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REVIEW ARTICLE

A Study on the International Trends and Prospects of Physical Activity and Health Promotion in Active Aging

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ABSTRACT

Later life is commonly a period of transitions and adjustment to losses. Reduced social participation is common in older people, and is associated with similar negative health outcomes. The aim of this literature review was to identify and discuss about international trends of the influence of community-based physical activity in older adults in order to summarize the impact of health promotion program associated with physical activity for promoting active aging. A total of nine studies met the inclusion criteria and were included in this review. Seven of these studies reported that physical function is significantly improved in intervention group. Most of these studies performed aerobic exercise or balance training and several studies were multi-component physical activities. This review found aerobic exercise and balance training mainly performed for community-dwelling elderly and also community-based intervention program has potential effect on their subjective well-being.

＜Key-words＞
Community-dwelling elderly, community-based physical activity, social participation, active aging

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Ⅰ. Background

The aging of the populations started several decades ago and is now a global phenomenon (Christensen, Doblhammer, Rau, et al., 2009). Increasing longevity and low birth rates inevitably result in major changes in the observed age structure, with consequences for societal arrangements. The projected changes will affect numerous areas of life, such as family formation, labor market arrangements, the sustainability of public finances, and the environment (Kluge F, Zagheni E, Loichinger E, et al., 2014).

Later life is commonly a period of transitions and adjustment to losses. In the developed world, older people often leave the formal workforce in their later years, although they may continue to contribute to society in many ways, including participating in the informal workforce, volunteering, or providing crucial help for their families. There is no physiologic reason that many older people cannot participate in the formal workforce, but the expectation that people will cease working when they reach a certain age has gained credence over the past century (WHO, 2011). Social participation is commonly regarded as involvement in interpersonal interactions outside the home, including social, leisure, community activities, and work (Levasseur M, Gauvin L, Richard L, et al., 2011; Maier H & Klumb PL, 2005). Reduced social participation is common in older people, and is associated with similar negative health outcomes (Glass TA, De Leon CFM, Bassuk SS, et al., 2006; Glei DA, Landau DA, Goldman N, et al,. 2005).

In the other hand, societal changes over decades have dramatically reduced the need for physical activity in daily life while creating ubiquitous barriers to physical activity. Mechanization and computerization have reduced physical activity at work, labor-saving devices have reduced activity required for household chores, and investments and policies that favored travel by automobiles have reduced the use of walking and bicycling for transportation. Although these societal changes have had some desirable effects, they have also led to a decrease in daily physical activity (Sallis, Floyd, Rodríguez, et al., 2012). The epidemiological picture that has emerged from population surveillance data reflects high levels of physical inactivity (e.g., no leisure-time physical activity, ranging from 20-30 percent of the population or more) that generally increase with age (Schnohr, Scharling & Jensen, 2003; Centers for Disease Control and Prevention, 2005). High physical inactivity rates are reported in many industrialized countries, as well as in a growing number of developing nations (Kalache & Kickbusch, 1997). Physical activity can be effective at all phases of chronic disease management, from primordial prevention (prevention of risk factors) through treatment and rehabilitation (Physical Activity Guidelines Advisory Committee, 2008). There is particular interest in the potential for physical activity to prevent chronic diseases, thereby improving quality of life and reducing healthcare costs (Dishman R, Washburn R & Heath G, 2004).

Walkable environments are particularly important, given that neighborhood walking

increases not only older people's opportunities for physical exercise but also social interaction (Leyden KM, 2003). Engagement in outdoor physical activity by older people is crucial to them remaining ambulatory and also provides numerous other health benefits (Heikkinen RL, 1998). Older people's participation in the wider community necessarily also relies on their capacity for remaining mobile in their out-of-home environments. Individual factors as well as multiple aspects of the built environment affect older people's potential out-of-home mobility and thus their capacity to participate in society (Aird RL & Buys L, 2015). The World Health Organization (WHO) adopted active aging to denote the process for achieving the vision that if ageing is to be a positive experience, longer life must be accompanied by continuing opportunities for health, participation and security (WHO, 1994). Older people who retire from work and those who are ill or live with disabilities can remain active contributors to their families, peers, communities and nations. Active ageing aims to extend healthy life expectancy and quality of life (QOL) for all people as they age, including those who are frail, disabled and in need of care (WHO, 2002).

According to Kahn et al., recommendations to increase physical activity have been made for individuals and clinical settings but not for community settings. Increased physical activity has been linked not only to behavioral and social correlates but also to physical and social environmental correlates (Kahn EB, Ramsey LT, Brownson RC, et al., 2002). Some community-based programs use methods and strategies employed in health care settings for patient education and counseling (such as one-to-one counseling, classroom instruction, self paced instruction, cognitive-behavioral strategies, skills building, and print materials), but base these services in nonclinical settings, such as recreation departments, churches, senior centers, and shopping malls. As with patient education and rehabilitation in clinical settings, the intervention's aims are to increase knowledge, change attitudes, build skills, and influence behavior change; thus the "community" aspect refers mainly to the setting and broader availability. Although these techniques predominate person-focused interventions, they may also be combined with other broader based methods in multicomponent programs (i.e., socioecologic programs and risk factor reduction programs) (Sharpe, 2003). Therefore, the role of community-based interventions to promote physical activity has emerged as a critical piece of an overall strategy to increase physical activity behaviors among the older adults (Kahn EB, Ramsey LT, Brownson RC, et al., 2002).

The aim of this literature review was to identify and discuss about international trends of the influence of community-based physical activity in older adults in order to summarize the impact of health promotion program associated with physical activity for promoting active aging. This review investigates international trends in the effect of community-based physical activities in community-dwelling elderly for promoting active aging.

Ⅱ. Methods

1. Search Strategy

A series of medical, scientific, and psychology databases were searched in PubMed. Papers were restricted to those published between January 2010 and January 2016. The following search terms were used to identify relevant articles:

- ((physical activity) AND social participation) active aging
- (((community based) AND physical activity) AND healthy elderly) AND quality of life
- (((Community-based) AND physical activity) AND elderly) AND quality of life

2. Inclusion and exclusion criteria

Studies were selected from the initial search if they met the following criteria: (i) research assessed community-based physical activity program, (ii) study design was a randomized controlled trial (RCT), or non-randomized (NRCT) or uncontrolled clinical trial (UCT) and (iii) a full length article published in a peer reviewed English language journal. Studies excluded that: (i) only home-based physical activity program, (ii) rehabilitation center or hospital-based physical activity program. (iii) non-intervention studies, (iv) theoretical articles or descriptions of treatment approaches and (v) unpublished studies, abstracts or dissertations.

3. Data extraction

Data were extracted using a data extraction form for the description of methodology and important trial characteristics including study population, intervention type, volume of training, outcome measures, and follow- up. This review focused on a description of the studies and their results, and on qualitative synthesis of the findings.

Ⅲ. Results

1. Search results

The initial search retrieved 173 articles that met the search criteria. After we excluded reviews and non-communicable disease research, 45 articles remained. The first screening round resulted in 45 titles of articles that met the inclusion criteria or raised doubt. We screened the abstracts of these 45 articles, and 12 articles remained for full-text assessment in the final screening round. Three of the 12 articles did not meet the inclusion criteria; thus, 9 articles were included in this review.

2. Description of the studies

A total of nine studies met the inclusion criteria and were included in this review. Key information about the clinical trials design and primary outcomes from the studies were

extracted and tabulated (table 1). These studies assessed the various dimensions of primary outcome in community dwelling elderly. Six studies assessed physical function or muscle function. Two studies assessed cognitive function. One study assessed psychological outcomes. Intervention were identified: 3 studies performed with community-based health management, 3 studies performed with multi-component physical activity, 2 studies performed with falls prevention balance training, and 1 study performed with walking program.

<Table 1> A descriptive overview of exercise interventions with control group

Study/ Population	Intervention / Control sample size	Intervention	Schedule	Control	Primary outcome
El-Khoury et al. (2015) 706 women aged over 75	352/354	1-h of progressive balance training	Once a week for two years	No physical activity	· Physical function: FES-I
Kamegaya et al. (2014) 52 elderly aged 65 years and older	26/26	2-h comprehensive intervention: muscle-stretching, aerobic exercise, walking, leisure activities such as cooking, handcrafts, competitive games	Once a week for 12 weeks	Daily activity	· Cognitive function: The five-Cog test(character position referencing task, cued recall task, clock drawing task, animal name listing task, analogy task)
Yeung et al. (2015) 99 elderly aged 60 years or older	41/46	1-h group-based falls prevention and exercise programme	Once a week for 36 weeks	Usual activities	· Balance function: TUGT, BBS, 6MWT
Chao et al. (2012) 2361 elderly aged 60 years or older	1163/1198	Community-based health management: diet and psychological advice, exercise, telephone consultation, lecture, material	Once per month for 18 months	Usual care	· Subjective grading health indices: self-evaluated (mental) health status · Objective health indices: BMI
Kanaya et al. (2012) 230 community-dwelling adults	113/117	Active intervention: education and skills training to modify diet and physical activity through primarily telephone-based counseling	Hours per week for 12 months	Daily activity	· Diabetes risk factors: Fasting glucose level, triglycerides, HDL, LDL weight, waist, and SBP

Maki et al. (2012) 150 community-dwelling adults	75/75	90-min a walking program	Once a week for 3 months	Educational lectures on food, nutrition, and oral care	・ Cognitive function: The five-Cog test(dual task test, delayed recall, clock drawing task, categorical word fluency, abstract reasoning)
Freiberger et al. (2012) 280 community-dwelling members aged 70 and older	SBG: 63 FG: 64 MG: 73 CG: 80	1-h each interventions	Twice a week for 24 months	No intervention	・ Fall-related psychological outcomes: CoF, ABC
Avila et al. (2010) 27 older adults aged 60-75 years	12/15	30-min dietary education session each week for the duration of the intervention and 40-min of moderate intensity resistance training	Three days per week for 10 weeks	30-min dietary education session each week for the duration of the intervention	・ Muscle function: 1-RM(N) ・ Physical function: SPPB(score)
De Vriendt et al.(2015) 162 community dwelling frail older adults	86/82	A client-centred, activity-oriented and community based intervention program	10 weeks	Usual care	・ Physical function: b-ADL

FES-I;Fear of falling, TUGT; Time-up-and-go test, BBS; Berg balance scale, 6MWT; Six-min walking test, BMI; Body mass index, SBP; Systolic blood pressure, SBG; Strength and balance group, FG; Strength and balance plus endurance training, MG; Strength and balance plus fall risk education. CG; Control group, CoF; Consequences of falling scale, ABC; The 16-item activities-specific balance confidence scale, 1-RM; Leg extensor one-repetition maximum, N; Newtons, SPPB; The short physical performance battery, b-ADL; Basic activities of daily living

<Table 1> (continued)

Study	Intervention		Control	
	Baseline (mean±SD)	Follow-up (mean±SD)	Baseline (mean±SD)	Follow-up (mean±SD)
El-Khoury et al. (2015)	25.5±7.1	Mean change from baseline to 24 months: -1.1(-1.8 to -0.3)	26.0±7.0	Mean change from baseline to 24 months: -1.4(-2.2 to -0.7)
Kamegaya et al. (2014)	Character position referencing task: 18.8±7.9 Cued recall task: 13.6±4.6 Clock drawing task: 6.9±0.3 Animal name listing task: 14.7±3.2 Analogy task: 9.4±3.0	Character position referencing task: 21.7±8.1 Cued recall task: 16.5±5.5 Clock drawing task: 6.7±0.7 Animal name listing task: 16.1±3.5 Analogy task: 11.0±3.1	Character position referencing task: 20.0±9.0 Cued recall task: 12.7±4.3 Clock drawing task: 6.8±0.5 Animal name listing task: 14.9±3.6 Analogy task: 9.7±3.7	Character position referencing task: 22.4±8.4 Cued recall task: 15.8±4.4 Clock drawing task: 6.7±0.6 Animal name listing task: 14.8±3.3 Analogy task: 10.3±2.5

Yeung et al. (2015)	TUGT(s): 12.1±3.1 BBS: 50.4±4.3 6MWT(m): 393.9±79.4	TUGT(s): 9.8±2.1 BBS: 53.9±2.0 6MWT(m): 434.7±71.2	TUGT(s): 13.4±4.9 BBS: 50.4±4.8 6MWT(m): 367.3±101.5	TUGT(s): 12.8±4.9 BBS: 50.8±5.7 6MWT(m): 357.3±88.2
Chao et al. (2012)	Self-evaluated mental health status: 3.5±1.0 Self-evaluated health status: 3.4±0.8 BMI: 24.1±3.3	Self-evaluated mental health status:3.5±0.9 Self-evaluated health status: 3.7±0.9 BMI: 23.5±4.3	Self-evaluated mental health status:3.5±0.8 Self-evaluated health status: 3.4±0.9 BMI: 23.8±3.3	Self-evaluated mental health status:3.7±0.56 Self-evaluated health status: 3.5±0.7 BMI: 23.3±3.6
Kanaya et al. (2012)	Data is Mean(SE) Fasting glucose level: 93.8(1.1) Triglycerides:148.3 (10.7) HDL: 53.1(1.6) LDL: 112.0(3.0) weight, 177.9(3.7) waist:100.6(1.3) SBP: 126.9(1.7)	Within-Group change, Mean(SE) Fasting glucose level: -0.9(1.0) Triglycerides: -1.6(6.8) HDL: 3.2(0.9) LDL: -5.8(2.3) weight, -1.3(0.7) waist: -0.1(0.4) SBP: 0.3(1.4)	Data is Mean(SE) Fasting glucose level: 93.5(1.1) Triglycerides:128.1 (8.6) HDL: 54.7(1.6) LDL: 114.8(3.0) weight, 177.9(3.7) waist:99.3(1.3) SBP: 127.6(2.0)	Within-Group change, Mean(SE) Fasting glucose level: -1.4(1.0) Triglycerides: 4.9(5.0) HDL: 1.7(0.8) LDL: -3.6(2.2) Weight: -0.4(0.8) waist: -0.2(0.5) SBP: 0.3(1.6)
Maki et al. (2012)	Dual task test: 21.2±6.4 Delayed recall: 14.2±5.2 Clock drawing task: 6.8±0.7 Categorical word fluency: 16.0±4.0 Abstract reasoning: 10.1±3.6	Dual task test: 22.9±6.7 Delayed recall: 17.3±5.9 Clock drawing task: 6.9±0.3 Categorical word fluency: 17.2±4.8 Abstract reasoning: 10.4±3.5	Dual task test: 19.1±8.0 Delayed recall: 13.3±5.2 Clock drawing task: 6.8±0.7 Categorical word fluency: 15.8±4.9 Abstract reasoning: 10.2±3.5	Dual task test: 21.6±7.1 Delayed recall: 16.1±5.6 Clock drawing task: 6.9±0.6 Categorical word fluency: 15.6±4.3 Abstract reasoning: 10.8±3.0
Freiberger et al. (2012)	SBG: CoF=(Loss of functional independence: 13.2±4.5, Damage to identity: 12.1±3.8), ABC=145.8±18.1 FG: CoF=(Loss of functional independence: 13.0±4.5, Damage to identity: 11.9±3.5), ABC=148.6±16.8 MG: CoF=(Loss of functional independence: 13.1±3.6, Damage to identity: 12.1±3.0), ABC=142.7±24.5	SBG: CoF=(Loss of functional independence: 12.3±4.1, Damage to identity: 11.4±3.3), ABC=143.8±20.4 FG: CoF=(Loss of functional independence: 11.5±4.0, Damage to identity: 10.7±3.4), ABC=147.7±19.6 MG: CoF=(Loss of functional independence: 12.3±3.8, Damage to identity: 11.6±3.2), ABC=143.4±21.8	CG: CoF=(Loss of functional independence: 12.9±3.9, Damage to identity: 11.6±3.0), ABC=150.3±12.4	CG: CoF=(Loss of functional independence: 13.1±3.6, Damage to identity: 11.7±3.2), ABC=145.0±23.8
Avila et al. (2010)	1-RM: 453±36 SPPB(score): 11.6±0.2	1-RM: 513±39 SPPB(score): 11.7±0.2	1-RM: 471±39 SPPB(score): 11.3±0.5	1-RM: 466±37 SPPB(score): 11.8±0.2

De Vriendt et al.(2015)	66±25	Mean differences intervention group: 3.6	69±23	Mean differences control group: -3.1

FES-I;Fear of falling, TUGT; Time-up-and-go test, BBS; Berg balance scale, 6MWT; Six-min walking test, BMI; Body mass index, SBP; Systolic blood pressure, SBG; Strength and balance group, FG; Strength and balance plus endurance training, MG; Strength and balance plus fall risk education. CG; Control group, CoF; Consequences of falling scale, ABC; The 16-item activities-specific balance confidence scale, 1-RM; Leg extensor one-repetition maximum, N; Newtons, SPPB; The short physical performance battery, b-ADL; Basic activities of daily living

<Table 1> (continued)

	Statistical analysis
El-Khoury et al. (2015)	FES-I increased significantly in both groups but less in the intervention group. The mean difference between groups in the FES-I score was significant at one year.
Kamegaya et al. (2014)	The intervention group had a significant increase in the score on the Five-Cog test's analogy task relative to the control group (F1,38 = 4.242, P = 0.046).
Yeung et al. (2015)	The intervention group had significantly better performances in TUGT, BBS and 6MWT than the comparison group over 36 weeks.
Chao et al. (2012)	Compared with the control group, the intervention group demonstrated improvement on the Subjective grading health indices
Kanaya et al. (2012)	Group differences in 6-month change for weight and triglycerides were significant. The intervention group lost 1.9 pounds more than control group(P=.03) and a difference in change in triglyceride levels was found between groups (P = .02). Significant within-group changes were observed in the intervention group: LDL decreased at 6 months (P < .001) and 12 months (P < .05), and HDL increased at 6 months(P < .05) and 12 months (P < .001); HDL also increased in the control group at 12 months (P < .05).
Maki et al. (2012)	Word fluency in the intervention group improved significantly more than control group (P = .01). There were no significant differences in delayed recall, dual task, clock drawing, abstract reasoning
Freiberger et al. (2012)	The mixed-effects analyses comparing the outcomes of the intervention groups with those of the control group revealed no significant differences regarding the fall-related psychological outcomes.
Avila et al. (2010)	The intervention group showed a significant strength increase compared to the control group (p = 0.005). SPPB was no significant difference between groups.
De Vriendt et al.(2015)	The effects were statistically significant for the b-ADL index (p=0.013)

FES-I;Fear of falling, TUGT; Time-up-and-go test, BBS; Berg balance scale, 6MWT; Six-min walking test, BMI; Body mass index, SBP; Systolic blood pressure, SBG; Strength and balance group, FG; Strength and balance plus endurance training, MG; Strength and balance plus fall risk education. CG; Control group, CoF; Consequences of falling scale, ABC; The 16-item activities-specific balance confidence scale, 1-RM; Leg extensor one-repetition maximum, N; Newtons, SPPB; The short physical performance battery, b-ADL; Basic activities of daily living

3. Effect on physical activity

Seven studies reported that physical function is significantly improved in intervention group. The intervention was balance training or aerobic exercise consisted of more than 1 hour per week. And 2 of these studies performed with community-based intervention

program. Two studies reported negative effect in psychological outcomes and physical function. Of these, one study was short terms intervention (10 weeks) other than studies reported positive effects.

Ⅳ. Considerations and Conclusions

1. Summary of the results

This review describes the international trends of the effect of community-based physical activities in community-dwelling elderly. Many studies were found in the literature, but a very small number of studies were community-based physical activities performed among community-dwelling elderly or met the inclusion criteria of this study. Therefore, this problem brought about a small number of studies being included in the review. Most of these studies performed aerobic exercise or balance training and several studies were multi-component physical activities. Moreover, heterogeneity existed between the types of interventions, study designs, the duration of follow-ups and assessment tools. Reviewer found that multi-component physical activities had no evidence of psychological effect. However, reviewer found most of studies performed for at least 1 hour per week with balance training or aerobic exercise and these studies reported positive effects on physical function or balance function.

2. Implementation of physical activity in active aging

Physical activity can be classified into 4 domains of life that describe how people spend their time: Leisure/recreation/exercise, occupation, transportation, and house hold. In this review, we divided into two categories: medical physical activity (exercise and occupation) and environmental and societal physical activity (Leisure, recreation, transportation and house hold) (Sallis, Floyd, Rodríguez, et al., 2012).

(1) Medical physical activity interventions

Evidence from randomized controlled trials indicates that exercise is as effective as drug interventions in terms of mortality benefits in the secondary prevention of coronary heart disease, treatment of heart failure and prevention of diabetes, and is more beneficial than drug treatment in stroke rehabilitation (Naci & Loannidis, 2013). Furthermore, high-intensity interval exercise training has also been shown to be more effective than traditional exercise interventions for cardiac function in various diseases for which there was major concern regrading its safety and appropriateness (Guiraud T, Nigam A & Gremeaux V, 2012).

The impact of physical activity in older adults is more strongly supported in cognitive function by results from intervention studies, which generally show that older adults who have completed a physical activity program that produces significant increases in cardiorespiratory fitness (indexed by direct measures or estimation of VO2max) often show enhanced cognitive performance (Bherer, Erickson & Liu-Ambrose, 2013).

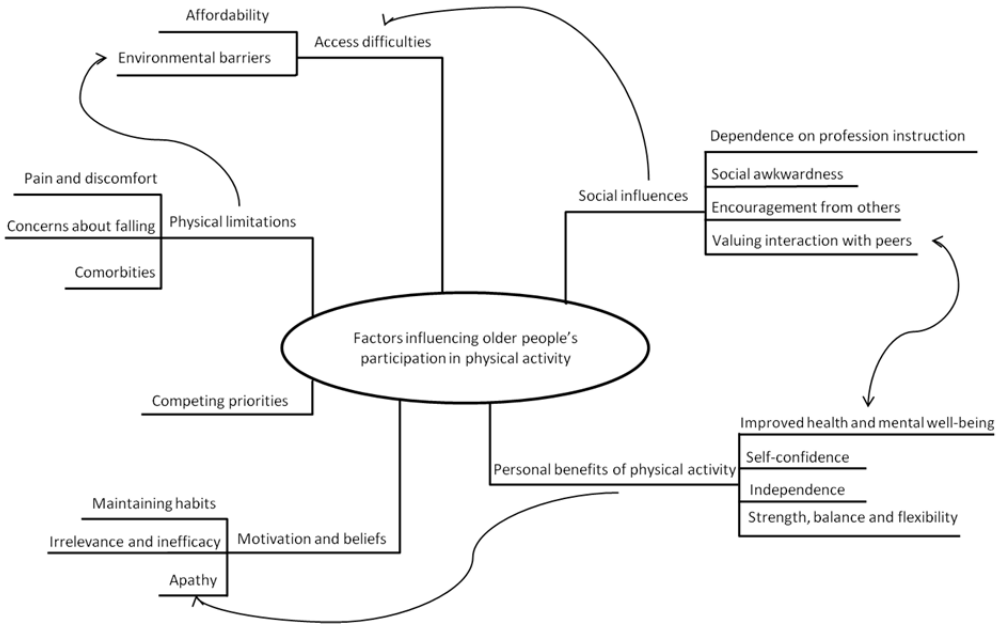
Kamegaya(2014) and Maki(2012) compared older individuals who completed a three-month aerobic training program to age-matched controls who did not exercise and who participated in educational lecture. Intervention group showed improved general cognitive function and language function.

(2) Environmental and societal physical activity interventions

Physical activity participation depends at least in part on availability and proximity of attractive, safe, and low-cost environments that facilitate movement and activity. Such environments include neighborhood and community parks; safe and usable sidewalks; hiking and biking trails; swimming pools; community recreation centers; and stairways that offer a safe, convenient, and attractive alternative to the use of elevators and escalators (Sallis, Bauman & Pratt, 1998). Chao(2012) and De Vriendt(2015) have demonstrated the potential utility of community-based intervention program. In both studies, Subjective grading health indices and ADL significantly increased than control group.

(3) The environmental barriers in active aging

Some older people still believe that physical activity in unnecessary or even potentially harmful. Others recognize the benefits of physical activity, but report a range of barriers to physical activity participation (Franco, Tong, Howard, et al., 2015). Figure 1 shows the thematic schema by Franco and his colleagues developed to illustrate the inter-relationships between the themes. There are six major reflecting community dwelling elderly's perspectives on physical activity: social influences; physical limitations; competing priorities; access difficulties; personal benefits of physical activity; and motivation and beliefs.



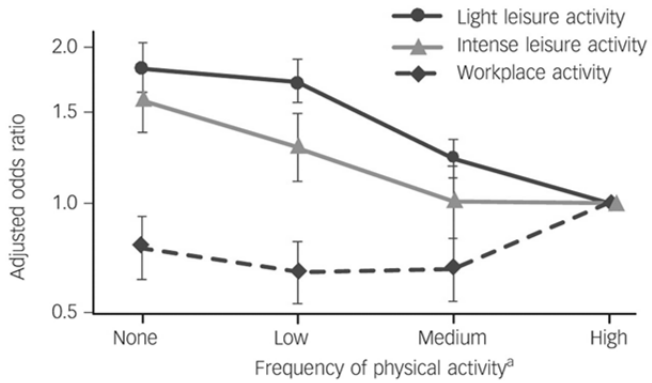
<Figure 1> Thematic schema illustrating conceptual interactions among valuing interaction with peers and improved health and mental well-being, personal benefits of exercise and apathy, physical limitations and environmental barriers, and access difficulties and social influences (Franco, Tong, Howard, et al., 2015)

(4) Importance of investments in active ageing

According to United Nations (2012), while some people experience a good health status up to very old age, other people suffer from chronic diseases and may die prematurely. Investments in active ageing which focus on the individual person can be made during different phases in the life course: "early investments" in childhood and adolescence, "late investments" in middle and late adulthood. Early investments, especially during the educational phase in childhood and adolescence, tend to have profound and long-lasting effects. Late investments in adulthood and old age, however, are effective as well. Late investments in active ageing may be effective, but that the effects of late interventions in active ageing may be not as cost-effective as investments earlier in life. Finally, investments in the societal frameworks for active ageing are highly important (United Nations, 2012).

Physical activity can be effective at all phases of chronic disease management, from primordial prevention (prevention of risk factors) through treatment and rehabilitation (Physical Activity Guidelines Advisory Committee, 2008). There is particular interest in the potential for physical activity to prevent chronic diseases, thereby improving quality of life and reducing healthcare costs (Dishman R, Washburn R & Heath G, 2004). Furthermore, physical activity can also be associated with impaired mental health. The adjusted odds ratio for case-level depression according to different levels of physical activity is displayed in Figure 2**.** Although there is a clear dose–response effect in terms of overall time of activity reported, the intensity of leisure activity (light vs intense) does

not appear to be important, with similar effect sizes seen for both categories (Harvey, Hotopf, Overland, et al., 2010).



<Figure 2> Comparison of the relative associations between different types of physical activity and case-level depression (Harvey, Hotopf, Overland, et al., 2010)

(5) Limitations

There are a number of limitations to this study. First, reviewer limited the search to English language articles. Second, the search strategy covered resources published between 2010 and 2016 as the process of conducting the literature review. Third, due to the small number of included papers and the lack of statistically significant differences, the results of this review are difficult to interpret. According to Amiri Farahani et al., in community-based interventions, the number of participants that contribute in all levels of measurement, design, application and assessment increase the chance of success for an intervention programme. At the same time, the efficacy and reliability of an intervention programme is more important than the number of people that an intervention could involve (Amiri Farahani, Asadi-Lari, Mohammadi, et al., 2015).

(6) Conclusion

This review found aerobic exercise and balance training mainly performed for community-dwelling elderly and also community-based intervention program has potential effect on their subjective well-being, although due to the inadequate supply of information reviewer could not determine which specific type, frequency or amount of intervention could significantly improve physical activity, or which intervention is more effective and sustainable.

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