

Tai Chi and Zumba Gold®: An alternative to motivate elderly in doing physical activity

Nor Fadila Kasim^{1,2}, Sarah Aldred², Jet Veldhuijzen Van Zanten²

¹Faculty of Sport Science and Coaching, Universiti Pendidikan Sultan Idris,
Tanjong Malim, Perak, Malaysia

²School of Sport Exercise and Rehabilitation Sciences,
University of Birmingham, United Kingdom

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Abstract

Elderly population are at risk of getting cardiovascular diseases, arthritis, loss of physical and functional fitness and any other health conditions related to ageing. Research has shown that, adherence to physical activity can help to reduce and control the prevalence of these diseases. However, as age increased, the tendency of elderly population to involve in physical activity decreased, and will continue decreasing as the age increased. Most of elderly population claimed that their motivation to involve in physical activity was low due to the several factors which includes; feeling fear that they will fall, their body will be in pain, too old to do exercise, no fun elements and no time to do exercise. Therefore, it is important to find a suitable exercise program for this aged group which will interest them to participate and at the same time will be beneficial to their health. In this paper, we will look on two possible exercise programs which have the elements of safety and not too vigorous to be done by this age group which are Tai Chi and Zumba Gold®.

Keywords: Tai Chi, Zumba Gold®, Elderly

INTRODUCTION

Regular physical activity (PA) is widely known to prevent and control several diseases such as type 2 diabetes mellitus, cardiovascular diseases, reduction in functional fitness, sarcopenia, osteoarthritis, osteoporosis and other diseases related to elderly population. According to the American College of Sport Medicine (ACSM) and American Heart Association (AHA), older adults are recommended to perform a minimum of 30 minutes moderate-intensity aerobic PA on five days each week. Moderate intensity can be classified as at scale 5 or 6, if 0 represents sitting, and 10 is all-out effort. However, it should be noted that the recommendation from the ACSM of 30 mins x 5 days is a minimum recommendation, which can be further tailored to an individual based on their health condition. Older adults with one or more medical conditions should perform exercise according to their ability and health condition which could include a gradual increase physical activities over time.

Unfortunately, there are too few elderly population that are engaged in physical activity, and the percentage is decreasing as the age increased. The most common factors are poor physical health and physical impairment due to inability to stand for long periods of time, or because they have limited mobility (Kosteli, Heneghan, Roskell, Williams, Adab, Dickens & Cumming (2017). In an interview

with older age participants of a study by Chen (2010), the participants stated: 'For a person who is sitting in a wheelchair like me, it is impossible to perform any physical activities. I cannot move freely' (Male, 79) 'my functional ability does not allow me to be physically active any more' (Male, 72), and 'My health is very poor, how can I perform PA? It is just a dream' (Female 71). In addition to that, other barriers identified relate to discouragement in doing physical activity includes the fear of getting injured or falling (Gobbi, Sebastião, Papini, Nakamura, Valdanha Netto, Gobbi & Kokubun, 2012; Lee, Jackson & Richardson, 2017; Schmidt, Rempel, Murray, McHugh & Vallance, 2016; Sjors, Bonn, Trolle Lagerros, Sjolander & Balter, 2014), had no interest in doing exercise or didn't enjoy any exercise programme earlier in life (Justine, Azizan, Hassan, Salleh, & Manaf, 2013; Kosteli et al., 2017; Lee et al., 2017) and didn't have time do exercise (Gobbi et al., 2012; Huang, Lin, Lee & Chen, 2016; Justine et al., 2013).

Therefore, to encourage older adults to exercise, and integrate exercise into their lifestyle, it is important to tailor an exercise intervention which includes the elements of safety, fun, and doable on a chair for example Tai Chi and Zumba Gold®.

Tai Chi

Tai Chi, Tai Ji Quan, Taiji or Taiji Chuan is an ancient Chinese exercise that has been practiced for hundreds of years in China (Yang, Wang, Ren, Zhang, Li, Zhu & Liu, 2015). Literally, Tai Chi means the 'The Supreme Ultimate Boxing System' which originally emerged from a form of martial arts and self-defence (Kuramoto, 2006). The full history of Tai Chi is unclear; however, it is believed to have originated from the Henan province in China in the late dynasty of Ming (Guo, Qiu & Liu, 2014). The first written source on Tai Chi is by the martial artist Chen Wangting (1600-1680), who suggested Tai Chi as a new form of Kung Fu (Chang, Nien, Tsai & Etnier, 2010; Wayne & Kaptchuk, 2008b). He is also believed to be the person who created and first practiced Tai Chi (Group of the State Sports General Administration of Martial Arts Research Institute, 2009).

To perform Tai Chi, the practitioner will start by standing with feet shoulder-width apart, and slightly bending their knees (Wall, 2005). Some practitioners believe that this position relates to enhanced body strength and balance by distributing the body weight on both feet to let the 'qi' or vital energy flow from centre of the earth (gravity) into the body. The philosophy is to let the body be part of gravity. The practitioner will then make a circular arm movement and use imagery and visualisation, for example use your hand to part the cloud, and as a crane would spread its wings (Wayne & Kaptchuk, 2008a). Those movements combined with deep diaphragmatic breathing will produce a slow and graceful movement (Thomas, Hong, Tomlinson, Lau, Lam, Sanderson & Woo, 2005). The concept of shifting weight from one leg to another leg during the slow movements trains the practitioner to become more mindful and aware.

These movements stimulate a three way combination of musculoskeletal strength, breathing and mindfulness, and this has provoked some scholars to identify Tai Chi as mind-body exercise or moving meditation (Rogers, Larkey & Keller, 2009). This is therefore not only beneficial to physical, but also to mental health (Adler & Roberts, 2006; Zheng, Kim, Lal, Meier, Sibbritt & Zaslowski, 2018; Zheng, Lal, Meier, Sibbritt & Zaslowski, 2014). Musculoskeletal strength improves by increasing the neuromuscular response to the lower extremities during the slow movements (Hass, Gregor, Waddell, Oliver, Smith, Fleming & Wolf, 2004; Wu, Liu, Hitt & Millon, 2004). In addition, deep breathing can have a significant impact on blood pressure, heart rate and cardiorespiratory physiology (Lu & Kuo, 2012; Zheng, Li, Huang, Liu, Tao & Chen, 2015), and the final component of awareness has a significant effect on the neurophysiology of the brain by improving immune function, pain and mood (Frye Frye, Scheinthal, Kemarskaya & Pruchno, 2015; Jin, 1988; Li, Su, Guo, Wu, Du, Yang & Niu, 2014).

Nowadays, Tai Chi is not only practised in China. It has recently become popular in Western countries as part of exercise and leisure activities (Lan, Lai & Chen, 2002). In the United States for example, 2.5 million Americans practised Tai Chi in 2007 and the numbers continue to increase (Barnes,

Bloom & Nahin, 2008). This may be due to the growing evidence on the beneficial effects of Tai Chi on wide range of medical conditions including CVD (Lan, Chen, Wong & Lai, 2013; Park & Park, 2010; Robins, Elswick, Sturgill & McCain, 2016), rheumatoid arthritis (RA) (Chenchen Wang, 2011; Han, Judd, Welch, Wu, Tugwell & Ga, 2010; Lee, Pittler & Ernst, 2007) and respiratory function (Chan, Lee, Suen & Tam, 2011).

There are a few factors which make Tai Chi a suitable exercise form for an older age adult or elderly population. The nature of Tai Chi itself, as a mix of strength (Lan et. al., 2013; Wang, Collet & Lau, 2004), flexibility (Carbonell-Baeza, Romero, Aparicio, Ortega, Tercedor, Delgado-Fernandez & Ruiz, 2011; Liu, Li & Shnyder, 2010) and cardiorespiratory exercise, offers a form of complete exercise as recommended by the ACSM (Chodzko-Zajko, Proctor, Fiatarone Singh, Minson, Nigg, Salem & Skinner 2009). In addition to that, research has proven that Tai Chi is a moderate intensity exercise, which equal to 60-70% maximum heart rate, that is tolerated among older aged adults (Li, Hong, Chan & Max, 2001; Xu, Letendre, Bekke, Beebe, Mahler, Lofgren & Delmonico, 2015). Further, Tai Chi is also considered to be suitable for older adults due to the slow movements that make it low impact, low velocity and low risk for orthopaedic injury (Lan, Lai, Chen & Wong, 1998). In addition, as a form of exercise with low risk for injury (Lo, Yeh, Chang, Sung & Smith, 2012), Tai Chi is safe to be practised, not only by older adults but also by people with mobility problems or frailty (Wayne & Kaptchuk, 2008a).

Several review papers on PA in older age have highlighted the benefits and safety of Tai Chi (Chiang, Cebula & Lankford, 2012; Taylor, Cable, Faulkner, Hillsdon, Narici & Van Der Bij, 2004) and most of the studies agreed that Tai Chi is beneficial in reducing the fall rate in this population. Statistics show that most people aged 65 and above experience a fall each year, and 20-30% of cases result in hip fracture and immobility (Hornbrook, Stevens, Wingfield, Hollis, Greenlick & Ory, 1994). The higher fall rate is potentially due to reduced muscle strength, poor balance and less flexibility (Nguyen & Kruse, 2012) and for this reason, Tai Chi has been recommended as a suitable exercise regime to reduce the fall rate in this population (Hwang, Chen, Lee-Hsieh, Chien, Chen & Lin 2016; Taylor-Piliae, Hoke, Hepworth, Latt, Najafi & Coull, 2014; Xiao & Zhuang, 2015). In addition to that, Tai Chi has also being reported to have no adverse effect on patients that suffer in chronic heart failure (Caminiti, Volterrani, Marazzi, Cerrito, Massaro, Arisi & Rosano, 2011; Lan, Chen & Wong 2013), obstructive pulmonary disease (Chan et al., 2011; Fu, Min, Yu, McDonald & Mao, 2016; Leung, McKeough & Alison, 2013), or cancer (Campo, Light, Connor, Nakamura, Lipschitz, LaStayo & Kinney 2014; Sprod, Janelains, Palesh, Carroll, Heckler, Peppone & Mustian, 2012) and appears to be safe among RA patients (Kirsteins, Dietz & Hwang, 1991).

Zumba Gold®

Zumba® was first created in Colombia in the 1990s, by a Latin dance instructor, Alberto Perez. The exercise programme was a blend of various dance types including salsa, merengue, cumbia, and samba. Over the last 30 years, Zumba® has been performed by over 12 million people in over 150 countries (Inouye, Nichols, Maskarinec & Tseng, 2013) and has been voted in the top 20 of fitness trends worldwide in ACSM Health and Fitness Journal (Walter Thompson, 2012). Zumba® has evolved to include different types of Zumba®: for example Zumba® for elderly and those who has physical limitation (Zumba Gold®), Zumba® using light weight which targeted to tone targeted body part including arms, core and lower body (Zumba toning®), Zumba® for kids (Zumbatomic®), higher intensity of Zumba® which includes strength and resistance training using chair and focusing on building muscle, calories burns and improving cardiovascular health (Zumba sentao®), and low impact of Aqua Zumba® that is perform with combination of aqua fitness and danced moved from Zumba® (Benham, Hall & Barney, 2013). Despite the popularity of Zumba® across the World, there are only 27 research studies published in Medline, PubMed and Scopus, of which 4 were specifically undertaken using Zumba Gold®.

Based on previous research, Zumba® has been categorized as moderate to high intensity exercise based on the mean heart rate reserve that can be achieved in an average session (Domene, Moir, Pummell, Knox & Easton, 2016): An average of 65.5% to 92.5% heart rate reserve (HRR) (Sanders & Prouty, 2012) or 135 ± 19 beats/min (bpm) which is the equivalent to $73\% \pm 8$ of HR max. However, Zumba Gold® has been modified to achieve a lower intensity compared to Zumba® corresponding to $50.1 \pm 10.1\%$ HRR or 114 ± 14 bpm (Dalleck, Roos, Byrd & Weatherwax, 2015). However the modification of Zumba Gold® still fulfils the ACSM requirements of moderate intensity exercise which can improved cardiorespiratory fitness. In the study by Dalleck et al.(2015), the total energy expenditure was 197.9 ± 38 kcal/session, and participants were encouraged to follow their own pace and rhythm. In Zumba Gold® participants are encouraged to move according to their ability, low or half tempo, and can undertake the exercise in a chair if needs be.

At present, there is limited evidence on the safety of Zumba Gold® among elderly population, however Delestrat, Bateman, Esser, Targen and Dawes (2016) investigated Zumba Gold® in eleven people with mild-to-moderate Parkinson's disease and assessed the incidence of falls, dizziness and pain during each session and measured the rating perceived exertion (RPE) immediately after session. This study found that Zumba Gold® was a safe form of exercise for people with Parkinson's Disease, with no adverse events reported. In addition Zumba Gold® was also undertaken by renal disease patients that underwent haemodialysis (Bennett, Corradini, Ockerby & Cossich, 2012). Patients were guided to do a modified form of Zumba Gold® while undertaking 30 minutes of haemodialysis. The authors concluded that the modified version of Zumba Gold® was safe and feasible during haemodialysis treatment. It is possible to undertake Zumba Gold® in a chair which further reduces the risk of fall and injury, and makes it safe to perform by frail elderly and those who have a physical limitation to stand.

FUTURE STUDIES AND CONCLUSION

Even though there is no negative evidence is reported in the both Tai Chi and Zumba Gold® exercise that involved its safety issue, a further investigation which includes experimental and meta-analysis will be a good indicator to confirm the effectiveness and its safety effect on elderly population. The experimental design would possibly involve the observation and self-report of fall rate, muscular injury and any occurrence of abnormality of cardio respiratory during and after the exercise. More meta-analysis studies will also be helpful to determine the safety effect which includes a comprehensive comparison other control intervention or other exercise that are already proven to be beneficial and safe for elderly.

In addition to that, it is also interesting to investigate the type of exercise or physical activity that might influence elderly population to adhere to exercise programme. This can be done using numerous questionnaire for example Behavioral Regulation Exercise Questionnaire or Attitude Towards Physical Activity Questionnaire. This type of studies will possible helps trainers, public health board or medical practitioner to propose any exercise training based on their preference and health condition.

In conclusion, Tai Chi and Zumba Gold® can be an alternative to encourage elderly population to participate in physical activity as both exercise has the elements of safety, fun and easily perform even though on a wheelchair. These elements, may interest the elderly people to try and engaged in which will help them improving their health condition and preventing diseases which are related in ageing.

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✉ Nor Fadila Kasim
School of Sport Exercise and Rehabilitation Sciences,
University of Birmingham,
United Kingdom
Email: norfadila@fsskj.upsi.edu.my