



Middle-Aged Women's Perceptions and Experiences of Physical Activity: A Grounded Theory Approach

Authors' contribution:

- A) conception and design of the study
- B) acquisition of data
- C) analysis and interpretation of data
- D) manuscript preparation
- E) obtaining funding

Rahim Khosromanesh^{1B-C} , Katarzyna Dzioban^{2A-D} ,
Ehsan Mohamadi Turkmani^{*3A-C-D} , Ameneh Asadolai^{4B} 

¹University of Tehran, College of Farabi, Qom, Iran

²Józef Piłsudski University of Physical Education in Warsaw, Faculty of Tourism and Recreation, Warsaw, Poland

³University of Tehran, Faculty of Physical Education and Sport Sciences, Tehran, Iran

⁴Islamic Azad University, Central Tehran Branch, Tehran, Iran

Received: 27.10.2022

Accepted: 26.01.2023

*Correspondence: Ehsan Mohamadi Turkmani, Tehran Province, Tehran, N Kargar, P9HR+J6X; E-mail: ehsan.mohamadi@ut.ac.ir

Abstract

Effective public health interventions require an understanding of why people engage in or abstain from physical activity. This study aimed to design a model of physical activity for middle-aged Iranian women. The research was conducted using the systematic approach of grounded theory. Data analysis was performed through continuous „questioning” and „comparison.” Semi-structured interviews were conducted with 35 middle-aged women (aged 40 to 65) who regularly engaged in physical activity to achieve theoretical saturation. The coding process identified 128 final codes, 30 sub-themes, and nine main themes. After the open, axial, and selective-coding stages, a conceptual model was designed. In our model: „Advice and Encouragement,” „Knowledge and Awareness,” „Fear and Prevention,” and „Exercise Therapy” are the primary drivers that affect the motivation of middle-aged Iranian women to engage in physical activity. Motivated middle-aged Iranian women by comparison of perceived barriers, facilities, and benefits to engage in physical activity. Experiencing benefits leads to internalizing motivation and can lead to exercise addiction. The developed model suggests that the key measures for motivating middle-aged women to engage in regular physical activity are increasing primary drivers, lowering obstacles, and expanding facilities. Middle-aged women's physical activity can be understood by employing the created model.

Keywords: fear of ageing, death anxiety, middle-aged women, physical activity, Iran

Introduction

Women act as a great invisible protector against cultural and environmental disturbances for the family at every stage of their life cycle. Subsequently, society's health depends on women's health (Hyman, 2007). Physical activity is a crucial factor affecting women's health, but in modernized living conditions, on the one hand, their physical work has decreased (Chau et al., 2017; Gurven et al., 2013; Huneault et al., 2011), and their leisure time has increased; on the other hand, the physical inactivi-

ty of their leisure activities has increased (Chau et al., 2012; Voorpostel et al., 2010; Yang et al., 2019). Middle age ranges from age 40 to age 60 or 65 (Lim et al., 2020). Despite being one of the most extended periods of a woman's life, this stage has received less attention than others (Fadjukoff et al., 2016). Middle-aged women are extremely susceptible to cardiovascular diseases, cancer, fatty liver, menopause, obesity, breast cancer, and osteoporosis, particularly in less developed nations (Eghbali et al., 2022; Eguchi et al., 2012; Folsom et al., 2011; Jaspers et al., 2015; Momenimovahed & Salehiniya,

2019; Nafissi et al., 2018; Niaz et al., 2022; Saaristo et al., 2008; Xiao et al., 2022).

Middle-aged women benefit from exercise and physical activity. Vigorous physical activity has a negative correlation with mortality in middle age (Gebel et al., 2015). Drastic hormonal changes related to menopause make middle-aged women prone to osteoporosis, leading to bone fractures and disability later in life. Higher physical activity during the different menopausal phases has significant effects on body muscles and the prevention of osteoporosis (Benedetti et al., 2018; Pinheiro et al., 2020; Sipilä et al., 2020; Szoëke et al., 2006). Therefore, the essential measure to reduce the everyday problems of middle-aged women is physical activity (Woolf et al., 2008). In middle-aged hypertensive individuals, aerobic and resistance training are fairly helpful in controlling inflammation and blood pressure (Boeno et al., 2020; Figueroa et al., 2019; Wong et al., 2018). Physical activity strongly affects the treatment of diabetes, and it is recommended that women with diabetes be encouraged to increase their physical activity (Kanaley et al., 2022; Sigal et al., 2018). Additionally, physical activity has a considerable impact on prevention, decreasing breast cancer treatment problems and mortality (Ligibel et al., 2019; Spei et al., 2019). Exercise has been shown to be an effective treatment for fatty liver disease (Stevanović et al., 2020; van der Windt et al., 2018). By increasing physical activity, middle-aged women's mental health improves, reducing their stress and depression (Brown et al., 2005; Denche-Zamorano et al., 2022; Schuch et al., 2018).

According to World Health Organization recommendations, adults should exercise 150 to 300 minutes weekly at moderate to intense intensity, 75 to 150 minutes at vigorous intensity, or an equivalent combination of moderate and vigorous intensity (Bull et al., 2020). Nevertheless, insufficient physical exercise is fairly common among middle-aged women worldwide (Piercy et al., 2018). From 1990 to 2017, the percentage of insufficient physical activity increased 1.5 times globally and doubled in Iran, resulting in over 1.2 million deaths globally and 18,000 deaths in Iran in 2017 (GBD Data Visualizations, 2018). Iran, as a developing middle-income country, has a high level of physical inactivity. According to studies, the prevalence of insufficient physical activity in Iran differs significantly between the sexes, with men accounting for 45.3% and women accounting for 61.9%. Although the prevalence of insufficient physical activity increases in the Iranian male population from childhood to middle age, it decreases in the female population (Mohebi et al., 2019). During recent years, the physical inactivity rate among Iranian adults has risen sharply, so that in 2001, the value of this indicator was 29.9% in women compared to 16.2% in men, but in 2016, these values were 62.3% in women compared to

48.5% in men. Walking, rhythmic group exercise, yoga, and aerobics are common among middle-aged Iranian women (Kamalian et al., 2021).

It is crucial to identify and comprehend the variables influencing the physical activity of middle-aged women. Environmental and ecological factors can impact middle-aged adults' physical activity (Troost et al., 2002). Another study revealed that adult physical activity is influenced by accessibility, opportunities and aesthetics (Humpel et al., 2002). The two factors that adults see as being the biggest obstacles to physical activity are a lack of motivation and pain (Rhodes et al., 2020). Middle-aged women think that taking part in outdoor adventure activities slows down ageing, boosts their self-confidence and provides social support from other group members (Wharton, 2020). There has also been research on the role of planned interventions in lowering perceived barriers and raising perceptions of the advantages of physical activity (Kim & Kang, 2021).

Studies conducted in one country may not be helpful in understanding middle-aged women's physical activity in another, due to the diverse cultural, religious and ethnic contexts. However, these kinds of studies can help build a general vision. Daily routine, internal motivation, biophysical concerns, psychosocial commitments, environmental conditions and resources (McArthur et al., 2014) influenced middle-aged Canadian women's adherence to regular exercise. The health status, prior leisure-time physical activity, social support and self-efficacy of middle-aged women in South Korea all had an impact on their leisure-time physical activity (Choi, 2008). Lack of time and motivation brought on by employment, responsibilities to family and home, and lack of effort were major barriers to Australian Arab women taking part in physical activity (El Masri et al., 2021). Taiwanese women's socioeconomic status, such as their monthly income, employment status and educational attainment, was correlated with their level of physical activity (Lin et al., 2017).

Studies on women's physical activity in other Muslim countries may be more useful in understanding the physical activity conditions of Iranian women. Mabry et al. (2010) showed that from 39.0% to 42.1% of men and 26.3% to 28.4% of adult women in Persian Gulf Cooperation Council countries have physical activity at the international standard level. The results of Barnawi's (2019) study showed 87% of adult women in the Mecca region, in the Kingdom of Saudi Arabia, are sedentary or lightly active, and 13% have moderate or vigorous activity. Inadequate time, lack of transportation, cultural influences and unavailability of facilities or equipment were identified as barriers to physical activity among Saudi Arabian women in Mecca. In Turkey, in the transition from traditional to contemporary society, family responsibilities, the ethic of care, time, social approval and economics are among the

most important barriers to leisure-time physical activity of adult women (Koca et al., 2009). The barriers preventing Arab adults from engaging in physical activity were divided into three categories by Benjamin and Donnelly (2013): personal (e.g., lack of time, health status), social/cultural/political (e.g., traditional roles for women, lack of social support, use of housemaids), and environmental (e.g., hot weather, lack of exercise facilities). Koca et al. (2009) emphasize adherence to Islamic rules, along with socioeconomic status, in interpreting the fundamental differences between Turkish women and Western women.

Despite the lack of comparative studies on women's physical activity in Muslim and non-Muslim nations, it seems that there are significant differences between Muslim and non-Muslim women's levels of physical activity, with non-Muslim nations having higher levels of female physical activity. Religious restrictions are frequently considered responsible for women's low levels of physical activity in Muslim nations. It seems "religious barriers" or "barriers related to Islamic rules" are a generic phenomenon in Muslim countries. These barriers are not the same in all Muslim countries because women's physical activity rates vary widely in different Muslim countries, and they have unique experiences. Therefore, religious restrictions is a superficial interpretation of all barriers that may influence women's physical activity in Muslim nations.

Women encounter special conditions in middle age. They experience menopause, which can be the beginning of osteoporosis. Physical activity is the most critical strategy for the health of middle-aged women. However, in most societies, only a small percentage of people engage in regular physical activity based on WHO guidelines. Of course, it should be noted that cultural and religious factors in Muslim countries create a unique condition for women. It is also interesting that these factors are not exactly the same in all Muslim nations. There are different interpretations of Islamic rules among Muslim countries. The governments of Muslim nations also have diverse policies for dealing with general issues like women's sports and physical activities. As a result, the factors influencing why women exercise and how they perceive physical activity will be quite complex in Muslim countries. Therefore, it is crucial to conduct in-depth qualitative studies to decide on any intervention to promote physical activity among women, especially in Muslim countries such as Iran. This work sought to explore the PA of middle-aged Iranian women and design a conceptual model for it using the systematic approach of the grounded theory method. Exploring PA motivations, contexts, drivers, barriers and consequences for middle-aged Iranian women can present a clear picture of Iranian women's physical activity status and provide practical policies for enhancing physical activity levels.

Methods

Study Design

The grounded theory method was employed in this study as a systematic approach, as the goal of the study was to construct a conceptual model (Creswell et al., 2007; Creswell & Poth, 2016). The systematic approach, which Corbin and Strauss support, involves open, axial and selective coding. In the grounded theory method, everything can be considered data, including interviews, previous research and observations. The sampling method in grounded theory is theoretical sampling. Data collection and analysis are carried out simultaneously until the researchers obtain theoretical saturation (Corbin & Strauss, 2014).

Participants

We conducted semi-structured interviews with 35 middle-aged Iranian women (aged 40 to 65 years) who had regular PA in all conditions. In order to find middle-aged women who have regular PA, we observed public parks in the three cities of Tehran, Islamshahr, and Mashhad at different times. Middle-aged women engaged in physical activity individually or in groups. First, preliminary coordination was discussed with them, and an interview was scheduled. The interviews took about four months. In order to provide safe and comfortable conditions during the interview, only our female co-researcher was present, and the interviews were recorded. Participants in qualitative research must devote considerable time to interviews, sharing personal documents, or being observed in their homes and workplaces. 'Reciprocity for Participants' suggests that researchers repay participants for their time. Researchers should express their appreciation to participants in diverse forms, such as with money for a cup of coffee (Creswell & Báez, 2020). For this purpose, we prepared a bag with a sports nutrition guidebook and an aluminum sports bottle for each participant.

Interview protocol

We briefed the participants on the purpose of the study and the interviewing process. They were also told to express opinions openly on their experiences with physical activity and associated topics. Previous research and researchers' personal experience were the basis for the interview questions. The interview questions are presented in the appendix at the end of the paper.

Data Collection & Analysis

The sports management board of the Faculty of Physical Education and Sports Sciences of the University of Tehran approved the study proposal and interview protocol. The interviews started in Tehran and then continued in Islamshahr, and after travelling to Mashhad, interviews were also conducted there. Interviews began in early October 2021

and continued until mid-February 2022 (approximately 4 months). Each interview lasted 30 to 45 minutes. Interviews were recorded using a digital voice recorder (Lander PCM Recorder), and a suitable PC was used to transfer the data from the recorder to the computer for it to be transcribed. Simultaneously, with reviewing previous research about the concepts raised in each interview, interviews in the cities of Tehran, Islamshahr and Mashhad were repeated twice until theoretical saturation was achieved.

After each interview in the grounded theory technique, the data were analyzed and the cycle was repeated until theoretical saturation was reached. During the data analysis, conceptual comparisons were made. More specifically, the data were divided into manageable chunks, so that each piece of data could be carefully scrutinized. Data from the new interview was coded using the same conceptual name if it shared conceptual similarities with data from the previously examined interview. Herein, the question we posed was “What else can be discovered about this concept?” This increased our grasp of a concept by allowing us to describe it in more detail in terms of its characteristics and dimensions. When we felt we had gathered enough information to adequately explain each category or topic in terms of its characteristics and dimensions, a condition Corbin and Strauss referred to as conceptual saturation, data collecting, and analysis procedure was completed. No software was employed in the analysis. All the interviews and data were carefully analyzed according to the guidelines given by Corbin and Strauss (2014). Of course, there were discrepancies during the data analysis process. However, we reached a consensus after analyzing and exchanging opinions. Profiteering doctors, fraud and exercise therapy were three important cases of discrepancies. For example, there is a lot of sensitivity regarding the sanctity of doctors in Iran and it has rarely been observed that their sanctity is questioned. However, most of the interviewees emphasized this concept. Due to strong and repetitive data, a consensus was reached over these discrepancies.

Triangulation

Creswell and Báez (2020) and Creswell and Miller (2000) describe triangulation as a validity process in which researchers seek convergence across several sources of information to construct themes or categories in a study. It is one of the methods for better understanding qualitative

data (Leech & Onwuegbuzie, 2007). Triangulation involves different parts of the research. There are three main types of triangulations: data, investigator, and theory. Data triangulation involves relating information about individuals, events, and locations; investigator triangulation involves relating the results of various researchers; and theory triangulation involves utilizing and relating various theoretical approaches (Denzin, 2017). Data triangulation and data saturation are directly related; the former ensures the latter (data saturation). In this research, to conduct data triangulation, middle-aged Iranian women were interviewed in Tehran, Islamshahr, and Mashhad to achieve reliable data saturation. Mashhad is a religious city, and its distance from Tehran, the largest city and capital of Iran, is approximately 1000 km. Islamshahr, a city of half a million people, is attached to Tehran, and is known as a city with a poor population. In this research, 15 middle-aged women were interviewed in Tehran, 8 in Islamshahr, and 12 in Mashhad. Also, in order to conduct investigator triangulation, after conducting each interview, data analysis was carried out by all co-researchers. In addition, at different stages of the research, three professors of sports management, sports psychology, and sports physiology at the University of Tehran were asked to analyze the data (as secondary coders). By outlining significant components and themes while conducting data analysis, all researchers and professors discussed the coherence and transparency of the study process. All professors agreed with the themes reached in the conclusion and agreed that the findings were complete and had attained saturation. For theory triangulation, the theories of goal-setting (Swann et al., 2021), terror-management theory (Goldenberg & Arndt, 2008), and expectancy-value theory (Shang et al., 2022) were used. Therefore, triangulation was carried out carefully, and the results have a high reliability and validity.

Results

Open coding

The results of the open coding are presented in Table 1. At the end of the interviews and after theoretical saturation, nine main themes were identified. Each of these themes has several sub-themes. Each sub-theme consists of several final codes.

Table 1. The results of open coding.

Main themes	Sub-themes	Final codes
Awareness and Knowledge	Study	Education, Personal Knowledge and Awareness, Knowledge, and Awareness of Relatives
	Experience	Personal Experience, Experience of Relatives, Experience of Friends, Experience of Others

Main themes	Sub-themes	Final codes
Fear and Prevention	Fear	Fear of Ageing, Fear of Obesity, Fear of Osteoporosis, Fear of Middle Age and Old Age Diseases, Death Anxiety
	Prevention	Prevention of Weight Gain, Prevention of Osteoporosis, Prevention of Severe Hormonal Changes During Menopause, Prevention of Diabetes, Prevention of High Blood Sugar, Prevention of High Blood Fat, Prevention of Varicose Veins, Prevention of Heart Diseases, Prevention of Knee Arthritis, Cancer Prevention
Exercise Therapy	Cardiovascular Respiratory Disease Treatment	Treatment of High Blood Sugar, Hyperlipidaemia Treatment, Hypertension Treatment, Treatment of Heart Diseases, Treatment of Diabetes, Treatment of Varicose Veins, Asthma Treatment
	Cure Cancer	Breast Cancer Recovery, Cure Other Cancers
	Pain Relief	Leg Pain Treatment, Back Pain Treatment, Neck Pain Treatment, And Arthritis Treatment
	Treatment of Digestive Diseases	Improving the Digestive System, Improve Kidney Stones, Improve Fatty Liver
	Improve the Complications of Surgery or Stroke	Treatment of Surgical Complications, Treatment of Complications of Heart Attack, Treatment of Stroke Complications
	Musculoskeletal Improvement	Improve Muscle Weakness, Improve Osteoporosis, Improve Frailty, Weight Management
	Treatment of Psychological Problems	Escape From Helplessness, Reduce Nervous Pressure, Treat Depression
Advice and Encouragement	Doctor's Advice	Personal Physician Advice, Neighbourhood Health House Advice, Physicians Present in Mass Media
	Encouraged by Family	Encouragement by Children, Encouragement by Husband, Encouragement by Son, Athletic Family, Athletic Husband, Encouragement by Sister-in-law
	Encouraged by Peers	Encouragement by Friends, Encouragement by the Neighbours Lady, Recreation-sports Program for the Ladies of the Neighbourhoods, Encouragement by the Husband's Friends
	Encouraged by the Media	Broadcasting of Government Media, Instagram
Motivation	Motivation	Self-importance, Inclination to PA, Willpower, Mental Toughness, Exercise Addiction
PA	PA	Walking in the Parks, walking on the Sidewalks, walking in the Residential Complex, Exercise with Sports Equipment in Parks, Exercising at Home, Group Rhythmic Exercises in Parks, Yoga, Aerobics Club, Morning Exercise in the Parks
Facilities	Sport Places	Public Parks, Women's Areas in Parks, Sidewalks, Easy Access to Parks, and Women's Parks
	Sports Equipment	Sports Equipment Installed in Parks, Medical Sports Shoes
	Security and Safety	Sidewalks Safety, Safety of Sports Equipment, Moral Security, Life Safety, Social Security, Environmental Health
	Trainer	Trainer Specialist for the Middle-aged Women, Sports Science Consultants, Private Trainer
	Socio-economic Situation	Economic Situation, Social Status, Society Culture, Family Culture

Main themes	Sub-themes	Final codes
Barriers	Problems of Public Sports Places	Inadequate Access to Public Sports Facilities, Inadequate Sidewalks, Lack of Qualified Special Trainers for Women in Parks, Mismanagement of Parks, Covid-19
	Fraud	Counterfeit Herbal Medicines for Weight Loss, Counterfeit Herbal Medicines for Middle-aged Diseases
	Housekeeping	Hospitality, Housework, Taking Care of Children, Wife Needing Care
	Shyness	Being Ashamed of Doing Physical Activity, Maintaining Modesty in the Presence of Men in Public Sports Venues, Observing the Islamic Dress Code
	Lack of Facilities	Lack of a Public Park in the Neighbourhood, the Absence of a Dedicated Women's Park in the Neighbourhood, Not Having Proper Walking Shoes, Lack of Knowledgeable Trainers in the Parks, Being Far from Clubs, Improper Timing of Gyms for Women
	Cultural Problems	Presence of Men in Public Parks, Men Looking at Women During Physical Activities, Men's Annoying Stares in Public Places, Illegal Filming of Women, Husband's Opposition, Poor Culture, Harassment of Men for Women
	National Media Neglect	National Media Neglect of Promoting the PA of Middle-aged Women
	Personal Problems	Laziness, Diseases, Physical Problems, Coronavirus
	Profiteering Doctors	Doctors' Desire for Surgery, Doctors' Desire for Prescribed Drugs, Doctors' Desire for Use Expensive Methods
	Socio-economic Problems	Expensive Sports Equipment, Expensive Food and Fruits
Benefits	Health	Physical Health, Maintain Health, Weight Management, Mental Peace, Freshness and Happiness, Good Mood, Increased Efficiency, Nervous Relaxation
	Improving Family Relationships	Husband's Satisfaction, Children's Happiness, Improving Intra-family Interactions, Improving Mood, Being a Role Model for Girls
	Social Interactions	Finding Companionship, Confabulate
	Prevention of Diseases	Prevention of Weight Gain, Prevention of Osteoporosis, Prevention of Diabetes, Prevention of High Blood Sugar, Prevention of High Blood Fat, Prevention of Knee Arthritis, Relief of Mental Stress, Prevention of Severe Hormonal Changes During Menopause
	Treatment of Diseases	Treatment of Cardiovascular Diseases, Treatment of Respiratory Diseases, Treatment of Musculoskeletal Problems, Treatment of Digestive Problems, Treatment of Mental and Psychological Problems, Treatment of Surgical Complications, Treatment of Obesity, Rehabilitation
	Self-efficiency	Increasing Efficiency, Ability to Do Hard Work, Overcoming Problems
	Beauty	Fresh Face, Beautiful Body, Stylishness, Gracefulness

Axial and selective coding

The emergent connections between the explored concepts must be included in a larger framework with a single core category to create the theory. According to Strauss and Corbin, this procedure is known as axial and selective coding. Subcategories are connected to

categories using the “coding paradigm” of conditions, context, strategies (action/interaction) and consequences (Corbin & Strauss, 1990). In other words, by creating linkages between a category and its subcategory, axial coding seeks to reconstruct the fragmented data in novel ways. Strauss and Corbin see the coding paradigm as

a necessary component of a grounded theory. The density and precision of the theory would be missed if the coding paradigm had not been applied in its creation (Vollstedt & Rezat, 2019). Through “selective coding,” all categories are combined around a single main category or key phenomenon, and categories that require further explanation are filled out with descriptive information. One identified category may be the core category, or the primary phenomenon may require a more abstract

name. Regarding the core category, the additional categories will always be preconditions, action/interactional methods, or outcomes. Using diagrams can help with categorization (Corbin & Strauss, 1990). Therefore, we conducted selective coding simultaneously with axial coding, which means limiting coding variables associated with the core category (Giske & Artinian, 2007). Selective coding examples are shown in Table 2, and the axial coding paradigm is in Figure 1.

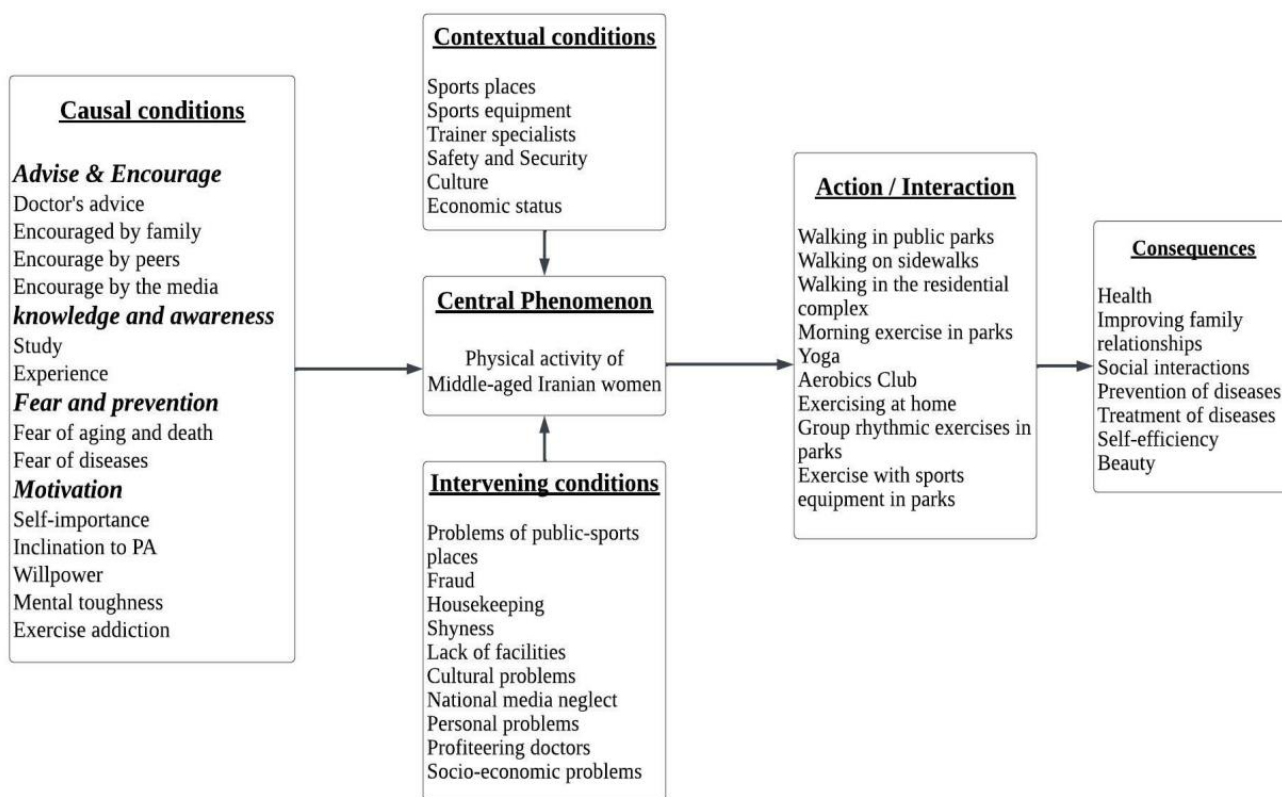


Figure 1. Coding paradigm pattern.

Table 2. Examples of selective coding

Example quotes	Open coding	Selective coding
“My husband plays a big role in my exercise... He always tells me that you have gained weight, go for a walk, so that you don't gain fat, blood fat, and blood pressure in the rest of your life.” (MAIW32)	Fear of Obesity Fear of Diseases	
“I exercise because it is good for my health, we are also getting older, as long as we take care of ourselves, we can have a good old age, therefore, we will not bother anyone in our old age and we will be able to take care of ourselves.” (MAIW13)	Fear of Ageing	Fear and Prevention
“I exercise in order not to gain weight” (MAIW08)	Fear of Obesity	

Example quotes	Open coding	Selective coding
<i>"I have Instagram; Seeing pictures of women with gorgeous bodies has influenced my exercise..." (MAIW28)</i>	Modern Media	
<i>"My husband encourages me a lot to exercise, and my son studied physical education and sports science, and he also encourages me to exercise." (MAIW35)</i>	Encouraged by Family	Advice and Encouragement
<i>"I walk because the doctor told me that you should walk for 40 minutes a day, because of my leg pains, because of the illnesses that I have, she said that you should walk." (MAIW03)</i>	Doctor's Advice	
<i>"The talk show expert stated: "Regular physical activity offers several health benefits, including weight control, disease prevention, liveliness, and others." (MAIW09)</i>	Personal Knowledge and Awareness	Awareness and Knowledge
<i>"I exercised and saw that I feel better, I became healthy, that's why I did more physical activity, I've been exercising for 27 years now (I'm 62 now)." (MAIW11)</i>	Personal Experience	
<i>"I think I am 17 kg overweight; I exercise to manage my weight" (MAIW17) "When I first came, I started walking regularly because I was fat, about 10-15 years ago I weighed 90 kg." (MAIW33)</i>	Weight Management	
<i>"I walk in the park to get some relief from my back and leg ache because of it." (MAIW12)</i>	Treatment of Pain	
<i>"I have varicose veins, the doctor recently told me to just walk, just walk." (MAIW18)</i>	Treatment of Varicose Veins	
<i>"I have arthritis, I can't run very much, I have to walk for 5 minutes and sit for 5 minutes, with this walking and taking medicine, my legs are better." (MAIW34)</i>	Treatment of Arthritis	
<i>"I had surgery on my leg, I slept at home for three months... The doctor told me: Madam, because the lesion is on the nerve of your leg, you should exercise. He said that walking is very important for you. If you are idle for a minute at home, go for a walk in the park." (MAIW01)</i>	Treatment of Surgical Complications	Exercise Therapy
<i>"I don't have money to go to the doctor, I just have to go for a walk to calm down, my nerves are broken, my daughter has problems, Therefore, I go to the park and walk in the mornings, this way my nerves calm down." (MAIW04)</i>	Reduce Nervous Pressure	
<i>"The doctor told me that you have high blood pressure and you should walk" (MAIW25) "My blood fat is high; my blood sugar is very high... I have leg pain, knee pain... that's why I walk to get well" (MAIW15) "The vein in my hand has arteriosclerosis, the doctor said you should exercise to treat it, as well as I am diabetic" (MAIW07)</i>	Treatment of Cardiovascular Diseases	
<i>"Women should put aside parties and soirees and pay more attention to their health, they themselves are more important than anything else." (MAIW05)</i>	Self-importance	
<i>"I feel very refreshed when I go for a walk, but when I don't go for a walk, I'm depressed at home, when I exercise, I do the housework nicely and I'm more refreshed." (MAIW26)</i>	Exercise Addiction	Motivation

Example quotes	Open coding	Selective coding
<i>"It is better to be a park for women, to be comfortable, not for men"</i> (MAIW09)	Park for Women	
<i>"The proximity of the walking area allows us to return home quickly and take care of our children. It would be much better if there was a park near our house"</i> (MAIW31)	Close Access to the Park	
<i>"I can't do every exercise, a lady comes to the park and trains us, she knows I can't do every movement, she tells me you don't want to move your hands like this, the presence of a trainer specialist is very important"</i> (MAIW20)	Trainer	
<i>"There is little danger in the park environment... After all, we try to leave the house at a time of the day when there is no danger and it is easier to come and go, there is no problem for anyone."</i> (MAIW14)	Security	Facilities
<i>"Walking with non-standard shoes makes my knees and soles hurt. The doctor told me to walk with running shoes"</i> (MAIW16)	Running Shoes	
<i>"I always train with sport equipment in the park. This sport equipment is very good."</i> (MAIW21)	Sports Equipment Installed in Parks	
<i>"You know! No one bothers us, but we ourselves being ashamed of doing physical activity"</i> (MAIW10)	Society Culture	
<i>"It was mostly my own decision to do physical activity rather than what the doctor recommended... The doctor is doing Cool Tech to reduce my body fat: there is a device that freezes the body fat, the fat volume decreases..."</i> (MAIW05)	Profiteering Doctors	
<i>"Once, I accepted the words of one of the ladies on Instagram and bought four types of tea from her so that I could lose weight by eating them and walking. I paid 160 dollars for those teas, but eating those teas made me hungry, so I ate more, and finally I got fatter, unfortunately."</i> (MAIW19)	Counterfeit Herbal Medicines for Losing Weight	
<i>"Taking care of the children and now that the children's school is online, so I have to stay at home more and that's why I can't go to the gym..."</i> (MAIW22)	Taking Care of Children	
<i>"When I exercise, I get tired, short of breath, but well, I sit down, I rest, I'll be fine."</i> (MAIW09)	Diseases	
<i>"I have atherosclerosis, I am also diabetic, that's why sometimes I feel that I'm not well, I can't go for a walk..."</i> (MAIW06)		
<i>"If there is a place with more facilities and men are not there, I will do physical activity more easily"</i> (MAIW24)	Presence of Men in Public Parks	
<i>"I don't exercise when there is a man in the park, I exercise when there is no man in the park"</i> (MAIW08)		Barriers
<i>"The culture here is also bad. If a woman moves, everyone stares at her, that's why we can't do any kind of physical activity."</i> (MAIW02)	Men's Annoying Stares in Public Places	
<i>"In the park, if I bend down, I don't want a man to see me in this state... I don't like a strange man staring at my hips"</i> (MAIW23)	Maintaining Modesty in the Presence of Men	
<i>"There are times when we are walking and meanwhile a man walks between us and enters our group and wants to walk next to us... this is very annoying... we don't like to be with men."</i> (MAIW30)		
<i>"When I'm walking in the park, men disturb me, make shameless offers... they look at my butt from behind... Young boys tease me ... My boys get sensitive and say, Mom, she looked bad, he said this, he said that... That's why I stopped walking in the park..."</i> (MAIW28)	Harassment of Men for Women	
<i>"I see the training programs of the national media, but I can't do those exercises, those exercises are hard for me."</i> (MAIW03)	Media Neglects to Promote Women's Physical Activity	

Example quotes	Open coding	Selective coding
<p>“Sports have affected me a lot mentally and emotionally, the woman has many problems at home, A woman has to take care of children who are very playful for a long time, that’s why in the long run, the nervous pressure is put on the woman... when I go for a walk in the park, I feel very calm. When I leave here, my nerves are calm” (MAIW29)</p>	Nervous Relaxation	
<p>“Since I’ve been exercising, I’ve lost weight, I’m lighter, and I wake up easier” (MAIW09)</p>	Weight Management	
<p>“I had severe knee pain, but after exercising for a while, I no longer have this problem... I did not go to the doctor either. I just got better with exercise... I got better with the exercises I did.” (MAIW06)</p>	Treatment of Musculoskeletal Problems	
<p>“Exercising had a very positive effect on my digestion, my digestion was very awkward, my digestion got better with exercise, I had bad asthma, my asthma got better, my nerves got better; that is, I had all kinds of illnesses, but this exercise made me feel much better.” (MAIW33)</p>	Treatment of Diseases	Benefits
<p>“Exercising has made my life more orderly: doing housework, taking care of my wife and children has had a great impact” (MAIW26)</p>	Self-efficiency	
<p>“Exercising has made relationships in my life better, my mood has improved. As a result, I can get to life’s affairs more easily in communication with anyone, my mind has become freer and I can live more easily.” (MAIW12)</p>	Improving Family Relationships	
<p>“Many women come to the park to exercise. Interacting with other women has a positive effect on my mood. We come here to talk and calm our nerves. This calms me down...” (MAIW18)</p>	Social Interactions	
<p>“Exercising helps me stay graceful” (MAIW27)</p>	Gracefulness	

Figure 2 is the final model of the PA of middle-aged Iranian women after conducting GT method analyses.

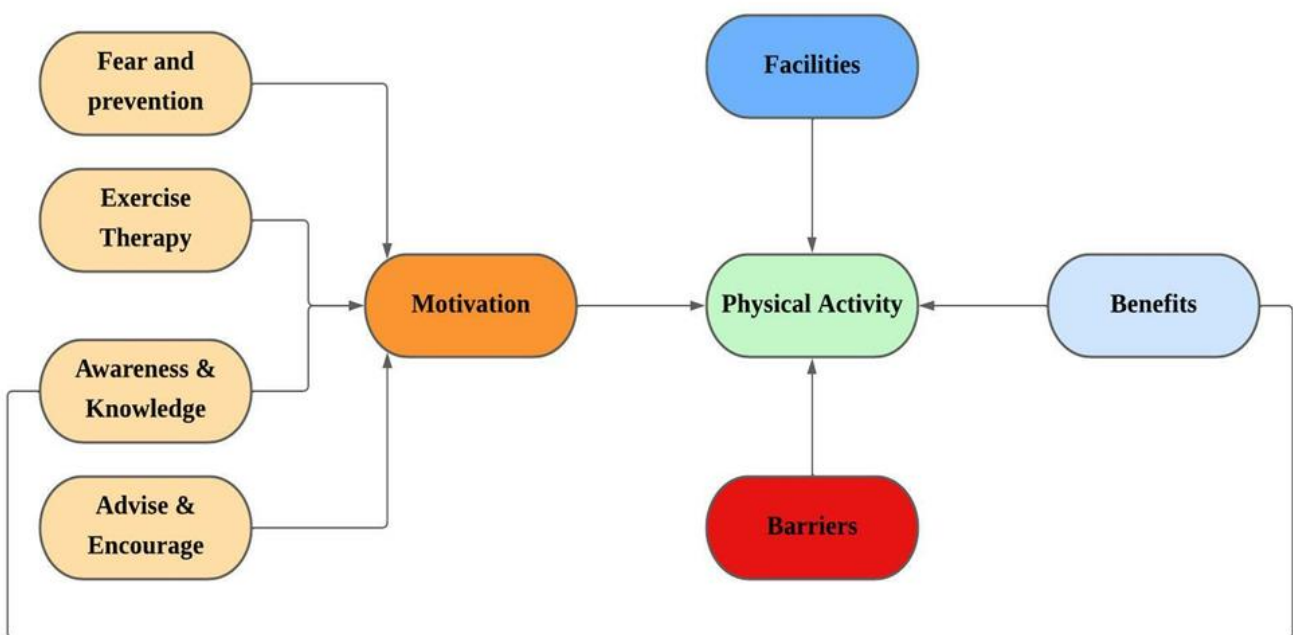


Figure 2. Iranian women’s physical activity paradigmatic model

As seen in Table 1 and Figure 2, there are many factors affecting the physical activity of middle-aged Iranian women, which are distributed into 9 categories. Middle age is a stage between youth and old age. The fear of growing old and contracting diseases that other Iranian middle-aged and old women have contracted affects young middle-aged Iranian woman at the start of her middle-aged period. As their ages increase, Iranian middle-aged women suffer from various diseases for various reasons, including inactivity, menopause, mental stress, etc. Usually, the only effective treatment for these diseases and physical problems is regular physical activity. In fact, in the results of the present research, exercise therapy was identified as the most valuable function of physical activity for middle-aged Iranian women.

Making the right decision to engage in physical activity (whether out of fear or to prevent and treat various diseases) is dependent on middle-aged women's knowledge and awareness. Some Iranian women in their 40s and 50s have the knowledge and experience, but many who are physically active on a regular basis learned about it from someone else. Advice and encouragement from doctors, family, peers and the media also play a significant role in the promotion of physical activity among Iranian middle-aged women. The effectiveness of each of these primary drivers (doctors, family, peers and media) is not the same for all women. However, it can be said that the combination of all of these drivers was more effective.

Besides the primary drivers mentioned, the motivation of Iranian middle-aged women is influenced by a feeling of self-importance, an inclination toward physical activity, willpower, mental toughness and exercise addiction. Due to these individual psychological differences, despite the same conditions, only some Iranian middle-aged women have regular physical activity. Of course, facilities and barriers are also analyzed by Iranian middle-aged women. Since they require minimal facilities and there are no strong barriers to their physical activity, their primary drivers and motivation play a more decisive role.

Iranian middle-aged women do not want special expensive facilities for physical activity. The existence of sidewalks in parks or neighborhoods can meet the needs of most of them. Other necessary conditions and facilities for their physical activity include having the right medical shoes, trainer specialists, security and safety. If the conditions are favorable, Iranian older and middle-aged women prefer to do rhythmic exercises in groups in parks together with music.

Young Iranian middle-aged women prefer to do physical activity in places only for women (e.g., women's parks) or indoors (e.g., women's swimming pools, women's aerobics, or yoga gyms) away from the sight of men. Iranian women in their forties face a variety of physical activity barriers, though these are significantly less intense and effective than those they faced when they were younger.

One of the most important ideas in the category of barriers is that there are some doctors who are out to make money and who place a lot of emphasis on using expensive medicines and surgeries. Lack of facilities is still one of the main reasons why women don't do physical activities, even though older women need fewer and better facilities.

Iranian middle-aged women who took part in the study were directly shown the benefits of regular physical activity. This had a significant effect on how they felt and what they did. In fact, experiencing the benefits of physical activity led to the creation of stronger internal motivation for regular physical activity in middle-aged women. In other words, the planned model creates a loop that goes in both directions (Figure 2). Exercise dependency develops over time in Iranian women of middle age when this pattern is repeated frequently. It is obvious that this addiction is considered a positive one, as it leads to an increase in general health.

Discussion

This study aimed to develop a qualitative model for middle-aged Iranian women's physical activity. The semi-structured interviews were conducted with 35 middle-aged Iranian women in three cities. Nine main themes or categories were identified in the research findings: "Fear and prevention," "Advice and Encouragement," "Awareness & Knowledge," "Exercise Therapy," "Motivation, Activity," "Facilities," "Barriers" and "Benefits."

Fear and Prevention

The Health Belief Model is a framework for behavior change that is still commonly utilized today. It serves as the foundation for or is included in treatments to raise awareness of health concerns, improve perceptions of individual risk, promote measures to lower or eliminate the risk, and—in later iterations—increase confidence in one's ability to make the necessary adjustments (Green et al., 2020). The Health Belief Model broadly supports our results. The category of fear and prevention, which was one of the significant drivers of regular physical activity among Iranian women in their middle age, included the ideas of fear of ageing, death anxiety, and prevention of various diseases and health problems. According to our findings, the theory of the Health Belief Model is most applicable to middle-aged women and can be more helpful for this age group. The Terror Management Theory also maintains that the realization of one's own mortality has a significant impact on one's motivation, thoughts, emotions and conduct (Pyszczynski et al., 2015). Our results showed that death anxiety is one of the crucial and most influential elements for participants' regular physical activity, which is consistent with the Terror Management Theory. In other words, middle-aged and

older adults exhibit higher health-promoting behaviors in situations of mortality anxiety (Bozo et al., 2009; Martens et al., 2005). Therefore, we may assert that one of the most significant motivators for middle-aged women to engage in regular physical activity is fear and prevention, which should be practiced by following the WHO standards.

Advising, Encourage, Awareness & Knowledge

Doctors (Brien et al., 2019; Bull et al., 1997), family members, peers (Eyler et al., 1999; Seefeldt et al., 2002) and media (Leavy et al., 2011; Sharpe et al., 2010) have always been external drivers for middle-aged women in society to do regular physical activity. However, these factors have distinct effects in various communities. For instance, the physical activity of doctors affects their clinical views regarding exercise (Lobelo et al., 2009). Due to a lack of time and company, at least half of the doctors have no background in physical activity (Khan et al., 2013; Rao et al., 2012). Therefore, the experience and perspectives of doctors on physical activity may influence the advice they give to patients. Middle-aged women's participation in physical activity is also significantly predicted by their social support from friends, peers, and family (Harvey & Alexander, 2012; Nguyen et al., 2022). In the coding of this study, all of these factors were categorized under the theme of advising and encouragement.

Awareness and knowledge are other factors that motivate Iranian middle-aged women to do regular physical exercise. Experience with the advantages of physical activity is seen as implicit knowledge about its value. For women in their middle years, being aware of the advantages and necessity of physical activity can be a powerful motivator (Allender et al., 2006). Therefore, significant efforts should be undertaken to raise middle-aged women's awareness of the advantages of physical activity during this stage of life (von Hurst & Wham, 2007). This aspect of our findings is in line with the theory of goal-setting. Using their knowledge or the suggestions and motivation of others, middle-aged women make objectives for their physical activity that are relevant to their bodily and mental health. For instance, the World Health Organization, the Ministry of Health, or a doctor might use goal-setting theory to determine the least amount of physical activity required to achieve the desired benefits (Swann et al., 2021).

Exercise Therapy

According to the findings, the participants believe that the most important benefits of exercise are the "treatment of cardiovascular, respiratory diseases," "cure of cancer," "pain relief," "treatment of digestive diseases," "improve the complications of surgery or stroke," "musculoskeletal improvement," and "treatment of psychological problems." These outcomes can be thought of as strong motivators. These ideas were grouped under the heading of exercise

therapy. Exercise therapy is the main reason most Iranian women in their middle years engage in regular physical activity. Middle-aged women gradually experience a variety of illnesses and physical issues. Of course, these physical issues and diseases are also made worse by menopause and its negative repercussions, such as osteoporosis. Therefore, the advice and encouragement of the doctor, family, peers and friends, and the media or the awareness and knowledge of middle-aged women lead to physical activity to treat physical and mental diseases and problems. In this regard, the American College of Sports Medicine and the American Medical Association came up with the "Exercise is Medicine" idea to highlight the importance of physical activity to health and well-being (Blair et al., 2012).

There are many cases in which exercise therapy is better than surgery (Kise et al., 2016; Stensrud et al., 2015). It is a successful supplementary treatment for enhancing cardiorespiratory fitness in cancer patients (Scott et al., 2018). All of the cases mentioned above and the findings of other clinical studies support our conclusions. For middle-aged Iranian women, exercise therapy can be argued to be the most significant benefit of physical activity. The expectancy theory is compatible with this aspect of our findings. Middle-aged women's expectations of the advantages and outcomes of regular physical activity and the allure of these advantages are strong incentives to do so. As a result, middle-aged Iranian women who engage in regular physical activity anticipate improvements in or complete cures for their physical, psychological, and medical conditions.

Barriers and Benefits

Physical activity interventions must be culturally and age-appropriate by understanding the benefits and barriers faced by target populations. In this study, the problems of public-sports places, fraud, housekeeping, shyness, lack of facilities, cultural problems, national media neglect, personal problems, profiteering doctors, and socio-economic problems are perceived as barriers; and health, improving family relationships, social interactions, prevention of diseases, treatment of diseases, self-efficiency and beauty were categorized as perceived benefits. It may be claimed that the perceived benefits of physical activity can be similar in countries with different cultural-economic and social conditions, but the perceived barriers have differences. For middle-aged Chinese women, fitness, health, enjoyment and attractiveness have been recognized as the primary drivers of involvement in physical activity. By contrast, a lack of time, resources or abilities, and a family or friend's lack of support have been highlighted as the major roadblocks (Sit et al., 2008). The most common barriers to physical activity for North American middle-aged women were exhaustion and daily tasks (Kowal & Fortier, 2007). Other studies

highlighted the affective-cognitive and practical barriers in Norway (Sørensen & Gill, 2008); exhaustion, culture, health issues, lack of child care, lack of encouragement, and lack of willpower and support in West Virginia (Hoebeke, 2008; Rye et al., 2009); weather, traditions, lack of facilities, and lack of time in Saudi Arabia (Amin et al., 2011); the importance of family and work commitments, and minimal promotion of subsidized initiatives by the government in Singapore (Bu & Chung, 2018). As can be seen, the barriers experienced in many nations vary and are connected to their respective cultural, economic, and social environments. Some personal barriers, including a lack of time or feeling tired or lazy, are prevalent in most nations, while Norwegians do not list a lack of time as a barrier. Additionally, amenities are lacking in less developed or emerging nations. In contrast, middle-aged women in wealthy nations do not see a lack of facilities as a barrier to physical activity. There are numerous barriers to physical activity for middle-aged women in Iran, a rising Muslim nation with long-standing stereotypes. Ignoring the challenges and engaging in regular physical activity is caused by the main motives and perceived rewards. Benefit-seeking induces internal motivation, which might result in exercise addiction.

Conclusion

Although one of the more prolonged stages of a woman's life, middle age has received less attention than other stages. Middle-aged women face many physical and psychological diseases and problems. The best method for preserving and enhancing the health of middle-aged women is physical activity. According to our research, exercise therapy is the primary benefit of physical activity for Iranian women in their middle years. Of course, fear and prevention are also significant drivers of physical activity in middle-aged women. The motives of middle-aged women to engage in physical activity should also be influenced by the aspects of "advising & encouraging" and "understanding & knowledge." The media, doctors, families and peers should significantly increase the awareness and knowledge of younger middle-aged women about the consequences of inactivity and significantly increase the fear of their occurrence. They should also increase the awareness and knowledge of older middle-aged women about the therapeutic benefits of physical activity. Facilities and obstacles are contextual and intervening elements that develop based on a nation's cultural, social, economic, and managerial circumstances. The lack of infrastructure (facilities) is still significant and affects the development of physical activity of middle-aged Iranian women. Undoubtedly, developing the infrastructure and increasing facilities will lead to an improvement in conditions and

reduce some of the existing barriers. Developing safe sidewalks, providing security, employing trainer specialists in public parks, and increasing indoor places for sports, such as swimming pools and gymnasiums, are among the most important proposed measures to develop the physical activity of middle-aged Iranian women.

In general, according to the designed model, the essential steps needed to encourage middle-aged Iranian women to engage in regular physical activity are to increase primary drivers (increasing fear and counseling of exercise therapy through increasing knowledge, awareness, and advice and encouragement), lower barriers, and improve facilities.

The present study was general and was conducted during the coronavirus pandemic. Also, ethnic differences and rural lifestyle are other conditions that can be specially addressed. Therefore, it is suggested that studies are conducted after the pandemic, focusing on rural areas and different ethnic groups in Iran. Quantitative studies can also assess the effect of the mentioned factors on the level of physical activity among Iranian middle-aged women in various parts of the country.

Limitations

One limitation of the study is the number of people interviewed. In qualitative research, it is not possible to interview various samples and identify exceptions.

Not focusing on different races, ethnicities, and income levels was another limitation of the research plan. There may be some exceptions in these groups. It is possible that the importance of concepts and categories identified in different groups is not the same.

Coronavirus was another limitation for conducting research, as it probably affected the type of physical activity of middle-aged Iranian women. The pandemic also caused the closure of some gymnasiums and indoor places.

Implications

According to the findings of the research, it can be said that in promoting physical activity among younger middle-aged women, the level of their fear of the consequences of inactivity should be raised to a considerable extent.

In the promotion of physical activity among older middle-aged women, the therapeutic function of physical activity (exercise therapy) should be emphasized, as the treatment of patients and physical problems is a concern for many of them.

It limited the activity of profit-seeking doctors.

The experiences of other active middle-aged women concerning the benefits of physical activity should be shared using mass media.

Ethics approval and informed consent

The sports management board of the Faculty of Physical Education and Sports Sciences of the University of Tehran approved the study proposal and interview protocol.

Competing interests

None of the authors have any financial, interpersonal, or other connections to other people or organizations that would create a conflict of interest.

Funding

There was no external funding in this study.

Acknowledgments

Our sincere thanks go out to all the interviewees who generously shared their time and ideas with us.

References

- Allender, S., Cowburn, G., & Foster, C. (2006). Understanding participation in sport and physical activity among children and adults: a review of qualitative studies. *Health Education Research, 21*(6), 826–835. <https://doi.org/10.1093/her/cyl063>
- Amin, T. T., Suleman, W., Ali, A., Gamal, A., & Wehedy, A. A. (2011). Pattern, Prevalence, and Perceived Personal Barriers Toward Physical Activity Among Adult Saudis in Al-Hassa, KSA. *Journal of Physical Activity and Health, 8*(6), 775–784. <https://doi.org/10.1123/jpah.8.6.775>
- Barnawi, I. A. (2019). *Physical activity level, knowledge, and the barriers to be active among adult Saudi women in Mecca Region, in Kingdom of Saudi Arabia* [Doctoral dissertation, University of Wisconsin-Stout]. <http://digital.library.wisc.edu/1793/81253>
- Benedetti, M. G., Furlini, G., Zati, A., & Letizia Mauro, G. (2018). The Effectiveness of Physical Exercise on Bone Density in Osteoporotic Patients. *BioMed Research International, 2018*, 4840531. <https://doi.org/10.1155/2018/4840531>
- Benjamin, K., & Donnelly, T. T. (2013). Barriers and facilitators influencing the physical activity of Arabic adults: A literature review. *Avicenna, 2013*(1), 8. <https://doi.org/https://doi.org/10.5339/avi.2013.8>
- Blair, S. N., Sallis, R. E., Hutber, A., & Archer, E. (2012). Exercise therapy – the public health message. *Scandinavian Journal of Medicine & Science in Sports, 22*(4), e24–e28. <https://doi.org/https://doi.org/10.1111/j.1600-0838.2012.01462.x>
- Boeno, F. P., Ramis, T. R., Munhoz, S. V., Farinha, J. B., Moritz, C. E. J., Leal-Menezes, R., Ribeiro, J. L., Christou, D. D., & Reischak-Oliveira, A. (2020). Effect of aerobic and resistance exercise training on inflammation, endothelial function and ambulatory blood pressure in middle-aged hypertensive patients. *Journal of Hypertension, 38*(12), 2501–2509. <https://doi.org/10.1097/hjh.0000000000002581>
- Bozo, Ö., Tunca, A., & Šimšek, Y. (2009). The Effect of Death Anxiety and Age on Health-Promoting Behaviors: A Terror-Management Theory Perspective. *The Journal of Psychology, 143*(4), 377–389. <https://doi.org/10.3200/JRLP.143.4.377-389>
- Brien, S., Prihodova, L., Heffron, M., & Wright, P. (2019). Physical activity counselling in Ireland: a survey of doctors' knowledge, attitudes and self-reported practice. *BMJ Open Sport & Exercise Medicine, 5*(1), e000572. <https://doi.org/10.1136/bmjsem-2019-000572>
- Brown, W. J., Ford, J. H., Burton, N. W., Marshall, A. L., & Dobson, A. J. (2005). Prospective Study of Physical Activity and Depressive Symptoms in Middle-Aged Women. *American journal of preventive medicine, 29*(4), 265–272. <https://doi.org/https://doi.org/10.1016/j.amepre.2005.06.009>
- Bu, E. Q. L., & Chung, H. J. (2018). Barriers towards exercise and physical activity of different ethnic groups in middle-aged female Singaporeans. *J Exerc Rehabil, 14*(5), 739–745. <https://doi.org/10.12965/jer.1836388.194>
- Bull, F. C., Al-Ansari, S. S., Biddle, S., Borodulin, K., Buman, M. P., Cardon, G., Carty, C., Chaput, J.-P., Chastin, S., Chou, R., Dempsey, P. C., DiPietro, L., Ekkelund, U., Firth, J., Friedenreich, C. M., Garcia, L., Gichu, M., Jago, R., Katzmarzyk, P. T., . . . Willumsen, J. F. (2020). World Health Organization 2020 guidelines on physical activity and sedentary behaviour. *British journal of sports medicine, 54*(24), 1451. <https://doi.org/10.1136/bjsports-2020-102955>
- Bull, F. C. L., Schipper, E. C. C., Jamrozik, K., & Blanksby, B. A. (1997). How Can and Do Australian Doctors Promote Physical Activity? *Preventive medicine, 26*(6), 866–873. <https://doi.org/https://doi.org/10.1006/pmed.1997.0226>
- Chau, J., Chey, T., Burks-Young, S., Engelen, L., & Bauman, A. (2017). Trends in prevalence of leisure time physical activity and inactivity: results from Australian National Health Surveys 1989 to 2011. *Australian and New Zealand journal of public health, 41*(6), 617–624. <https://doi.org/https://doi.org/10.1111/1753-6405.12699>
- Chau, J. Y., Merom, D., Grunseit, A., Rissel, C., Bauman, A. E., & van der Ploeg, H. P. (2012). Temporal trends in non-occupational sedentary behaviours from Australian Time Use Surveys 1992, 1997 and 2006. *International journal of behavioral nutrition and physical activity, 9*(1), 76. <https://doi.org/10.1186/1479-5868-9-76>
- Choi, J.-A. (2008). Construction of leisure physical activity model of middle-aged women in urban area. *Korean Journal of Adult Nursing, 20*(4), 626–640.
- Corbin, J., & Strauss, A. (2014). *Basics of qualitative research: Techniques and procedures for developing grounded theory*. Sage publications.
- Corbin, J. M., & Strauss, A. (1990). Grounded theory research: Procedures, canons, and evaluative criteria. *Qualitative sociology, 13*(1), 3–21.
- Creswell, J. W., & Báez, J. C. (2020). *30 Essential Skills for the Qualitative Researcher*. SAGE Publications. <https://books.google.nl/books?id=kvXbDwAAQBAJ>

- Creswell, J. W., Hanson, W. E., Clark Plano, V. L., & Morales, A. (2007). Qualitative research designs: Selection and implementation. *The counseling psychologist, 35*(2), 236–264.
- Creswell, J. W., & Miller, D. L. (2000). Determining Validity in Qualitative Inquiry. *Theory into practice, 39*(3), 124–130. https://doi.org/10.1207/s15430421tip3903_2
- Creswell, J. W., & Poth, C. N. (2016). *Qualitative inquiry and research design: Choosing among five approaches*. Sage publications.
- Denche-Zamorano, Á., Barrios-Fernandez, S., Gómez-Galán, R., Franco-García, J. M., Carlos-Vivas, J., Mendoza-Muñoz, M., Rojo-Ramos, J., Vega-Muñoz, A., Contreras-Barraza, N., Gianikellis, K., & Muñoz-Bermejo, L. (2022). Associations between Physical Activity Level and Mental Health in the Spanish Population: A Cross-Sectional Study. *In Healthcare, 10*(8), 1442. <https://www.mdpi.com/2227-9032/10/8/1442>
- Denzin, N. K. (2017). *The Research Act: A Theoretical Introduction to Sociological Methods*. Routledge. <https://books.google.nl/books?id=UjcpXFE0T4cC>
- Eghbali, T., Abdi, K., Nazari, M., Mohammadnejad, E., & Gheshlagh, R. G. (2022). Prevalence of Osteoporosis Among Iranian Postmenopausal Women: A Systematic Review and Meta-analysis. *Clinical Medicine Insights: Arthritis Musculoskeletal Disorders, 15*, 11795441211072471.
- Eguchi, Y., Hyogo, H., Ono, M., Mizuta, T., Ono, N., Fujimoto, K., Chayama, K., Saibara, T., & Jsg, N. (2012). Prevalence and associated metabolic factors of nonalcoholic fatty liver disease in the general population from 2009 to 2010 in Japan: a multicenter large retrospective study. *Journal of Gastroenterology, 47*(5), 586–595. <https://doi.org/10.1007/s00535-012-0533-z>
- El Masri, A., Kolt, G. S., & George, E. S. (2021). The perceptions, barriers and enablers to physical activity and minimizing sedentary behaviour among Arab-Australian adults aged 35–64 years. *Health promotion journal of Australia, 32*(2), 312–321. <https://doi.org/https://doi.org/10.1002/hpja.345>
- Eyler, A. A., Brownson, R. C., Donatelle, R. J., King, A. C., Brown, D., & Sallis, J. F. (1999). Physical activity social support and middle- and older-aged minority women: results from a US survey. *Social Science & Medicine, 49*(6), 781–789. [https://doi.org/https://doi.org/10.1016/S0277-9536\(99\)00137-9](https://doi.org/https://doi.org/10.1016/S0277-9536(99)00137-9)
- Fadjukoff, P., Pulkkinen, L., Lyyra, A.-L., & Kokko, K. (2016). Parental Identity and Its Relation to Parenting and Psychological Functioning in Middle Age. *Parenting, 16*(2), 87–107. <https://doi.org/10.1080/15295192.2016.1134989>
- Figuroa, A., Okamoto, T., Jaime, S. J., & Fahs, C. A. (2019). Impact of high- and low-intensity resistance training on arterial stiffness and blood pressure in adults across the lifespan: a review. *Pflügers Archiv - European Journal of Physiology, 471*(3), 467–478. <https://doi.org/10.1007/s00424-018-2235-8>
- Folsom, A. R., Yatsuya, H., Nettleton, J. A., Lutsey, P. L., Cushman, M., & Rosamond, W. D. (2011). Community Prevalence of Ideal Cardiovascular Health, by the American Heart Association Definition, and Relationship With Cardiovascular Disease Incidence. *Journal of the American College of Cardiology, 57*(16), 1690–1696. <https://doi.org/doi:10.1016/j.jacc.2010.11.041>
- GBD Data Visualizations. (2018). *Institute for Health Metrics and Evaluation*. Retrieved 20 Dec from <https://vizhub.healthdata.org/gbd-compare>
- Gebel, K., Ding, D., Chey, T., Stamatakis, E., Brown, W. J., & Bauman, A. E. (2015). Effect of Moderate to Vigorous Physical Activity on All-Cause Mortality in Middle-aged and Older Australians. *JAMA Internal Medicine, 175*(6), 970–977. <https://doi.org/10.1001/jamainternmed.2015.0541> %J JAMA Internal Medicine
- Giske, T., & Artinian, B. (2007). A personal experience of working with classical grounded theory: From beginner to experienced grounded theorist. *International journal of qualitative methods, 6*(4), 67–80.
- Goldenberg, J. L., & Arndt, J. (2008). The implications of death for health: A terror management health model for behavioral health promotion. *Psychological Review, 115*, 1032–1053. <https://doi.org/10.1037/a0013326>
- Green, E. C., Murphy, E. M., & Gryboski, K. (2020). The Health Belief Model. In *The Wiley Encyclopedia of Health Psychology* (pp. 211–214). <https://doi.org/https://doi.org/10.1002/9781119057840.ch68>
- Gurven, M., Jaeggi, A. V., Kaplan, H., & Cummings, D. (2013). Physical Activity and Modernization among Bolivian Amerindians. *PLOS one, 8*(1), e55679. <https://doi.org/10.1371/journal.pone.0055679>
- Harvey, I. S., & Alexander, K. (2012). Perceived Social Support and Preventive Health Behavioral Outcomes among Older Women. *Journal of Cross-Cultural Gerontology, 27*(3), 275–290. <https://doi.org/10.1007/s10823-012-9172-3>
- Hoebeke, R. (2008). Low-income women's perceived barriers to physical activity: focus group results. *Applied Nursing Research, 21*(2), 60–65. <https://doi.org/https://doi.org/10.1016/j.apnr.2006.06.002>
- Humpel, N., Owen, N., & Leslie, E. (2002). Environmental factors associated with adults' participation in physical activity: A review. *American journal of preventive medicine, 22*(3), 188–199. [https://doi.org/https://doi.org/10.1016/S0749-3797\(01\)00426-3](https://doi.org/https://doi.org/10.1016/S0749-3797(01)00426-3)
- Huneault, L., Mathieu, M.-È., & Tremblay, A. (2011). Globalization and modernization: an obesogenic combination. *obesity reviews, 12*(5), e64–e72. <https://doi.org/https://doi.org/10.1111/j.1467-789X.2010.00817.x>
- Hyman, M. A. (2007). The life cycles of women: Restoring balance. *Alternative therapies in health medicine, 13*(3), 10–17.
- Jaspers, L., Daan, N. M. P., van Dijk, G. M., Gazibara, T., Muka, T., Wen, K.-x., Meun, C., Zillikens, M. C., Roeters van Lennep, J. E., Roos-Hesselink, J. W., Laan, E., Rees, M., Laven, J. S. E., Franco, O. H., & Kavousi, M. (2015). Health in middle-aged and elderly women: A conceptual framework for healthy menopause. *Maturitas, 81*(1), 93–98. <https://doi.org/https://doi.org/10.1016/j.maturitas.2015.02.010>

- Kamalian, A., Khosravi Shadmani, F., Yoosefi, M., Mohajer, B., Mohebi, F., Naderimaghani, S., Rezaei, N., Ghasemi, E., Rouhifard Khalilabad, M., Hassanmirzaei, B., Selk Ghaffari, M., Khosravi, A., Kordi, R., & Farzadfar, F. (2021). A national and sub-national metaregression of the trend of insufficient physical activity among Iranian adults between 2001 and 2016. *Scientific Reports*, *11*(1), 21441. <https://doi.org/10.1038/s41598-021-00252-3>
- Kanaley, J. A., Colberg, S. R., Corcoran, M. H., Malin, S. K., Rodriguez, N. R., Crespo, C. J., Kirwan, J. P., & Zierath, J. R. (2022). Exercise/Physical Activity in Individuals with Type 2 Diabetes: A Consensus Statement from the American College of Sports Medicine. *Med Sci Sports Exerc*, *54*(2), 353–368. <https://doi.org/10.1249/mss.0000000000002800>
- Khan, D. A., Zaidi, R., Danish, H., Ahmad, F., & Sarfraz, M. (2013). Attitude towards physical activity: A comparative study among doctors and physical therapists. *Journal of the Dow University of Health Sciences*, *7*(2), 68–72.
- Kim, Y., & Kang, S. (2021). Effects of a weight control intervention based on the transtheoretical model on physical activity and psychological variables in middle-aged obese women. *Journal of Women & Aging*, *33*(5), 556–568. <https://doi.org/10.1080/08952841.2020.1728183>
- Kise, N. J., Risberg, M. A., Stensrud, S., Ranstam, J., Engbretsen, L., & Roos, E. M. (2016). Exercise therapy versus arthroscopic partial meniscectomy for degenerative meniscal tear in middle aged patients: randomised controlled trial with two year follow-up. *bmj*, *354*, i3740. <https://doi.org/10.1136/bmj.i3740> %J BMJ
- Koca, C., Henderson, K. A., Asci, F. H., & Bulgu, N. (2009). Constraints to Leisure-Time Physical Activity and Negotiation Strategies in Turkish Women. *Journal of Leisure Research*, *41*(2), 225–251. <https://doi.org/10.1080/00222216.2009.11950167>
- Kowal, J., & Fortier, M. S. (2007). Physical Activity Behavior Change in Middle-aged and Older Women: The Role of Barriers and of Environmental Characteristics. *Journal of Behavioral Medicine*, *30*(3), 233–242. <https://doi.org/10.1007/s10865-007-9102-y>
- Leavy, J. E., Bull, F. C., Rosenberg, M., & Bauman, A. (2011). Physical activity mass media campaigns and their evaluation: a systematic review of the literature 2003–2010. *Health Education Research*, *26*(6), 1060–1085. <https://doi.org/10.1093/her/cyr069>
- Leech, N. L., & Onwuegbuzie, A. J. (2007). An array of qualitative data analysis tools: A call for data analysis triangulation. *School Psychology Quarterly*, *22*, 557–584. <https://doi.org/10.1037/1045-3830.22.4.557>
- Ligibel, J. A., Basen-Engquist, K., & Bea, J. W. (2019). Weight Management and Physical Activity for Breast Cancer Prevention and Control. *American Society of Clinical Oncology Educational Book*(39), e22–e33. https://doi.org/10.1200/edbk_237423
- Lim, S., Ma, R., & Park, H. (2020). A Study on the Relationship between Family Stress, Retirement Anxiety and Self-Efficiency in Middle-Aged Male. *Asia-pacific Journal of Convergent Research Interchange (APJCRI)*, *6*(9), 63–72.
- Lin, C.-H., Chiang, S.-L., Yates, P., Tzeng, W.-C., Lee, M.-S., & Chiang, L.-C. (2017). Influence of Socioeconomic Status and Perceived Barriers on Physical Activity Among Taiwanese Middle-Aged and Older Women. *Journal of Cardiovascular Nursing*, *32*(4), 321–330. <https://doi.org/10.1097/jcn.0000000000000354>
- Lobelo, F., Duperly, J., & Frank, E. (2009). Physical activity habits of doctors and medical students influence their counselling practices. *British journal of sports medicine*, *43*(2), 89. <https://doi.org/10.1136/bjism.2008.055426>
- Mabry, R. M., Reeves, M. M., Eakin, E. G., & Owen, N. (2010). Evidence of physical activity participation among men and women in the countries of the Gulf Cooperation Council: a review. *obesity reviews*, *11*(6), 457–464. <https://doi.org/https://doi.org/10.1111/j.1467-789X.2009.00655.x>
- Martens, A., Goldenberg, J. L., & Greenberg, J. (2005). A Terror Management Perspective on Ageism. *Journal of social issues*, *61*(2), 223–239. <https://doi.org/https://doi.org/10.1111/j.1540-4560.2005.00403.x>
- McArthur, D., Dumas, A., Woodend, K., Beach, S., & Stacey, D. (2014). Factors influencing adherence to regular exercise in middle-aged women: a qualitative study to inform clinical practice. *BMC Women's Health*, *14*(1), 49. <https://doi.org/10.1186/1472-6874-14-49>
- Mohebi, F., Mohajer, B., Yoosefi, M., Sheidaei, A., Zokaei, H., Damerchilu, B., Mehregan, A., Shahbal, N., Rezaee, K., Khezriani, M., Nematollahi Dehmoosa, A., Momen Nia Rankohi, E., Darman, M., Moghisi, A., & Farzadfar, F. (2019). Physical activity profile of the Iranian population: STEPS survey, 2016. *BMC public health*, *19*(1), 1266. <https://doi.org/10.1186/s12889-019-7592-5>
- Momenimovahed, Z., & Salehiniya, H. (2019). Epidemiological characteristics of and risk factors for breast cancer in the world. *Breast Cancer (Dove Med Press)*, *11*, 151–164. <https://doi.org/10.2147/bctt.S176070>
- Nafissi, N., Khayamzadeh, M., Zeinali, Z., Pazooki, D., Hosseini, M., & Akbari, M. E. (2018). Epidemiology and histopathology of breast cancer in Iran versus other Middle Eastern countries. *Middle East Journal of Cancer*, *9*(3), 243–251.
- Nguyen, T. T. P., Phan, H. T., Vu, T. M. T., Tran, P. Q., Do, H. T., Vu, L. G., Doan, L. P., Do, H. P., Latkin, C. A., Ho, C. S. H., & Ho, R. C. M. (2022). Physical activity and social support are associated with quality of life in middle-aged women. *PLOS one*, *17*(5), e0268135. <https://doi.org/10.1371/journal.pone.0268135>
- Niaz, T., Riaz, U., Zaheer, M., Shahzadi, T., Ayub, R., & Umar, B. (2022). Prevalence of Osteoporosis Following Menopause. *Pakistan BioMedical Journal*, *5*(1), 150–153.
- Piercy, K. L., Troiano, R. P., Ballard, R. M., Carlson, S. A., Fulton, J. E., Galuska, D. A., George, S. M., & Olson, R. D. (2018). The Physical Activity Guidelines for Americans. *JAMA*, *320*(19), 2020–2028. <https://doi.org/10.1001/jama.2018.14854> %J JAMA
- Pinheiro, M. B., Oliveira, J., Bauman, A., Fairhall, N., Kwok, W., & Sherrington, C. (2020). Evidence on physical activity and

- osteoporosis prevention for people aged 65+ years: a systematic review to inform the WHO guidelines on physical activity and sedentary behaviour. *International journal of behavioral nutrition and physical activity*, 17(1), 150. <https://doi.org/10.1186/s12966-020-01040-4>
- Pyszczyński, T., Solomon, S., & Greenberg, J. (2015). Chapter One - Thirty Years of Terror Management Theory: From Genesis to Revelation. In J. M. Olson & M. P. Zanna (Eds.), *Advances in Experimental Social Psychology* (Vol. 52, pp. 1–70). Academic Press. <https://doi.org/https://doi.org/10.1016/bs.aesp.2015.03.001>
- Rao, C. R., Darshan, B., Das, N., Rajan, V., Bhogun, M., & Gupta, A. (2012). Practice of Physical Activity among Future Doctors: A Cross Sectional Analysis. *Int J Prev Med*, 3(5), 365–369.
- Rhodes, S., Waters, D., Brockway, B., & Skinner, M. (2020). Physical activity behaviour and barriers to activity in adults at high risk of obstructive sleep apnoea. *Journal of Primary Health Care*, 12(3), 257–264. <https://doi.org/10.1071/HC19102>
- Rye, J. A., Rye, S. L., Tessaro, I., & Coffindaffer, J. (2009). Perceived Barriers to Physical Activity According to Stage of Change and Body Mass Index in the West Virginia Wisewoman Population. *Women's Health Issues*, 19(2), 126–134. <https://doi.org/https://doi.org/10.1016/j.whi.2009.01.003>
- Saaristo, T. E., Barengo, N. C., Korpi-Hyövälti, E., Oksa, H., Puolijoki, H., Saltevo, J. T., Vanhala, M., Sundvall, J., Saarikoski, L., Peltonen, M., & Tuomilehto, J. (2008). High prevalence of obesity, central obesity and abnormal glucose tolerance in the middle-aged Finnish population. *BMC public health*, 8(1), 423. <https://doi.org/10.1186/1471-2458-8-423>
- Schuch, F. B., Davy Vancampfort, Ph.D., Joseph Firth, Ph.D., Simon Rosenbaum, Ph.D., Philip B. Ward, Ph.D., Edson S. Silva, B.Sc., Mats Hallgren, Ph.D., Antonio Ponce De Leon, Ph.D., Andrea L. Dunn, Ph.D., Andrea C. Deslandes, Ph.D., Marcelo P. Fleck, Ph.D., Andre F. Carvalho, Ph.D., & Brendon Stubbs, Ph.D. (2018). Physical Activity and Incident Depression: A Meta-Analysis of Prospective Cohort Studies. *American Journal of Psychiatry*, 175(7), 631–648. <https://doi.org/10.1176/appi.ajp.2018.17111194>
- Scott, J. M., Zabor, E. C., Schwitzer, E., Koelwyn, G. J., Adams, S. C., Nilsen, T. S., Moskowitz, C. S., Matsoukas, K., Iyengar, N. M., Dang, C. T., & Jones, L. W. (2018). Efficacy of Exercise Therapy on Cardiorespiratory Fitness in Patients With Cancer: A Systematic Review and Meta-Analysis. *J Clin Oncol*, 36(22), 2297–2305. <https://doi.org/10.1200/jco.2017.77.5809>
- Seefeldt, V., Malina, R. M., & Clark, M. A. (2002). Factors Affecting Levels of Physical Activity in Adults. *Sports medicine*, 32(3), 143–168. <https://doi.org/10.2165/00007256-200232030-00001>
- Shang, C., Moss, A. C., & Chen, A. (2022). The expectancy-value theory: A meta-analysis of its application in physical education. *Journal of Sport and Health Science*. <https://doi.org/https://doi.org/10.1016/j.jshs.2022.01.003>
- Sharpe, P. A., Burroughs, E. L., Granner, M. L., Wilcox, S., Hutto, B. E., Bryant, C. A., Peck, L., & Pekuri, L. (2010). Impact of a community-based prevention marketing intervention to promote physical activity among middle-aged women. *Health Education & Behavior*, 37(3), 403–423.
- Sigal, R. J., Armstrong, M. J., Bacon, S. L., Boulé, N. G., Dasgupta, K., Kenny, G. P., & Riddell, M. C. (2018). Physical Activity and Diabetes. *Canadian Journal of Diabetes*, 42, S54–S63. <https://doi.org/10.1016/j.jcjd.2017.10.008>
- Sipilä, S., Törmäkangas, T., Sillanpää, E., Aukee, P., Kujala, U. M., Kovanen, V., & Laakkonen, E. K. (2020). Muscle and bone mass in middle-aged women: role of menopausal status and physical activity. *Journal of cachexia, sarcopenia and muscle*, 11(3), 698–709. <https://doi.org/https://doi.org/10.1002/jcsm.12547>
- Sit, C. H. P., Kerr, J. H., & Wong, I. T. F. (2008). Motives for and barriers to physical activity participation in middle-aged Chinese women. *Psychology of Sport and Exercise*, 9(3), 266–283. <https://doi.org/https://doi.org/10.1016/j.psychsport.2007.04.006>
- Sørensen, M., & Gill, D. L. (2008). Perceived barriers to physical activity across Norwegian adult age groups, gender and stages of change [<https://doi.org/10.1111/j.1600-0838.2007.00686.x>]. *Scandinavian Journal of Medicine & Science in Sports*, 18(5), 651–663. <https://doi.org/https://doi.org/10.1111/j.1600-0838.2007.00686.x>
- Spei, M.-E., Samoli, E., Bravi, F., La Vecchia, C., Bamia, C., & Benetou, V. (2019). Physical activity in breast cancer survivors: A systematic review and meta-analysis on overall and breast cancer survival. *The Breast*, 44, 144–152. <https://doi.org/https://doi.org/10.1016/j.breast.2019.02.001>
- Stensrud, S., Risberg, M. A., & Roos, E. M. (2015). Effect of Exercise Therapy Compared with Arthroscopic Surgery on Knee Muscle Strength and Functional Performance in Middle-Aged Patients with Degenerative Meniscus Tears: A 3-Mo Follow-up of a Randomized Controlled Trial. *American Journal of Physical Medicine & Rehabilitation*, 94(6). https://journals.lww.com/ajpmr/Fulltext/2015/06000/Effect_of_Exercise_Therapy_Compared_with.6.aspx
- Stevanović, J., Beleza, J., Coxito, P., Ascensão, A., & Magalhães, J. (2020). Physical exercise and liver “fitness”: Role of mitochondrial function and epigenetics-related mechanisms in non-alcoholic fatty liver disease. *Molecular Metabolism*, 32, 1–14. <https://doi.org/https://doi.org/10.1016/j.molmet.2019.11.015>
- Swann, C., Rosenbaum, S., Lawrence, A., Vella, S. A., McEwan, D., & Ekkekakis, P. (2021). Updating goal-setting theory in physical activity promotion: a critical conceptual review. *Health Psychology Review*, 15(1), 34–50. <https://doi.org/10.1080/17437199.2019.1706616>
- Szoeki, C. E. I., Cicuttini, F. M., Guthrie, J. R., Clark, M. S., & Dennerstein, L. (2006). Factors affecting the prevalence of osteoarthritis in healthy middle-aged women: Data from the longitudinal Melbourne Women’s Midlife Health Project. *Bone*, 39(5), 1149–1155. <https://doi.org/https://doi.org/10.1016/j.bone.2006.05.016>
- Trost, S. G., Owen, N., Bauman, A. E., Sallis, J. F., & Brown, W. (2002). Correlates of adults’ participation in physical activ-

- ity: review and update. *Medicine science in sports exercise*, 34(12), 1996–2001.
- van der Windt, D. J., Sud, V., Zhang, H., Tsung, A., & Huang, H. (2018). The Effects of Physical Exercise on Fatty Liver Disease. *Gene Expr*, 18(2), 89–101. <https://doi.org/10.3727/105221617x15124844266408>
- Vollstedt, M., & Rezat, S. (2019). An introduction to grounded theory with a special focus on axial coding and the coding paradigm. *Compendium for early career researchers in mathematics education*, 13, 81–100.
- von Hurst, P. R., & Wham, C. A. (2007). Attitudes and knowledge about osteoporosis risk prevention: a survey of New Zealand women. *Public Health Nutrition*, 10(7), 747–753. <https://doi.org/10.1017/S1368980007441477>
- Voorpostel, M., van der Lippe, T., & Gershuny, J. (2010). Spending Time Together—Changes Over Four Decades in Leisure Time Spent with a Spouse. *Journal of Leisure Research*, 42(2), 243–265. <https://doi.org/10.1080/00222216.2010.11950204>
- Wharton, C. Y. (2020). Middle-aged women negotiating the ageing process through participation in outdoor adventure activities. *Ageing and Society*, 40(4), 805–822. <https://doi.org/10.1017/S0144686X18001356>
- Wong, A., Figueroa, A., Son, W.-M., Chernykh, O., & Park, S.-Y. (2018). The effects of stair climbing on arterial stiffness, blood pressure, and leg strength in postmenopausal women with stage 2 hypertension. *Menopause*, 25(7), 731–737. <https://doi.org/10.1097/gme.0000000000001072>
- Wolf, K., Reese, C. E., Mason, M. P., Beaird, L. C., Tudor-Locke, C., & Vaughan, L. A. (2008). Physical Activity Is Associated with Risk Factors for Chronic Disease across Adult Women’s Life Cycle. *Journal of the American Dietetic Association*, 108(6), 948–959. <https://doi.org/https://doi.org/10.1016/j.jada.2008.03.015>
- Xiao, P. L., Cui, A. Y., Hsu, C. J., Peng, R., Jiang, N., Xu, X. H., Ma, Y. G., Liu, D., & Lu, H. D. (2022). Global, regional prevalence, and risk factors of osteoporosis according to the World Health Organization diagnostic criteria: a systematic review and meta-analysis. *Osteoporosis International*, 33(10), 2137–2153. <https://doi.org/10.1007/s00198-022-06454-3>
- Yang, L., Cao, C., Kantor, E. D., Nguyen, L. H., Zheng, X., Park, Y., Giovannucci, E. L., Matthews, C. E., Colditz, G. A., & Cao, Y. (2019). Trends in Sedentary Behavior Among the US Population, 2001–2016. *JAMA*, 321(16), 1587–1597. <https://doi.org/10.1001/jama.2019.3636> %J JAMA



This is Open Access article distributed under the terms of CC-BY-NC-ND 4.0 International License.

Interview protocol

1. Why do you do PA? Has anyone advised you to exercise, or did you decide on your own? If others have recommended you, what were their reasons? If you decided by yourself, what were your reasons?
2. Do you have a small child in need of care? Does having a child in need of care hinder your regular physical activity?
3. Are you employed? If you are employed, how does being employed affect your regular physical activity?
4. How do you feel about approaching old age?
5. Have you experienced menopause? How has menopause affected your regular physical activity? How has regular physical activity affected your menopause process?
6. Are cultural, safety, and security problems an obstacle to your regular physical activity? Please explain more.
7. Have social media, or national and international media influenced you to do PA?
8. In your opinion, what is the current role of the government, municipalities, and park management in encouraging and supporting middle-aged women to do PA? What are your expectations from them in this regard?
9. Did you do physical activity when you were young? If yes, for what reasons?
10. What do your husband’s perspective about your PA? Do they encourage you? Do they help you do PA or not? Please explain more.
11. What are the benefits of PA for you? How is your physical and mental experience after PA? Has experiencing the benefits motivated you to pursue PA?
12. What have been your barriers to PA?
13. What things cause you to suffer when doing PA?
14. What reasons can lead to your lack of PA?
15. Do culture, social support, and economic conditions affect your PA?
16. Is observing hijab a restriction for your PA? Please explain more.