back pain commented,

[The training intervention] improved your overall wellbeing. That you feel better all around, even more cheerful, as well as enjoying life more because you haven't got aches and pains. You just felt good about coming and doing it. It wasn't 'oh no, I have to go to the gym today.'

With another noting that prior injuries appeared to improve,

I'm a jogger, for 10-15 years I've been troubled with Achilles and calf problems, and since I've been doing this [training intervention], I have had no issues, absolutely no issues.

Our study also showed significant improvements when descending stairs (Gluchowski et al. 2017), a common activity required for independent living. 'Going down the stairs, I can instantly adjust and stop myself from falling.' In fact, one married couple in the study took their stair navigation confidence to 'the extreme' and tackled what is known as the 'Devil's staircase.'

I booked to do the Tongariro crossing, the only time we could do it was half way through the program, I think she, my wife [who is also a part of the training intervention] would still be up there if we hadn't done this program. It's 36,000 steps, on 300 flights of stairs, that's just the ones you go up. We just did it, it was hard but we did it.

Accountability to the cause

An unexpected cause of motivation to participate in the training intervention emerged through our discussions. When asked for a reason behind consenting to our exercise intervention, our older adults spoke how they felt the need to 'give back'.

This [training intervention] was an opportunity to give something back, [the trainer] was here to do a study and research and with a view to getting her PhD. I thought 'well, why not give something back?' And that was my main motivation to get in at the start of it and for me it seems to have gone on forever, I've enjoyed it.

Another participant confirms,

I was very conscious I wasn't there for myself, it was research, and we were participants in that research, if there was some benefit out of it, then fantastic. I was surprised as a guinea pig, how beneficial it ended up being, and how personal it did become, so I have found it a fantastic experience. To be part of something. I found it fantastic.

Several other participants confirmed that 'giving back' was their main motivation to initial participation, 'it looked so interesting, you want to help people do these studies well and it's a two-way thing' and 'the fact that she's doing PhD, I want to help her.' Finally, 'anything to help students, and I wanted a challenge'.

Participants felt that continued assessment and reporting of their results would be a major factor in keeping them coming back to the gym. Again, most women discussed being motivated with continued body composition assessment. The men were more motivated by having their strength continuously measured and compared to their previous value(s). One woman commented that a promise of further regular and appropriate assessments would keep her optimally motivated to adhere to any future training schedule,

I'd like to be measured again at the end of the next eight weeks, the measurement part is a huge motivator, puts meaning into what we are doing every day ... having a professional to measure us and encourage us, but we knew it was up to us. Having everything measured, it made more sense. Can see the logic in it, not meaningless exercise.

One gentleman, who visibly struggled to get up for the early morning sessions even used our assessments as motivation to continue to force himself out of bed on those early mornings, 'regular check ups [motivate me], knowing that I will have another performance measurement in 2 or 3 weeks, I feel obligated to train regularly.'

Thereafter, motivation shifted into a compelling sense of accountability and commitment to the other group members. One avid jogger in the group uses jogging as an analogy, 'If you go for a jog on your own, you'll take shortcuts if you've had enough. It's that phrase 'any obligation to yourself you'll break, any obligation to others you'll fulfill'.

Another participant simply states, 'with social groups, you feel a commitment to turn up. They will be there if we are there. They are doing what we are doing.' While another comments, 'I found coming to the class, even if there's not much talk, just doing it with a group, it's an extra bit of commitment to make sure you get there.'

The sense of commitment our older adults had towards their peers was also directed towards their trainer. Their commitment to the trainer however, does seem to be connected to our first theme, indicating their commitment is correlated with the trainer's personality, '[our trainer] has a manner that encourages you to be there.' Another commented that 'We're keen to do better, and improve on yourself, to please her.'

Craving challenge and savouring success

During our discussions, participants reported a feeling of disappointment knowing they had not reached this level of success sooner. Some of our participants admitted that, in hindsight, they didn't push themselves sufficiently and had become quite complacent with their training.

I found what we've done in the research, it's much more effective. I joined gyms all my life, but that initial workout you were given, it's almost like [personal trainers] don't expect too much from you. I was throwing 2, 3 kilos around and not making much difference. It's quite light, and you get bored. This program pushed me to test my own strength ... I surprised myself; I've always been athletic, from a fit healthy family. I had cancer and after chemo and

radiation, my strength disappeared, and thought 'I guess I'm just old now.' They tell you to exercise, but you're so exhausted. I've rebuilt my health, having this program, to realize I can get a level of strength back, that I don't even think I had before the cancer, it's been really amazing and encouraging.

Another participant confirms his complacency when training with his long-time personal trainer,

Having done weight training for 10 years, I wanted to see if what I was doing was the best that I can do, because you get apathetic, with doing the same thing all the time, and over the course you get an injury and stop doing that, stop doing that and then to come along and get the enthusiasm [trainer] puts into it.

Another participant, also with a longstanding personal trainer, confirms her craving for a more challenging programme,

You don't want to be on lots of machines, you want to be on stuff that challenges you. The free weights nearly killed me and I consider myself strong but it's the [tempo].

In the end, our challenging programme led to an increased sense of pride and accomplishment,

[Our trainer] said, I haven't got any more weights, so she [increased the range of motion on the leg press] to make it harder for me. I was bringing down over 510 kg or something like that.

Our participants were quite fond of the strict and challenging programme, 'we had to exercise to a tempo, 4 [sets] of 10 [repetitions], it was very ridged, but it was good,' 'I actually look forward to those sessions, even though they're hard work.' The challenge afforded by the intervention appeared to be related to competitiveness as well,

We, myself and one other gentlemen in the study, both pushed more weight than the leg press could hold. I had to then lift the weight with two legs, and lower with one, it was torture. But come to the last training session, I did the full sets. [Our trainer] always asked how many [more repetitions] you can do, instead of saying I could do two more [repetitions], I did them. I improved incredibly.

Issues of ageism, both covertly and overtly, were evident from our discussions and presented quite a different form of challenge for our high functioning older adults. During the study, participants had begun to bring cameras to take 'evidence' of what they had accomplished to prove to their family and friends who were sceptical of their results.

I didn't expect changes because of what I was already doing [at the gym]. We ran out of room on the leg press for more weights. We had to take a photo! There was no way my sons would believe me. My sons said, literally, 'there's no way Mom you could push that weight!'

Even participants themselves were in disbelief of the loads they were moving. One participant (67 years old), who had worked with the same personal trainer for over 10 years, went back to his trainer's notes and found he lifted more during our intervention than he had when he was a decade younger.

Having done weight training for a number of years, we went back to our trainer, the interesting thing is that he pulled out what I was leg pressing 10 years ago, which was 115 kg and on Wednesday I did 340 kg.

More overtly, from the very beginning, it quickly became apparent that some participants were greatly offended with the use of words such as 'ageing' and 'old.' 'Elderly' gathered responses akin to profanity. Some participants even alluded to the fact that they had second thoughts about participating in a research intervention in which those terms were used. One woman (66 years old) was particularly offended,

What's wrong with [just] saying 60 plus? Cause that's what we are. When you say 'elderly', [our trainer] is fighting that much more to bring us in [to participate in the training intervention]. Don't call us 'elderly'; I find that quite insulting, demeaning. In our heads we are still 20.

Exercise environment

Our participants enjoyed how our training intervention was carried out in small groups (1–6 participants) rather than one-on-one or with a much larger group. As previously discussed, group training led to a feeling of accountability and commitment to the group as well as to the trainer. Thus, our small group training provided extra motivation our cohort may not have felt or experienced if the training sessions were one-on-one. On the other hand, some participants who never had the luxury of affording

a personal trainer loved the attention of small group training, 'I've never had a personal trainer, I felt like I had one with such a small group.'

In addition to the small group, our participants enjoyed training with the same group each week over the eight-week intervention. This small group dynamic not only caused strong feelings of accountability, commitment and motivation but also made the challenging sessions a little more appealing, 'I find [training] incredibly boring [by myself], but when you're doing it with 3 or 4 other people, the hour goes like that.' A number of participants expressed similar feelings, 'if there's a social aspect, [training's] not the same chore.' These feelings are further enhanced when the group possesses a similar enthusiasm for exercise, 'it's a huge part, I'd be long gone if it wasn't social. We've had a lot of fun. [Our trainer] has a wonderful sense of humour.' Another participant echoes, 'the social thing in our lives is important. [Training] has to have an element of enjoyment.'

On the other hand, the oldest gentleman in our study was previously a member of a large group programme and provides his perspective,

I think [a large, local program for older adults] err on the side of caution far more than what we've been doing [in the training intervention]. We have been monitored [during the training intervention], therefore we could do more, we could challenge ourselves more, because of our situation [small group lead by an experienced trainer]. Whereas [with the large program] there are so many people, the programs are on the cautious side.

Finally, the dedicated training environment provided to our participants was found to be a key feature of the programme. One participant simply stated, 'the area was a luxury.' Having their own training space with equipment they were familiar with, without music or other users was a certain advantage. One of our female participant confirms, 'having that gym to ourselves makes a difference also, you don't have 20 year olds watching. Was such a relief to get away from the grunting and groaning.'

Discussion

As a result of our small group discussions with 21 older adults following a very heavy load resistance training intervention, five themes emerged: 'Expert Enthusiastic Instructors', 'Appropriate Assessments for Real Life Results', 'Craving Challenge and Savouring Success', 'Accountability To A Cause' and 'Exercise Environment'. Of the five themes, the trainer's characteristics appeared to be the most regularly cited factor contributing to satisfaction and subsequently adherence to our eight-week resistance training intervention. For real world, sustainability purposes, exercise programmes for older adults have been recently leaning towards sessions that are led by a peer (Modra and Black 1999). In a 2010 study, moderately active participants were intentionally paired up with a student volunteer to complete a resistance training intervention (Dionigi and Lyons 2010). Those older adult participants noted that they 'needed young people around them.... because [older adults] put confines on themselves and young people get them away from that.' Despite this, the age of our trainer was never mentioned in our group discussions. Instead, we can confirm that the presence of a trainer who has the personality to push, encourage and motivate older adults out of their 'confines' is key to exercise satisfaction. In addition, as discussed and corroborated by Bundon, Clarke, and Miller (2011), there is also value in having a trainer who is an expert in effective resistance training modalities and assessment strategies specifically targeted for strength and functional capacity adaptation (Bundon, Clarke, and Miller 2011). Furthermore, in a study that recruited older adults with a varying level of physical activity, a theme entitled 'factors that support sustainability of physical exercise' was related closely to the findings in our study (Janssen and Stube 2014). One sub-theme in particular from that study also indicated personable and expert trainers as vital for exercise adherence (Janssen and Stube 2014). One participant indicated that their ideal trainer needs to be an 'excitable person ... and a likable person who makes exercise fun' and another, similar to our findings, listed the importance of the opportunity to learn about physical activity (Janssen and Stube 2014). Having an expert trainer seems particularly important when working with older adults living with health conditions, such as osteoarthritis (Fisken et al. 2016). As one older participant from Fisken et al. (2016) states, 'Perhaps it could be recommended within this study that aqua-aerobics instructors be more attuned to older people and their needs ... or specific ones that will help people with arthritis.'

The negative connotations surrounding the ageing discourse can be challenged with the encouragement of a supportive trainer, as the last quote in our theme 'Expert, Enthusiastic Instructors' demonstrates. Self-perception, especially exercise-identity and thus, well-being, has been shown to be driven by external factors (that is, by society or by a trainer) (Whaley and Ebbeck 2002). Much of our society still subscribes to the notion that ageing is implicitly degenerative, yet, our trainer does not. Additionally, the first quote in our theme 'Craving Challenge and Savouring Success' left our participant with feelings of inadequacy when she previously tried to challenge this degenerative discourse. Unfortunately, these attempts went unsupported by her previous trainers. Trainers that nurture positive self-schemas for exercise, foster a greater sense of self-determination, feelings of competence (Cross and Markus 1994), autonomy and perhaps adherence. Alternatively, it is possible that our participants have adhered to such an intense training programme simply to rebel against societies degenerative expectations.

In a study by Dionigi and Cannon (2009), healthy and moderately active yet previously untrained older adults ($n = 9$) provided many similar insights following a resistance training intervention to those found in our study, especially surrounding our second theme, 'Appropriate Assessments for Real Life Results.' Their untrained participants were surprised by their strength gain for reasons also found in our trained participants (because both set of participants were physically active, they doubted they could increase their strength any further). Dionigi and Cannon (2009) also noted that their participants doubted they could increase their strength because of their advanced age. It is at these critical moments of uncertainty and insecurity that trainers must instil a sense of confidence in abilities, rather than limit the older adult any further. It is unacceptable that chronological age remains a barrier that older adults cite for their lack of physical activity (Grant 2008). Nevertheless, similarities between the studies included the increase in strength that translated to performing every day activities with greater ease, improved energy, confidence, increased motivation and resulted in a strong sense of achievement (Dionigi and Cannon 2009). As the benefits of exercise for older adults become increasingly convincing, more and more adults are looking to maintain their exercise programmes as they age. As our older adult population is rapidly increasing, it is important to continue to enable this active cohort by instilling confidence and providing effective and relevant exercise programming that maximises long term adherence.

Importantly, even older adults reporting a high quality of life prior to training, found benefits from resistance training (Dionigi and Cannon 2009). Dionigi and Cannon (2009) also notes that positive strength and body composition changes contribute to increased self-esteem. Increased self-esteem in turn, motivated many to continue training independently following their study (Dionigi and Cannon 2009). We also had several participants mention an increase in confidence during our group discussions and even more continued training with our author in a small group setting following the conclusion of data collection. Thus, improved self-esteem via physical changes seems to be a contributing factor to continued exercise adherence. Continued adherence, in turn, allows older adults to extend their disability-free life expectancy (Bélanger et al. 2002). Extending the years spent functionally independent allow older adults to continue to pursue activities of enjoyment which improves overall quality of life and reduces the risk of depression and loneliness (Aartsen and Jylhä 2011).

In a study by Janssen and Stube (2014), participants support our conjecture of providing an exercise programme that is challenging yet achievable; exercise that is not so easy as to be boring but not so hard as to be frustrating. Masters cyclists take our theme 'Craving Challenge and Savouring Success' to the upmost level of competition, 'You have to test yourself a smidgeon every now and then and I guess I'm not afraid to test it more than a smidgeon (Appleby and Dieffenbach 2016).' Exercise programmes offering insufficient vigorous options have even been cited as a barrier to adherence amongst a female cohort in their early 1970s (Biedenweg et al. 2013). Our research contributes to this body of evidence suggesting prescription of challenging programming for able-bodied cohorts through both our unusually high adherence rate and our qualitative findings presented here. However, older adults with osteoarthritis found that aqua exercise was too challenging and thus, cited it as a barrier to continued adherence, 'I found it was going too fast for me and I didn't like that, I couldn't keep up (Fisken et al. 2016).' Of course, practitioners need to be wary of the capabilities of their particular cohort, as either end of the challenge spectrum may lead to cessation of exercise adherence.

In an endorsement of our 'Accountability to a Cause' theme, a study by Biedenweg et al. (2013) found that exercise programmes promoting accountability were one of the most frequently cited motivating factors for exercise participation. One participant justified, 'I can exercise in the living room easily but I'm also not very disciplined ... so, yes, having a class that you had to go to...' (Biedenweg et al. 2013). Masters cyclists also feel the need to have coach and team for continued training adherence,

If I didn't have a team, I don't know if I would have been racing this long. To be an unattached rider and not have camaraderie and friends as a team and just go to a race by myself, I don't think I'd be doing this (Appleby and Dieffenbach 2016).

Thus, it seems exercise adherence is strongest when older adults are held accountable to their trainer, peers or team. Conversely, one-on-one and home-based programmes remain suboptimal for long-term exercise adherence (Simek, McPhate, and Haines 2012).

Suggestions on how to optimally market exercise programmes to older adults have mentioned and confirm our results described in the 'Exercise Environment' theme. Older adults prefer to have a place and time when the gym is opened only to their cohort (Biedenweg et al. 2013; Fiskén et al. 2016). Additionally, group exercise has been identified as an important motivational factor for continued exercise adherence in several studies, including ours, with cohorts ranging from healthy yet sedentary, older adults with morbidity, to masters athletes (Biedenweg et al. 2013; Appleby and Dieffenbach 2016; Fiskén et al. 2016). Group exercise has also been shown to increase self-efficacy, which related to increased positive feelings of well-being while simultaneously decreasing psychological stress (McAuley et al. 2000). Our research contributes to this body of evidence indicting small group training (2–6 people) leads to high levels of motivation and adherence (Gluchowski et al. 2017). Exercising alone, on the other hand, was shown to significantly decrease feelings of well-being while increasing psychological distress (McAuley et al. 2000).

Our study adds to the growing body of literature on the keys to exercise satisfaction by extending the previous findings from active yet untrained older adults to our cohort of high functioning, resistance-trained older adults. Our results intensify the evidence in areas such as prescribing and performing challenging programming in small groups rather than prescribing less challenging programmes to complete either one-on-one with the trainer, or even worse still, alone. Interestingly, in our study, the modality of resistance exercise (in our case, traditional, eccentric only and eccentrically biased) did not seem to play a critical role in the perceived benefit of resistance training or continued adherence. That is, adherence was maintained equally across all three of our investigated modalities (94%) (Gluchowski et al. 2017). Findings from our study and that of Dionigi and Cannon (2009) suggest that active older adults are motivated to exercise and perceive many of the same benefits regardless of previous training status.

Limitations

The recruitment of a small sample of high functioning, resistance-trained older adults somewhat limits the statistical probabilistic generalisation of these findings, but it does not limit the naturalistic generalisability for those older adults who have also experienced very heavy load training (Smith 2018). In addition, this study may even provide inferential generalisation (or transferability) to practitioners who may wish to apply this research and its findings to their own practice (Smith 2018). It is also possible that the insights and perspectives described in this study would vary considerably if we would have recruited an untrained or clinical population into our intense, highly structured, very heavy load exercise intervention. However, Dionigi and Cannon (2009) revealed similar insights and perspectives to a training intervention with their untrained yet moderately active participants (Dionigi and Cannon 2009). It is also possible that our participants felt uncomfortable with disclosing more intimate or negative details regarding their participation in the study, perhaps due to the close relationship that developed between themselves and the lead researcher (who was also their trainer). As with qualitative research, the interviewers and authors own backgrounds and worldviews may influence the collection and interpretation of data. However, as discussed, our methods were selected to reduce researcher bias

and our results have been supported by several previous investigations (Dionigi and Cannon 2009; Dionigi and Lyons 2010; Bundon, Clarke, and Miller 2011; Franke et al. 2013; Janssen and Stube 2014).

Implications

Because exercise is most effective when performed regularly, it is important to identify prior to designing an initiative, the factors which influence adherence to and relevance of prescribed training programmes. Thus, the following points are summarised from our results as practical suggestions and considerations for trainers and coaches working with older populations.

- The characteristics of a trainer appear to be of upmost importance to older adults. It is important that the trainer is an expert in the field of active ageing and who is able to push them past their comfort zone.
- Use evidence-based exercise prescription. When older adults have experience in resistance exercise, continue to challenge them and despite the importance of safe training practices, don't avoid going heavy simply because of their chronological age.
- Fitness assessments are key for recruiting, motivating and encouraging continued adherence. Older adults, like every other age group, want to see positive outcomes as a result of their effort, whether improved strength, functional capacity, body composition or blood biomarkers.
- Keep goals connected to activities that are relevant to everyday life. Make the connection between strength and function, functional ability and independence, body composition and health, and health and quality of life.
- Most enjoy the social aspects of exercise, so look for opportunities to train in small groups (ideally, two to six participants per trainer).
- Use a strength-based approach that highlights the capabilities and potential of the individual rather than the perceived barriers or weaknesses associated with older age. This includes doing too much for participants (setting up equipment), prescribing significant restrictions in their training without reasonable cause or explanation or simply naming your programme using 'offensive' wording such as 'exercise for the elderly.' It is necessary that researchers and trainers be cognizant of both their verbal and non-verbal communication.

Conclusion

During the reading and re-reading of the verbatim transcripts, our author and trainer rediscovered much of what participants had informally discussed with her during the training sessions. The themes presented here provide a deeper understanding of the thoughts and perspectives from older adults on participating in an intense, very heavy load resistance training programme. We identified a few key factors that keep high functioning, resistance-trained older adults satisfied with their exercise programme; factors which likely contribute to long-term exercise adherence. The findings from this study provide researchers and practitioners with important factors to consider when designing and implementing very heavy load training programmes for older adults. This study, alongside our quantitative study (Gluchowski et al. 2017), may also be used to directly inform older adults of the multitude of benefits of very heavy load training.

Disclosure statement

No potential conflict of interest was reported by the authors.

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