

## **Factors Promoting and Inhibiting Exercise for Older Women in Kyoto, Japan**

**Lay Summary:** What are the motivators and barriers for older women in Japan to stay physically active? The main objective of this research was to explore promoting and inhibiting factors of exercise among older women in Kyoto, Japan to seek effective strategies for exercise promotion. A questionnaire prior to interview identified current physical activity, exercise, and “possible selves”, which was expected to provide insight into the conceptual link between individuals’ cognition and motivation related to exercise behavior. Beside well-known factors that promote or inhibit exercise such as social factors, physical factors and belief toward exercise, unexpected factors that seem strongly related to aging and the nature of the collective culture in Japan were identified. The unique factors encapsulated in the category of {altruism} emerged as the dominant barrier to exercise. In contrast, {egoism} emerged as an important facilitator of exercise. In conclusion, it may be possible to suggest that interlinking of the role of mother, wife, daughter or grandmother into exercise and its promotion may be beneficial for women aged 65 and above in Kyoto city. To generalize recommendations made, further research is required with a larger sample size and geographical spread. Furthermore, outcomes may differ depending on the cultural background, generations and gender studied.

**Abstract:** The main objective of this research was to explore promoting and inhibiting factors of exercise among older women in Kyoto, Japan to seek effective strategies for exercise promotion. More specifically, this research aimed to explore the role of possible selves, which can influence the current view of self and act as an incentive for future behavior, as a facilitator and/or barrier to exercise. Data was collected using

semi-structured questionnaires and in-depth interviews among women aged 65 and above in Kyoto city through snowball sampling from August to September, 2018. Transcripts including non-verbal communication were analyzed using thematic analysis, then were summarized into a conceptual model. This research revealed a wide range of factors that promote or inhibit exercise. Beside well-known factors such as social factors, physical factors and beliefs about exercise, unexpected factors that seem strongly related to culture and aging in Japan were identified. The unique factors encapsulated in the category of {altruism} emerged as the significant barrier to exercise. In contrast, {egoism} emerged as an important facilitator of exercise. In conclusion, it may be possible to suggest that integrating the role of mother, wife, daughter or grandmother into exercise and its promotion may be beneficial for women aged 65 and above in Kyoto city. To generalize recommendations made, further research is required with larger sample size and geographical area. Furthermore, findings may differ depending on the cultural background, generations and gender studied.

## 1. Introduction

The increasing aging population has become a growing global concern (Beaudart, Rizzoli, Bruyère, Reginster, & Biver, 2014; World Health Organization, 2007). The well-established source of concern is a range of health problems associated with aging such as sarcopenia, diabetes, depression, and dementia (Beaudart et al., 2014; World Health Organization, 2021). In such an aging society, women live longer, but in poor health and are expected to have longer length of life with disability than men (Promotion committee of 11<sup>th</sup> Health Japan 21, 2018). Among older women, falling, fracture and age-related atrophy account for a high percentage of the causes of disability (Cabinet office, 2018). Previous research has shown that exercise is effective for the prevention and treatment for such age-related health problems (Santilli et al., 2014; World Health Organization, 2021). There is a range of exercise promotion activities with an emphasis on frailty or fall prevention (Consumer affairs agency, 2020; Kobayashi, 2008; Nakamura, 2020; Shimada, 2015; Tipness, n.d.; Oishi, 2014). For example, it is commonly accepted to hear terms, “Kaigo-Yobou”, “Tento-Yobou”, and “Ninchisho-Yobou” in exercise promotion targeting older adults in Japan. “Yobou” means prevention. “Kaigo” means provision of care for those who have difficulties in daily activities such as bathing, toileting, and eating due to mental or physical conditions. “Tento” refers to falling. “Ninchisho” indicates dementia. As is evident, these terms convey a somewhat negative image about aging itself. Some studies claimed that older adults have difficulty accepting and/or engaging in exercise promotions with an emphasis on fall prevention (Simpson, Darwin & Marsh, 2003; Yardley, Donovan-Hall, Francis & Todd, 2006). One of the documented reasons is that exercise promotion based on preventing fall is perceived as a threat to their identity and autonomy (Yardley et al., 2006): the perception that falling happens only

to physically weak individuals and frail “elderly”, conflicts with older adults’ self-image. This suggests the importance of current self-image and potential future image of self in exercise promotion. However, there is limited understanding of how current and future self-image in Japanese older adults is related to their physical activity. Thus, despite a large body of research exploring strategies for exercise promotion and behavioral change in Japanese older adults (Aoki, 2012; Ota, Ninoyama & Sakano, 2014; Shimazaki, 2012; Sudo, 2008) research into exercise promotion for older adults that makes use of self-image is much needed.

In contrast, research in other countries has explored exercise promotion based on self-image, utilizing the concept of “possible selves” (Ouellette, Hessling, Gibbons, Reis-Bergan & Gerrard, 2005; Perras, Strachan, & Fortier, 2016; Whaley, 2003). Possible selves derive from the representation of self in the past and future, reflecting specific, individually significant hopes (hoped-for self) and fears (feared self). Of note, research with older adults has revealed that individuals who had a negative view of their potential future and of ageing, and who expressed feared possible selves, avoided behaviours and situations, like physical activity, that contribute to positive ageing, whereas those expressing hoped-for selves were likely to engage in such behaviours (Hoppmann et al., 2007). These findings corroborate earlier evidence that older adults’ level of expectation for their future-selves was positively associated with physical activity engagement (Sarkisian et al., 2005). Findings also indicate that older adults might also reduce their participation in strenuous physical activities that they perceive to be inaccessible to them if they have negative expectations about ageing in relation to physical health (Meisner et al., 2013).

Although possible selves can be individualized or personalized, they are derived from the categories created by an individual's sociocultural and historical context and social experience. Thus, possible selves offer a meaningful way to conceptualize the self-image that may be associated with exercise and physical activity behavior in Japanese older adults. With a unique sociocultural, historical background and context, exploring possible selves in Japan will be beneficial by revealing not only the constructive nature of self, but also the socially determined and constrained self (Markus & Nurius, 1989) within this culture. Despite the potential contribution, current studies on possible selves in Japan are mainly conducted in the field of psychology (Irie, 2011; Miyamoto, Nakada & Horino, 1994), rather than in the field of health promotion and exercise. Thus, understanding of possible selves in a Japanese context, especially in the field of health promotion, could help to create strategies for socially and culturally specific health and exercise promotion in Japan. Therefore, this study was conducted to explore the factors, with a focus on possible selves, that promote or inhibit exercise among women aged 65 and above in Kyoto. This study is expected to improve the current practice on exercise promotion and health education among Japanese older women in Kyoto.

## **2. Objective**

The main objective was to explore promoting and inhibiting factors of exercise among women aged 65 and above in Kyoto city. More specifically, this study aimed to explore the role of possible selves as a facilitator and/or barrier to exercise.

## **3. Operational definitions**

Physical Activity:

“Any bodily movement produced by skeletal muscle that requires more energy expenditure” (WHO, 2019) than resting state (Ministry of health, labor and welfare, 2013).

Exercise:

Physical activity that is planned and repeated for the purpose of improving or maintaining physical fitness and overall health (Ministry of health, labor and welfare, 2013).

## **4. Method**

### **4-1. Study design**

This was a qualitative study employing in-depth interviews guided by a semi-structured questionnaire. The duration of each interview was about 1 hour.

### **4-2. Target population and study setting**

The population of interest was Japanese women aged 65 and above. It is commonly accepted that older adults are defined as individuals older than 65 (Kameoka, 2014; WHO, 2002; The Japan Geriatric Society, 2017). Moreover, most recommendations for exercise targeting older adults are usually for those who are older than 65 (WHO, 2019; Ministry of health, labor and welfare, 2013). Due to the nature of qualitative research, the target population was limited to women living in Kyoto city at the time of the study. Only those who were able to understand and answer the questionnaires (appendix 1 and 2) by themselves were asked to proceed to the interview. Interviews were conducted at the participants' homes or in cafés based on their requests. There were no participants excluded at the time of interview.

### **4-3. Sampling method and sample size**

Participants were recruited through snowball sampling. Sampling was conducted until theoretical saturation was reached, where contents of narratives repeated the same codes and themes overlapped with the existing narratives. The interviews were conducted at an appointed date or on the same day of recruitment, depending on the participants' preferences. Participants were recruited via six individuals introduced from faculty members and students. Those six individuals introduced other participants who were eligible for study inclusion to start the snowball sampling. Within the six, three were staff at the local cafés and restaurants, two were organizers of volunteer works, and one was a member of staff in a local pharmacy. Four of the six individuals only participated as mediators because they did not meet the age criterion of this study.

#### **4-4. Data collection and measures**

A semi-structured questionnaire (appendix 3) was used to collect the following information: current living ward; age; past and current exercise; and hoped-for self. The interview guide was developed based on the results of informal interviews as shown in Table 1. The order of questions was altered to accommodate the natural flow of the conversation. After the interview, height, weight, BMI, body composition (fat/muscle mass) and hand grip strength were measured. Data collections were carried out from August to September 2018.

#### **4-5. Data Analysis**

Transcripts with non-verbal communication were analyzed as shown in Table 2 (Kihara & Kihara, 2012; Nowell, Norris, White & Moules, 2017). Codes were initially generated by the first author and then reviewed by co-authors

acting as critical friends to interrogate the codes and their link to the data thus using triangulation to review the interpretation and analysis.

## **5. Ethical Considerations**

This study was granted ethical clearance. All the participants provided a signed informed consent form after they received a detailed explanation of the study. A letter of retraction was distributed with an informed consent form. At the submission of a signed informed consent, participants were informed that a letter of retraction could be submitted if they wished to opt out. Before the interview, an interviewer asked if the contents of the informed consent were understood well and explained that the interview session could be terminated whenever they requested. All the documents and data were identified by the participant's ID including an informed consent form and a letter of retraction to ensure that no personally identifiable information such as name was recorded to preserve anonymity. Participants were asked to safely store a participant ID form, which would be necessarily to delete data should they so request.

## **6. Results**

### **6-1. Characteristics of Participants**

In total, 42 participants in Kyoto city were included in this study and fully contributed data from the interviews. The age of participants ranged from 65 to 84 years (Table 3). Participants were from both the city and mountain areas in Kyoto city, including five wards as follows: 23 from Sakyo, 15 from Ukyo, two from Nakagyo, one from Kita, and one from Shimogyo.

32 participants reported that they exercise although the types and amount of exercise varied largely. 16 participants had hand grip strengths of less than 18kg, which is one of the cutoff values for the diagnosis for



sarcopenia by the Asian Working Group for Sarcopenia (AWGS). Among the 16 individuals, eight of them had a muscle mass of less than 5.7kg/m<sup>2</sup>, indicating atrophy of skeletal muscle.

Participants either grew up in Kyoto or came to Kyoto at a young age, following their husbands. Kyoto is a historically and culturally significant area of Japan as it has been the political and cultural center until the central function were moved to Tokyo in 1869 (National Archives of Japan,2014). Not only was Kyoto globally well-known for its collective culture, but also Kyoto was domestically well-known for its old-fashioned, conservative, closed, and collective society until recently. These stereotypical characteristics may often be reflected in the characteristics of the citizens as well. Although such stereotypes may be less prevalent nowadays, a publication from by the local newspaper company in 1976, when the participants were in their 20s to 40s, asserted that “women in Kyoto maintained the beautiful and vivid afterglow of good old-fashioned Japanese women that modernized Japan has forgotten (Kyoto Shimbun,1976).” The characteristics of older citizens in Kyoto, or more exactly the participants, may represent those living in this collective culture.

## **6-2. Themes, categories, and codes generated from the data**

After each interview was transcribed by the interviewer, interpretation of non-verbal communication was added, such as tone of voice, and fluency or hesitation of answer. Then, the recurring key words and themes among participants were highlighted to create codes. Once codes and sub-categories were identified, a co-author reviewed the transcript to input her interpretation of potential codes and sub-categories as a critical friend. In the next step, similar concepts were combined to create categories, and a conceptual diagram

of how the codes, sub-categories, and categories were related to each other. As a part of the triangulation process, each narrative in a code was tagged to indicate if the participant was a member of the exercise or non-exercise group. This allowed the researchers to identify trends in codes depending on exercise status. Furthermore, the quantitative data such as amount of exercise, and physical strength were reviewed as additional information. Although Table 4 displays six linear steps of the analysis procedure, the process was rather more complicated, using an iterative approach that involved constant comparison of codes with interview quotations by returning to the previous steps to check and review codes in, beginning the process as required. As the result, two themes, four categories with twelve sub-categories and thirty-four codes were identified ~~emerged~~ from the analysis. Additional feedback regarding the codes identified was provided by other researchers who were not involved in the research. Each category is explained along with the associated codes in the order they are presented in the table. The categories and other remarks are notated as follows: Category with { }, code with <sup>(number)</sup>, narration with “ ”, and participant’s ID code with <# >. Due to the limited space, each code will be illustrated with only one quote from the participants. In this study, the term “altruism” is used to describe general selfless concern and actions for the well-being of other, (others-centered mindset), while “egoism” is used to describe general concern and actions focusing on one’s own interest (self-centered mindset). Therefore, the terms do not infer neither positive, negative sense, nor moral judgement.

### **Theme 1: Inhibiting factors of exercise**

**{Altruism: Acceptance of expected Altruism}**

Most of the participants endorsed their <sup>(1)</sup> **expected role and duty** as a mother, wife, daughter or grandmother. The task usually included housework and provision of care to family members. There was a sense of guilt and hesitancy from participants to use their time or money for exercise, recognizing that it might deviate them from their role and duty. Their willingness to talk about how much they have contributed and fulfilled their role (<sup>(2)</sup> **execution of duty**) during the interviews reflected not only on how much importance they attributed to their role and duty, but also showed their need for approval and acknowledgement for their role (<sup>(2)</sup> **esteem needs**) from others, including interviewers. This illustrated that the role is also accepted as a socially desired role.

(1) *“I need to do more housework like cooking and cleaning...my husband also tells me that.”* ⟨#22: Age70⟩ (2) *“I had hard time, taking care of everything when my father was sick. But then, my brothers appreciate it, saying that they did not have to do anything because of me. I’ve never asked (them or) their wives for help.”* ⟨#16: Age72⟩

### **{Altruism: Altruistic-self}**

Many participants <sup>(3)</sup> **prioritized their role and duty as mother, wife, daughter or grandmother** over exercise. Even when they were asked to describe their hoped-for self, many had difficulty to describe any image of themselves. Some even claimed that they have already completed their role already, and there is nothing more they could contemplate. Such altruistic-self was narrated with <sup>(4)</sup> **pride to fulfill the role** and the <sup>(6)</sup> **denial of an egoistic self-image**. Prioritizing themselves, even if it is for exercise to maintain their own health, was perceived as a selfish act. Altruistic-self, others-centered-self,

emerged as a great part of their self-image, and was also related to their <sup>(5)</sup>  
**hesitation to ask for help** (for exercise).

**(3)(4)** *“I could not go anywhere when I lived with children, of course not. No way a mother goes play around like that, as a responsible mother.”* ⟨#4: Age69⟩

**(5)** *“I will quit if I will need assists from others, being held my hands*

*and such.”* ⟨#13: 67⟩ **(6)** *“I don’t want to spend money for myself. I prefer*

*buying something for children then. It seems that I don’t need to treat myself*

*nicely.”* ⟨#20: Age75⟩

### **{Altruism: Altruistic behavior}**

Altruistic-self as a barrier to exercise was not merely limited to the ideal image of self, but also reinforced by circumstances such as caregiving needs due to sickness in the household or simply by the desire of not obstructing the younger generation. This is exemplified in the following codes and quotes: <sup>(7)</sup>  
**lifestyle adjusted to husband**, <sup>(8)</sup> **physical and mental restriction caused by nursing family members** and <sup>(9)</sup> **care for younger generations**.

**(7)** *“My husband had been sick for a long time, so I could not go out to take a walk...Now my pace became even slower since I had been walking with him,*

*adjusting to his pace...also, the first year after his death, I need to follow some rules, avoiding shrines for example.”* ⟨#32: Age76⟩ **(8)** *“My husband needs*

*assistance in daily activity. He is at home always, other than 2 times a week to go to daycare...He requires a lot of help, so I cannot do anything else.”* ⟨#37: Age77⟩

**(9)** *“They are younger than me. I don’t want to slow them down...I will feel bad if they have to go with me.”* ⟨#27: Age78⟩

### **{Other inhibiting factors: Belief}**

There are mainly four beliefs that emerged as barriers to exercise. First, there was a <sup>(10)</sup> **lack of confidence in exercise**, which was nurtured by negative memories that they kept from physical education classes. Second, participants who do not exercise sufficiently had <sup>(11)</sup> **misconceptions about exercise and the prevention of sarcopenia**, believing that daily activity should be enough to prevent sarcopenia or falling. Third, when they were asked about the feasibility of achieving their hoped-for self or to avoiding their feared self, they referred to their <sup>(12)</sup> **mother's lifespan/illness** being <sup>(12)</sup> **optimistic/pessimistic**. Such beliefs prevented them from starting exercise. Finally, some believed that their <sup>(13)</sup> **current health condition could not improve** because of their advanced age.

**(10)** *"I'm so bad at exercise...my grade of Physical Education (was bad in school). I have inferior complex for exercise."* <#8: Age69> **(11)** *"If I go outside, then it should be good enough as exercise, right? I also have chance to talk to people then."* <#1: Age80> **(12)** *"My parents passed away young, like 42...I'm already much older than them. So, I'm not afraid to die."* <#15: Age 75> **(13)** *"I'm fine, that's age-appropriate way. It (physical condition) goes down."* <#40: Age78>

**{Other inhibiting factors: Social factors}**

<sup>(14)</sup> **Pessimism derived from friends' sickness/death** and <sup>(15)</sup> **decreased human connection** were a barrier to not only exercise, but also to other activities.

**(14)** *"I would want to go to mountain, but everyone in our group is old now. Some say leg hurts, back hurts, and the other say we cannot climb mountain*

anymore.” ⟨#31: Age73⟩ **(15)** “The person who used to organize our group trip passed away, so now we don’t go travel together anymore.” ⟨#5: Age78⟩

**{Other inhibiting factors: Physical factors}**

A large number of participants, regardless of their exercising status, complained about <sup>(16)</sup> **increased exhaustion** and resolved to <sup>(18)</sup> **surrender to the age-related decline/atrophy**. Acceptance of such change in their body led to <sup>(17)</sup> **fear of injury**, and subsequently, <sup>(17)</sup> **avoidance of some exercise and activities**.

**(16)** “I cannot imagine my good future. It’s because my body feels tired.”

⟨#35: Age81⟩ **(17)** “I don’t want to fall outside. Then it is better to do something at home.” ⟨#26: 82⟩ **(18)** “Even if we try, muscle just decrease.” ⟨#21: 84⟩

## **Theme 2: Promoting factors of exercise**

**{Egoism: Absolution from Expected Altruism and Embracing the of Egoistic-self}**

Participants who reported exercising often portrayed a sense of <sup>(19)</sup> **absolution from domestic roles** by mentioning that their role and duty was already completed. In most instances, this was because their children or grandchildren got married and moved away from home, or their sick parents/husband passed away. Although <sup>(20)</sup> **dementia and frailty** were often discussed in relation to the feared self and as a motivation to exercise, some participants who did not exercise also expressed the same feared self. However, participants who reported exercising expressed their hoped-for self to stay <sup>(21)</sup>

**independent** or even to be <sup>(22)</sup> **helpful** to others as a significant part of their identity.

(19) *“My grandchildren are all growing up, needing less and less care from me, which allows me to do what I want to do.”* ⟨#19: Age77⟩ (20) *“I want to do all by myself without developing dementia. I want to be careful with my health and enjoy my life. That’s all I wish.”* ⟨#16:C Age72⟩ (21) *“Myself being taken care of? I cannot even image that. I am always on the side of taking care of someone, not the one to be taken care of.”* ⟨#8: Age69⟩ (22) *“I want to do something for others, being helpful.”* ⟨#10: Age75⟩

#### **{Egoism: Egoistic behavior}**

Participants who accepted their egoistic-self often talked passionately about their hoped-for self, <sup>(23)</sup> **pursuit of avocation and hobbies**, which motivated them to be physically healthy to continue their activities.

(23) *“I need to be able to move around. I cannot create my art if I cannot move. That’s why I don’t want to be weak and stay in bed.”* ⟨#11: Age67⟩

#### **{Other promoting factors: Belief}**

Many believed that <sup>(24)</sup> **mother’s lifespan/illness** is deeply related to their future state, which <sup>(24)</sup> **raised their awareness** of the need to be active. With this heightened awareness for health, most participants who exercised recognized <sup>(26)</sup> **the importance of exercise** and believed that <sup>(25)</sup> **exercise should be a sustained habit**.

(24) *“My mother broke her hip joint, and my hip was painful too... it’s better now because I bike at the gym.”* ⟨#25: Age77⟩ (25) *“For me, exercise is something we need to do regularly, having fun. No point if we quit it after 3*

days.” ⟨#39: 76⟩ **(26)** “*I think exercise, even light one, is important (to be healthy)*” ⟨#17: Age71⟩ .

### {Other promoting factors: Social factors}

Motivation for exercise not only stemmed from participants’ feared self such as dementia and frailty, but also from their hoped-for self such as the image of <sup>(27)</sup> **active older adults as a role model**. Active older adults around them set a good example that encouraged their hoped-for self. The direct reasons to start exercise were often <sup>(28)</sup> **recommendations from family, friends, or doctors**. After they started to exercise, <sup>(30)</sup> **social interaction through exercise** and <sup>(31)</sup> **convenient access** emerged as the key factors that help to sustain the habit. <sup>(29)</sup> **Support from husband and family** was important not only for exercise specifically, but also general social activities.

**(27)** “*I want to keep my good posture. When you stand up straight with good posture, you look beautiful. You will look great even if you are 80. I met my friend today, she is 84. I was very impressed how smoothly she walks. Her straight back and posture. That’s what makes her look beautiful.*” ⟨#12: Age72⟩

**(28)** “*My doctor told me...to start exercise as rehabilitation.*” ⟨#34: Age 83⟩

**(29)** “*Of course, family’s support is necessary to leave home in the early morning, even for volunteer works*” ⟨#2: Age7⟩

**(30)** “*(I started exercise) because...I wanted to be friend with people from the same apartment.*” ⟨#42: Age73⟩

**(31)** “*It’s free to go anywhere in Kyoto city, using a bus. I don’t feel any inconvenience here.*” ⟨#24: Age82⟩

### {Other promoting factors: Physical factors}



Most participants complained about <sup>(32)</sup> **age-related decline/atrophy** of their body. While those who did not exercise gave up and surrendered to such physical change, others resolved to exercise given that they perceived the threat more seriously. The threat of age-related decline/atrophy fueled their <sup>(32)</sup> **keen awareness** to start exercise.

*(32) “After retirement, the way I walk (became terrible). It even made people worry... I thought it was better to start exercise.”* ⟨#35: Age81⟩

**{Other promoting factors: Goal setting/attainment}**

Participants showed a strong interest in the <sup>(33)</sup> **measurement** of hand grip strength and muscle mass. They seemed to enjoy these as a game. Most importantly, such objective results of measurement served as an opportunity to emphasize the perceived threats of inactivity. Participants who exercise regularly are often aware of their past/current body weight and muscle/fat mass. Such individuals demonstrated their skill to <sup>(33)</sup> **set a goal**, to <sup>(34)</sup> **select doable activities** for themselves and to <sup>(33)</sup> **achieve** the goal.

*(33) “We have physical strength tests like sit-ups. I couldn’t do even one-repetition before.”* ⟨#18: Age80⟩ *(34) “I was even afraid of water...I decided to go to swimming lessons, then it was fun. After I learned all four styles, I quitted lessons, and started go swim by myself.”* ⟨#36: Age66⟩

### **6-3. Overall result and storyline**

The category of **{egoism}** was identified as a primary factor promoting exercise. Participants’ common hoped-for selves were **independent** and **helpful self**. The other side of the same coin was their feared self, the self associated with **dementia and frailty**. Many participants claimed that they exercise to

prevent dementia and frailty. The {egoistic-self} corresponds to the hoped-for self who **pursues avocation and hobbies**, {egoistic behavior}. In contrast, an inability to identify clear possible selves, either hoped-for self or feared self of the individual, was identified as a barrier to exercise. Importantly, the category of {altruism} emerged as a significant barrier. Even participants who currently exercise reported the experience that they could not start or continue exercising in the past since **prioritizing their role and duty as mother, wife, daughter or grandmother** were more important. There were external factors, {expectation from others}, and internal factors, {altruistic-self}, that encouraged {altruistic behavior}. The roles and duties were not necessarily disfavored, but rather valued to secure their **pride** and self-worth.

## **7. Discussion**

This qualitative study is one of the first to employ the concept of possible selves to explore barriers and facilitators of exercise among older Japanese women with women living in Kyoto city as the target population. Our study revealed findings that are: (1) unique from previous research, but also (2) consistent with previous research in other cultures, which enables us to make (3) suggestions for further research.

### **(1) Unique findings of this study**

One of the main findings of this study is that {altruism} was a significant barrier to exercise. Although altruistic behavior is observed in both collective and individualistic cultures, it is believed that altruistic behavior is molded and shaped differently by each culture (Nadeem & Haroon, 2019). A specific definition of altruistic behavior has been offered by American researchers,

Smith and his colleagues, as “behavior that is intended to benefit others beyond simple sociability or duties associated with role (Smith, Lapinski, Bresnahan & Smith, 2013)”. However, the term “altruism” in this research is used in a broader sense to interpret the categories. It seems that altruistic concern and actions in a Japanese cultural context could not be discussed without including social roles, considering the difference in degree of social pressure on the responsibilities expected for each role and duty.

{Altruism} was expressed in different ways, including for example endorsement of one’s role and duty in the household as a priority. Thus, this prevented older women to allocate time or money for exercise, though sometimes they recognized the benefits associated with exercise. In some instances, engaging in exercise or other activities at the expense of one’s role and duty in the household was frowned upon and perceived as a “selfish” attitude. As Kaizuka claimed, the collective culture in Kyoto, often with severe interference, expectation, and criticism evident in the society, may have extinguished independence in some older women (Kyoto Shimbun, 1976). Although there were limited numbers of participants who were able to balance “Altruistic-self” and “Egoistic-self”, where possible, this was generally achieved due to the support and understanding gained from family members. In participants who do not exercise, the requirements to satisfy the ideal “Altruistic-self” seemed to be too burdensome to maintain the healthy behaviors that stemmed from the “Egoistic-self.”

This has important implications for health promotion strategies. For example, most health promotion strategies tacitly assume that individuals hold a self-centered mindset that positions them to engage in healthy behavior and

protect their own health. This view corroborates with our findings that factors that were encapsulated in the category of {egoism}, such as independent self and helpful self, were all facilitators of exercise. However, a prevailing altruistic mindset such as that documented in our study means that health promotion activities based on a self-centered mindset might not be effective for those who are strongly influenced by a collective culture.

Previous research has identified the denial of feared self (weakened self with risk of falling, for example) as a barrier to the uptake of healthy behavior (WHO, 2007; Yardley et al., 2006). According to Yardley's research regarding fall prevention, advice on prevention can threaten an older adult's identity and autonomy (Yardley et al., 2006). The perception that falling can happen to physically weak individuals and frail "elderly" (feared self), conflicts with these older adults' own self-image as explained in the introduction. Therefore, it has been suggested that health or exercise promotion with a focus on the positive benefit of improving their health outcomes may be more acceptable and effective than the advice focused on prevention (WHO, 2007; Yardley et al., 2006). In this study, however, most participants already endorsed the thoughts and beliefs that the body and muscle will be weaker with age (feared self). Thus, the "denial of feared self" was not a relevant factor among our participants. Moreover, a physical activity promotion approach with a focus on the positive benefit of improving their health may not be beneficial for the older women in Kyoto, even though such an approach can be appropriate to those who live in an individualistic culture and who have a clear vision of identity of oneself, which emerged as {egoism} in this research. This research found that those who did not

exercise often define themselves based on social roles rather than their own identity as an independent woman.

Furthermore, we found that <sup>(32)</sup> **keen awareness raised by age-related decline/atrophy was a facilitator to take up exercise**. Most of the participants who exercised or intended to start exercise claimed that they did so because they felt a progressive decline in their physical health as they age. Interestingly, most took up exercise to maintain their condition rather than to improve it. Our finding contrasts with previous research showing that healthier and physically stronger individuals tend to be more motivated to take up exercise (Nishida, Watanabe, Sasaki & Takenouchi, 2000).

## **(2) Consistent findings with previous research in other cultures**

In this study, <sup>(11)</sup> **misconception about exercise and prevention of sarcopenia** emerged as a barrier to raise the awareness of the need to exercise. Similarly, <sup>(10)</sup> **lack of confidence in exercise** and <sup>(18)</sup> **surrender to age-related decline/atrophy** emerged as barriers to exercise self-efficacy (Perras et al, 2016). A further barrier to exercise was <sup>(17)</sup> **fear of injury**, which was often characterized by <sup>(17)</sup> **avoidance of risky activities** such as exercise. These findings are consistent with previous research that has identified a range of internal factors such as fear, belief and skills, that influence exercise behavior. As an example of fear, Legters' study found that 12-65% of individuals aged 60 years and above without any history of falling, reported some degree of fear of falling (Legters, 2002). In another study, individuals were reluctant to take a walk for exercise or walk several blocks outside due to a fear of falling, along with fatigue (Dias et al., 2011). An example regarding belief is a previous finding that individuals who recognize the value and benefit of exercise have

higher motivation toward exercise (Nishida et al., 2000). This supports our results that the <sup>(25)</sup> **belief that exercise should be a sustained habit**, and acknowledgement of <sup>(26)</sup> **the importance of exercise** served as facilitators of exercise. On the same note, <sup>(13)</sup> **belief that current health condition may not improve** was documented as an inhibiting factor for exercise. Additionally, skills for goal setting seem to play an important role as well. It is documented that goal setting, especially specific and more challenging ones, can result in a higher level of performance and effort (Weinberg, 2013). In this study, goal setting/attainment consisting of <sup>(33)</sup> **measurement and goal setting/achievement** and <sup>(34)</sup> **selection of doable activities** was also found as promoting factors that promote of exercise behavior.

There are also a number of external factors that can promote or inhibit exercise. Many studies have indicated that social factors such as encouragement from friends and family are promoting factors (Ota et al., 2014 ;Nishida et al., 2000; Sudo, 2008). Similar social promoting factors were revealed here, such as, <sup>(28)</sup> **recommendation from family, friends, or doctors**, <sup>(29)</sup> **support from husband and family**, and <sup>(30)</sup> **social interaction through exercise**. On the other hand, factors such as <sup>(14)</sup> **pessimism derived from friends' sickness/death** and <sup>(15)</sup> **decreased human connection** emerged as inhibiting factors. Moreover, <sup>(31)</sup> **convenient access**, especially via the Kyoto-city free transit pass for older adults was mentioned in the interviews as a facilitating factor for exercise. However, previous research that has examined the association of convenient access and exercise has found mixed results; some supporting (Humpel, Owen & Leslie, 2002; Sallis, Kraft & Linton, 2002) and others in contrast (Ota et al., 2014; Nishida et al., 2000) with our findings.

Additionally, a study from the U.S. exploring role models and views on aging indicated that family members, particularly mothers, were the most often cited as the primary role model, while another study reported that friends are the most frequently mentioned as a health role model (Jopp, Jung, Damarin, Mirpuri & Spini, 2017). In this study, both family and non-family members were cited as role models. The codes of <sup>(27)</sup> **active older adults as a role model** and <sup>(32)</sup> **keen awareness raised by mother's lifespan/illness** are examples of role models as incentives to adopt healthy behavior in these older women.

### **(3) Suggestions for further research**

Because of the limitations of qualitative research, possible suggestions from this study cannot be generalized, but only for the specific target population. Based on the findings, it may be possible to suggest that involvement of the role as a mother, wife, daughter, or grandmother into exercise may be beneficial for women aged 65 and above in Kyoto city. This could be promoted in a similar way to the promotion of exercise during and after the pregnancy. The pregnant women join the exercise sessions as future mothers or current mothers in this example. It may be beneficial to take advantage of their strong sense of responsibility to fulfill their role of motherhood and reduce the sense of guilt in investing their time or money in exercising. Similar arguments could be used with older women who strongly identify with the socially prescribed roles. To generalize the suggestions, further research is required with a larger sample size and from a wider geographical region. Furthermore, findings may alter depending on the cultural background, generations and gender of people studied, therefore these factors need to be accounted for in future research.

## **8. Limitations**

This study represents qualitative exploratory research. Due to the limited number of participants, it may not be appropriate to apply the results to general population, especially with different cultural backgrounds, from different generations and genders. Therefore, the results cannot be generalized, but the rigorous analysis and description of results above aim to help readers to determine if findings are transferable to similar contexts and groups of people who strongly identify with collective cultures. Further, study recruitment meant limited access to socially isolated individuals due to the use of snowball sampling.

## **9. Conclusion**

This study revealed a wide range of factors that promote or inhibit exercise including factors related to possible selves. Among those factors, unique factors encapsulated in the category of {altruism} emerged as a significant barrier to exercise. In contrast, {egoism} emerged as an important facilitator of exercise. Although the results of this qualitative research cannot be generalized, future health and exercise promotion for older women in Kyoto and other similar areas or cultures may become more effective by taking the factors of {altruism} and {egoism} into account when developing exercise promotion strategies.



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