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## Effects of Bingocize® on Overall Physical Activity, Functional Performance, Blood Glucose Level, Sleep Quantity, and Quality Among Older Adults in Assisted-Living Facilities

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EFFECTS OF BINGOCIZE® ON OVERALL PHYSICAL ACTIVITY, FUNCTIONAL  
PERFORMANCE, BLOOD GLUCOSE LEVEL, SLEEP QUANTITY AND QUALITY  
AMONG OLDER ADULTS IN ASSISTED-LIVING FACILITIES

A Thesis  
Presented to  
The Faculty of the School of Kinesiology, Recreation and Sport  
Western Kentucky University  
Bowling Green, Kentucky

In Partial Fulfillment  
Of the Requirements for the Degree  
Master of Science

By  
Sepehr Rassi

May 2020

EFFECTS OF BINGOCIZE® ON OVERALL PHYSICAL ACTIVITY, FUNCTIONAL  
PERFORMANCE, BLOOD GLUCOSE LEVEL, AND SLEEP QUANTITY AND  
QUALITY AMONG OLDER ADULTS IN ASSISTED-LIVING FACILITIES

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# EFFECTS OF BINGOCIZE® ON OVERALL PHYSICAL ACTIVITY, FUNCTIONAL PERFORMANCE, BLOOD GLUCOSE LEVEL, SLEEP QUANTITY AND QUALITY AMONG OLDER ADULTS IN LONG-TERM CARE FACILITIES

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May 2020

160 pages

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Bingocize® has been established as an effective falls prevention exercise program for older adults, but its effects on older adults residing in assisted-living facilities have not been examined. The purpose of this investigation was to assess the effects of Bingocize® on overall physical activity level, functional performance, blood glucose level, sleep quantity and quality in older adults who live in assisted-living facilities. Participants ( $N = 13$ ; mean age  $86.23 \pm 3.90$ ) were asked to participate in Bingocize® while wearing activity trackers (Fitbit Charge 3 HR) for 10 weeks. The activity trackers were used to assess the average number of steps taken, sleep quantity, and quality before, after 5 and 10 weeks of Bingocize®. Additionally, participants' functional performance, blood glucose level, sleep quantity, and quality were examined pre, mid, and post intervention. While there were no statistically significant improvements in any of the variables with the exception of blood glucose level ( $F_{2, 22} = 3.086$ ;  $p = 0.007$ ;  $\eta^2 = 0.363$ ;  $N-B = 0.850$ ), they trended towards improvement after 10 weeks of Bingocize®. In conclusion, Bingocize® can be an effective exercise program for older adults who live in assisted-living facilities, but it may need to be implemented for a longer period of time to yield statistically significant improvements.



## **Chapter 1: Introduction**

The number of American adults over 65 years of age is increasing. It is estimated that one in five Americans will be 65 years or older by 2030 (Colby & Ortman, 2015). Aging is correlated with deteriorations in functional performance capability and physical activity level, both of which may be modifiable factors in the prevention and rehabilitation from diseases and falls in older adults (Heal et al., 2018; Turner, Lira, & Brum, 2017). This emphasizes the importance of finding solutions to age-related physical and psychological problems, workforce training to provide health care, and improving the Health-Related Quality of Life (HRQL) in older adults. The Centers for Disease Control and Prevention (CDC) defines HRQAL as “an individual’s or a group’s perceived physical and mental health over time”. Researchers showed physical activity can improve HRQOL and physically active older adults demonstrate less illness or pain, and they carry out their daily tasks and movements more independently (Chen, Hicks, & While, 2014; Naylor et al., 2016).

Physical activity is an important part of healthy lifestyle, and while functional performance declines as individuals get older (Hall et al, 2016), physical activity can reduce these declines (Galloway and Jokl, 2000). The HRQOL can also be affected by fear of falling and functional limitations in older adults (Hoang et al., 2017) and that is why the Centers for Disease Control and Prevention (CDC) created a falls risk assessment in older adults to examine lower extremities strength, gait, and balance (Ward et al., 2015). Additionally, exercise can improve disease management, decrease the risk of chronic diseases in older adults (Nelson et al., 2007), and is associated with lower risk of obesity, heart disease and hypertension (Molt and McAuley, 2010). Furthermore, there

is a positive relationship between sedentary behaviour, weight, and plasma glucose level (Gennuso et al., 2013). If the blood glucose level is consistently elevated, it can contribute to complications of diabetes (Wasserman, 2009).

While 14.3 million older adults over the age of 65 are diabetic in the United States, only 24.2% of them meet the recommended amount of physical activity (CDC, 2020). Bouchonville et al. (2013) found a weight loss program coupled with exercise is associated with improvements in insulin sensitivity. In another study Morey et al. (2012) found a home-based physical activity counselling program can increase physical activity, but they did not find a significant improvement in older adults' glycemic indicator. Moreover, there is a strong relationship between higher fasting glucose level and apnea, daytime sleepiness, and snoring in older adults (Strand et al., 2015).

Older adults with poor sleep quality show higher rates of physical disability (Chien and Chen, 2015). Sleep disturbance is common among older adults and is considered an adjustable behavior associated with occurrences of cognitive deficits, chronic disease, and fall risk in older adults (St George et al., 2009; Seingsukon, Al-dughmi, & Stevens, 2017). A normal sleep cycle is divided into four different stages: Rapid Eye Movement (REM) stage, Non-Rapid Eye Movement (NREM) stage one, NREM stage two, and NREM stage three (NIH, 2019). While both REM and NREM stages are essential in memory consolidation and lowering the fall risk (NIH, 2019; St George et al., 2009), older adults spend more time in the first and second stages of NREM sleep and spend less time in REM sleep (Ohayon et al., 2004). Researchers found exercise-based interventions can enhance functional performance ability, activity levels, and sleep quality in older adults, but more research is needed to evaluate the effects of

different types of exercise interventions on all three potentially modifiable factors in older adults (Gine-Gariga et al., 2014; Clegg et al., 2014).

Exercise interventions can be administered in two ways: Individual or grouped-based. Both methods may improve physical activity and quality of life in older adults, but the group-based interventions may result in greater exercise adherence, patient satisfaction, and social interaction (Martin et al., 2013). Bingocize<sup>®</sup> is a group-based exercise program that can improve flexibility, balance, gait, muscular strength, and cardiorespiratory fitness in older adults (Crandall & Steenbergen, 2015b; Shake et al., 2018). While Bingocize<sup>®</sup> has been established as an effective exercise intervention for community-dwelling older adults and those who live in nursing homes, its effectiveness for older adults in assisted-living facilities have not been examined yet. Zimmerman and Sloan (2007) defined assisted-living facilities as Activities of Daily Living (ADL) care providers for older adults which are not certified nursing facilities. Therefore, in the spectrum of different types of living for older adults, they fall between community-dwelling, those who live on their own, and nursing facilities, which help older adults in performing their daily tasks. Although the effects of Bingocize<sup>®</sup> on overall physical activity level, sleep quantity and quality in older adults have not been examined, the emergence of new activity trackers can be helpful in objectively measuring these variables. These trackers are able to record individual's daily activities and sleep patterns. Additionally, these activity trackers are accurate, less expensive, and more accessible for the general population (Lee et al., 2017).

### *Purpose*

The purpose of this study was to assess the effects of the Bingocize® program on the overall physical activity, functional performance, blood glucose level, sleep quantity and quality among older adults in assisted-living facilities.

### *Definition of Terms*

- *Actigraphy* – A device that is worn on the wrist to track movements and sleep patterns (Ancoli-Israel et al, 2003, Martin and Hakim, 2011).
- *Activities of Daily Living (ADL)* – Self-care tasks such as feeding, personal hygiene, toileting, ambulating, dressing, and continence (Edemekong et al., 2020).
- *Assisted-Living*– Provides care in ADL for older adults that are not certified nursing facilities (Zimmerman & Sloane, 2007).
- *Community-dwelling* – Older adults who can live independently ((Gobbens et al., 2010).
- *Fall Efficacy Scale* – The scale that measures the fear of falling in individuals (Tinetti, Richman, & Powell, 1990).
- *Fall Risk* – A person has higher risk of falling if they are not supported by another individual or mobility aids (CDC, 2017a).
- *Health-Related Quality of Life* – A person's perceived mental or physical health (Zubritsky, 2013; CDC, 2018).
- *Non-Rapid Eye Movement (NREM) Sleep* – The dreamless sleep which can be divided into three different stages (NIH, 2019).

- *NREM Stage 1* – The transition stage between sleep and wakefulness. The brain waves are starting to slow down in this stage and muscles begin to relax (NIH, 2019).
- *NREM Stage 2* – The transition stage between light and deep sleep. This stage is characterized by reduced body temperature and brain wave activity (NIH, 2019).
- *NREM Stage 3* – The deep sleep stage that is longer in the first half of sleep. The brain waves activity is even slower compared to other NREM stages and muscles are relaxed (NIH, 2019).
- *Nursing Homes* – Provide personal and health care services to older adults with a focus on medical care (NIH, 2017).
- *Rapid Eye Movement (REM) Sleep* – The eye movement is increased in this stage and the brain activity waves are similar to the waves in the awake stage. Also, this is the stage that dreams occur (NIH, 2019).
- *Sleep Quality* – Feeling restored, rested, and alert throughout the day and number of sleep disturbances during night (Harvey et al., 2008).

#### *Delimitations*

1. The participants must not be physically active at the beginning of the study or start an exercise regimen during the study.
2. The participants must not have a history of colorblindness.
3. English must be the native language of the participants.
4. The participants' vision must be normal or corrected-normal.

### *Limitations*

1. Although detailed protocols for wearing the activity trackers were provided to the leaders and participants, they may not have worn the trackers 24 hours a day for 10 weeks.

### *Assumptions*

1. The participants answered questions truthfully during the study.
2. The participants completed exercises to the best of their abilities.

### *Hypotheses*

1. The number of steps taken by participants will increase significantly after 10 weeks of Bingocize®.
2. Participants' functional performance will significantly improve after 10 weeks of Bingocize®.
3. Participants' blood glucose level will significantly improve after 10 weeks of Bingocize®.
4. Participants' sleep quantity will significantly improve after 10 weeks of Bingocize®.
5. Participants' sleep quality will significantly improve after 10 weeks of Bingocize®.

## **Chapter 2: Literature Review**

### *Aging Population*

The population of older adults in the United States is increasing at a fast pace. The United States Census Bureau reports that by the year 2030, one in every five adults will be 65 years or older. This means the number of older adults over the age of 65 will be more than children for the first time in the history of the United States. By the year 2035, it is estimated that 78.0 million adults over the age of 65 will live in the United States, while the number of people under the age of 18 is projected to be 76.7 million (United States Census Bureau, 2018).

A similar trend exists in the rest of the world. The National Institutes of Health (2016) reported that by the year 2050, there will be 1.6 billion adults over the age of 65 in the world, which is an increase from 8.5% (617 million) to 17% worldwide. Furthermore, the NIH reported while people are living longer, it does not mean they are living healthier. They also reported the risk factors are changing in the world. For instance, while tobacco use has decreased in wealthier countries, the low level of physical activity and inadequate consumption of fruit and vegetables are still considered the main risk factors in the world.

### *Physical Activity*

Physical activity is a crucial component of healthy lifestyles and successful aging (Galloway and Jokl, 2000). It is associated with reduced risks of obesity, hypertension, and heart disease (Molt and McAuley, 2010), and it is the most successful intervention to prevent chronic diseases (Turner, Lira, and Brum, 2017). While functional performance typically decreases as individuals get older (Hall et al. 2016), Galloway and Jokl (2000)

reported that regular exercise can decrease the effects of aging on functional performance. Yorston, Kolt, and Rosenkranz (2012) examined the relationship between physical activity and functional performance in older adults. They analyzed the self-reported data from 91,375 individuals over the age of 65 in Australia and found a positive relationship between functional performance and physical activity in older adults. The authors concluded physically active older adults are less likely to suffer from physical limitations. Gine-Garriga et al. (2014) conducted a review of physical activity levels and functional performance in community-dwelling older adults and showed exercise can improve performance in older adults, but they were not able to recommend a certain type of exercise to help all older adults. Santos et al. (2012) supported their findings and concluded the sedentary lifestyle can adversely affect functional performance.

Gennuso et al. (2013) studied the sedentary lifestyle and examined the relationship between amount of time spent sitting on a daily basis and performance in moderate-to-vigorous physical activity (MVPA). They analyzed the self-reported data from 1914 older adults over the age of 65 from 2003 to 2006 in United States and although they did not find a statistically significant interaction between sedentary behaviour and MVPA, they found a strong positive independent correlation between sedentary lifestyle and functional limitations, weight, Body Mass Index (BMI), and plasma glucose level. They concluded the older adults should avoid prolonged sitting and perform adequate moderate-to-vigorous physical activity in order to increase their functional performance and decrease their plasma glucose level.

CDC published the National Diabetes Statistics Report in 2020 and they estimated 26.8% of adults over the age of 65 or 14.3 million people in the United States are



diabetic. Also, they reported that 24.2% of adults in the US are meeting the recommended physical activity level and the A1C level is 7% or higher in 50% of all adults. The data suggests an emphasis should be placed on increased physical activity to help adults in the US and specifically, older adults over the age of 65 years of age.

Physical activity and exercise play an important role in improving the insulin level in older adults. Bouchonville et al. (2014) examined the effects of exercise and weight loss on insulin sensitivity and cardiometabolic risk factors in obese older adults. They recruited 107 obese adults over the age of 65 and divided them randomly into four different groups: control group, diet group, exercise group, and diet-exercise group. They tracked Insulin Sensitivity Index (ISI), central obesity, glucose tolerance, cardiometabolic syndrome, and adipocytokines for one year and found that ISI and cardiometabolic risk factors improved significantly in the diet-exercise group only. Baptista et al. (2017) investigated the effects of a long-term exercise program on HRQL among older adults with Type II diabetes. They recruited 279 participants and divided them into a control and an intervention group. All participants had to complete baseline testing and an evaluation at the end of the program. They found improvements in HRQL, anthropometric, and cardiorespiratory fitness in the experimental group. In another study, Morey et al. (2012) studied the effects of a home-based counselling exercise program on glycemic measures in prediabetic older adults. They recruited 302 overweight participants and divided them into control and intervention groups. They measured their blood glucose level at baseline, after three and 12 months. They did not find a significant improvement in glycemic indicators in the intervention group in prediabetic older patients. These researchers suggest in-person exercise programs can be an effective

method to improve glucose levels in older adults, especially those with diabetes.

Additionally, it is important to note that diabetic older adults are more likely to fall.

Schwartz et al. (2002) examined the relationship between fall risk and diabetes in older adults. They recruited 9249 older women, 629 of them were diabetic. They followed up with them every 4 months for 7 years and found an increased risk of falling in diabetic older women. This study shows the relationship between diabetes and increased fall risk, which is important in older adults.

Many older adults experience fear of falling which may lead to functional limitations. Bruce, Devine, and Prince (2002) examined fear of falling and its association with participation in physical activity in older adults. They recruited 1,500 healthy Australian women between the ages of 70 and 85 years of age and found fear of falling and physical activity level to be independently related and concluded fear of falling needs to be overcome in order to increase the physical activity level. Brassington, King, and Bliwise (2015) investigated fall risk and sleep problems in older adults. They recruited 555 and 971 older men and women, respectively, between 64 and 99 years of age and conducted 20 minutes telephone interviews with the participants. Two hundred eighty-four participants (19% of the sample) experienced falls in the past 12 months prior to the study demonstrating an independent relationship between falls and sleep problems amongst older adults.

Dzierzewski et al. (2015) examined the effects of physical activity and sleep in older adults. They enrolled 79 initially sedentary community-dwelling older adults with an average age of 63.58 years of age into Active Adult Mentoring Program (AAMP). The AAMP project consists of an active lifestyle intervention, a group-based behavioral

counselling, and a health education component. They found physical activity to be positively associated with sleep quality and better sleep quality was related to the participants' physical activity level. They concluded the physical activity and sleep affect each other and improving one, can lead to improvements in the other.

### *Sleep*

Centers for Disease Control and Prevention (CDC) recommends individuals to sleep at least seven hours per night (Lie et al., 2016), yet only 65% of adults in United States sleep seven hours each night. While there are different methods of measuring sleep quantity, the gold standard for evaluating sleep physiology has been Polysomnography (PSG) for the past 40 years. In recent years the cost and inconvenience of PSG have encouraged researchers to use other devices to assess sleep. Lucey et al. (2016) compared PSG and single-channel electroencephalography (EEG) and found a strong agreement between the EEG and PSG. Other investigators such as McCall and McCall (2012) and Zavrel and Krieger (2018) compared the PSG with actigraphy and activity trackers in measuring the sleep and the reliability of these devices and found the actigraphy and trackers to be clinically adequate compared to PSG and can be used to evaluate sleep physiology. In conclusion, these devices can help researchers and clinicians to measure the sleep quantity and quality in the general population and help reduce the risk of diabetes or obesity.

In one study Patel et al. (2015) used actigraphy to study the relationship between obesity and sleep patterns and quantity in older adults. They recruited 3053 men (mean age of 76.4 years of age) and 2985 women (mean age of 83.5 years of age) and evaluated the regularity of their sleep patterns and their daytime napping. They found variability in

daytime napping and night-time sleep duration is associated with obesity in older adults, but their results did not show an association between average sleep quantity and obesity. They concluded the variability in sleep duration is more important than duration of sleep in increasing the odds of obesity. On the other hand, Liu et al. (2016) reported that sleeping less than seven hours each night is related to hypertension, heart diseases, obesity, diabetes, and mortality. Grandner et al. (2010) studied the association between sleep quantity and mortality and found that individuals who sleep seven hours per day have a low mortality rate, which emphasizes the importance of sleep. In another study, Grandner et al. (2016) examined the relation between sleep quantity and quality and diabetes risk and found that sleep duration is directly related to risk of diabetes and obesity. While both sleep quantity and quality are important in order to reduce the risk of obesity, hypertension, diabetes, and mortality, they also play a significant role in cognition and functional performance.

Sleep disturbances are frequent among older adults which can lead to adverse effects in cognition and functional performance (St George et al., 2009). In a study conducted by Chein and Chen (2015), the effects of poor sleep quality on functional performance and physical disability were examined. They recruited 213 community-dwelling older adults and evaluated the sleep quality and functional performance amongst the participants. They found the rate of physical disability is higher among the older adults with poor sleep quality. In another study, St George et al. (2009) investigated the sleep quality and falls risk in older adults. They recruited 169 older adults and followed tracked falls for one year and found decreased duration of sleep at night and increased daytime naps are associated with elevated falls risk. Min, Nadpara, and Slattum (2015)

investigated the association between sleep disturbances, sleep medication, and falls risk in older adults and found the combination of sleep disturbances and medication can increase falls risk. Lambiase et al. (2013) recruited 143 older women and used actigraphy to evaluate sleep and physical activity. Their results showed a positive association between greater sleep quality and daily activity. In summary, sleep quality and physical activity are positively associated and while different devices can be used to measure these variables, researchers have used activity trackers widely to evaluate them. The activity trackers are accessible, less expensive, and accurate to assess variables such as physical activity and sleep quantity and quality.

#### *Activity Trackers*

For more than 20 years, researchers used actigraphy to study sleep patterns (Ancoli-Israel, 2003), but in recent years activity trackers, such as Fitbit, have been used widely to examine the physical activity and sleep patterns. Lee et al. (2015) compared an actigraphy (Actiwatch 2) with an activity tracker (Fitbit Charge HR) to evaluate the accuracy of the activity tracker in measuring sleep and circadian rhythm. They found the activity tracker has high accuracy for measuring sleep quantity and concluded the activity trackers can be a good replacement for actigraphy. In another study, Byun, Kim, and Brusseau (2018) compared the accuracy of an activity tracker (Fitbit Flex) with an actigraphy (G3X+) in preschoolers. They found the tracker accurately measured the physical activity in preschoolers and concluded they are reliable devices that can be used to monitor physical activity. Other studies such as Heale et al. (2018) and Deka et al. (2018) showed activity trackers to be reliable devices in measuring physical activity in patients with juvenile idiopathic arthritis and heart failure respectively. Furthermore,

Jones et al. (2018) compared an actigraphy (GT3X) and an activity tracker (Fitbit Flex) and examined their accuracy in measuring step counts at different speeds. They showed both devices are reliable in measuring step counts for speeds 8 to 14 km/h. Conversely, Tophoj et al. (2018) evaluated the reliability and validity of four activity trackers (Fitbit Surge, Fitbit Charge HR, Microsoft Band 2, and A&D 101NFC) at lower speeds and found that the trackers are accurate at speeds above 4 km/h, but they are not accurate at speeds slower than 2 km/h. Therefore, they concluded these trackers are not useful for patients during rehabilitations walking at lower speeds. Straiton et al. (2018) examined the reliability of activity trackers in community-dwelling older adults and found the trackers accurately measured physical activity. While the activity trackers are found to be reliable devices, it is also important to study the effects of such devices on activity level.

Sloan et al. (2018) and Smith et al. (2018) studied the effectiveness of activity trackers and whether they can increase physical activity in individuals. Both studies found the trackers alone do not change the behaviour in individuals, and the participants will not become more physically active because of the trackers.

In conclusion, activity trackers are reliable devices to assess the physical activity, sleep quantity and quality in older adults. Additionally, these devices can be used to evaluate the adherence rate to exercise programs in older adults. For instance, Torino et al. (2008) and Jefferis et al. (2014) used accelerometers to assess the adherence and retention rate to exercise programs in older adults.

### *Exercise Adherence*

The adherence rate to most exercise programs is low and in order to improve the adherence rate, different barriers such as poor health conditions, fear of injury, length and

frequency of the program, and environmental safety concerns need to be improved (Falls, 2017). A number of researchers have examined the adherence rate to exercise programs in older adults.

Troiano et al. (2008) used accelerometry to compare the physical activity level among children, adolescents, and adults. They used the data from 6329 participants who wore accelerometers for at least one day. They found the adherence to physical activity decreases with age and less than 5% of adults adhere to the recommended level of physical activity. In another study, Jefferis et al. (2014) examined the adherence of older adults to physical activity guidelines. They recruited 1593 men and 857 women aged 70-93 years of age in the United Kingdom and asked the participants to wear an accelerometer for one week. They found only 15% of men and 10% of women adhered to the physical activity level guidelines. Also, they identified the chronic health conditions, depression, mobility limitations, and self-efficacy as the major contributors to the adherence to the physical activity guidelines. Beauchamp et al. (2018) compared the adherence rate to physical activity programs in older adults. They recruited 627 older adults with an average age of 71.57 years of age and assigned them to one of the following groups: similar age same gender (SASG), similar age mixed gender (SAMG), or mixed age mixed gender (MAMG). They found no significant difference in adherence rate between SASG and SAMG groups, but found a significant difference between these two groups and the MAMG group. Findorff, Wyman, and Gross (2009) studied the long-term adherence to exercise programs in older women. They recruited 137 women over the age of 70 years of age and compared the participants' physical activity level at the beginning and after two years. They found the adherence rate for the walking exercise

was 19% and 24% for balance exercise after two years. In another study, Jancey et al. (2007) examined the adherence rate to an exercise program in older adults. The participants in this study were 248 adults 65-74 years of age who completed a 6-month exercise intervention. They found only 65% completed the program. Sullivan-Marx (2011) investigated the retention rate of an exercise program in older adults. They recruited 52 African-American women with an average age of 78 years of age and instructed them to perform strength and endurance activities, three times per week for 16 weeks. After 16 weeks, 71% of the participants completed the program. Steinman et al. (2011) studied the adherence and retention rate of older adults to a fall prevention exercise program. They recruited 102 participants over the age of 65 years, taught them different exercises during four on-site sessions, and encouraged them to perform the exercises at home. They found 73% attended all classes but only 1% performed the exercises at home. Flegal et al. (2007) compared the adherence rate between exercise and yoga interventions in older adults. They recruited 135 adults 65-85 years of age and randomly assigned them to either yoga or exercise programs. After six months, they found a high adherence rate in both yoga (86%) and exercise (81%) groups. McAuley et al. (2003) also investigated the adherence rate to an exercise program in older adults. They recruited 174 adults with the average age of 66 years of age and assigned them to either a walking group or stretching and toning group. After six months, they found 88% of the participants completed the programs, but they did not find a significant difference in attendance rate between the two groups. Dorgo, King, and Brickey (2009) studied the adherence rate of a peer-mentored exercise program in older adults. They recruited 60 older adults over the age of 60 years of age and assigned the participants to either peer-



mentored or student-mentored groups. The retention rate was high in both groups, but it was higher in the peer-mentored group (90%) compared to the student-mentored group (77%). The Bingocize<sup>®</sup> program showed the highest adherence and retention rate among the exercise programs. The Bingocize<sup>®</sup> combines different elements such as bingo, exercise, health education, and social interaction which improve the adherence rate to the program. For instance, Maillot, Perrot, and Hartley (2012) studied the effects of physical activity on cognition and functional performance in older adults. They found the combination of physical activity and social interaction can improve the adherence rate.

### *Bingocize<sup>®</sup>*

The results of studies such as Pahor et al. (2014) and Chen, Lauderdale, and Waite (2015) showed the importance of physical activity, health education, and social interaction in increasing physical activity level and improving sleep quality in older adults. The Bingocize<sup>®</sup> program combines bingo, exercise, health education, and social interaction. Multiple studies showed the effectiveness of Bingocize<sup>®</sup> as an intervention program for older adults.

Crandall, Fairman, and Anderson (2015) studied the effectiveness of Bingocize<sup>®</sup>. Their results from 18 older adults who completed the 10-week program showed the Bingocize<sup>®</sup> program can improve the functional performance measures in the participants. Crandall and Steenbergen (2015) examined a modified version of Bingocize<sup>®</sup> that included a health education component. They found seven out of eight functional performance measures were improved, but lower body flexibility and health knowledge were not significantly increased. The results from this study illustrated the effectiveness of Bingocize<sup>®</sup> program in increasing functional performance, but the

authors concluded the health education component needed revision. Furthermore, Crandall and Shake (2016) studied the mobile application version of Bingocize® to evaluate the functional performance, health knowledge, and adherence. They found the Bingocize® application can improve functional performance and health knowledge, but the adherence in both control and experimental group adherence was equal. They concluded the Bingocize® application can be a successful method of improving functional performance and increasing health knowledge in older adults. Moreover, Falls et al. (2018) examined the mobile application of Bingocize® and gait performance in older adults. They found the application can improve the gait speed in the participants. The researchers concluded the application effectively improves gait speed and can reduce the risk of falls.

Although recent studies support the Bingocize® program as an interactive method of increasing physical activity and health knowledge in older adults, its effects on overall physical activity, sleep quantity, and sleep quality have not been studied during and after Bingocize® sessions. Therefore, the purpose of this study is to assess the effects of the Bingocize® program on the overall level of physical activity, functional performance, blood glucose level, sleep quantity and quality among older adults in assisted-living facilities.

### **Chapter 3: Methods**

#### *Participants*

The research team used flyers, newsletters, electronic communication, direct contact, and word of mouth to recruit volunteers from assisted-living facilities in Kentucky and Tennessee. Males and females who were 60 and over were eligible to participate. The Physical Activity Readiness Questionnaire (PAR-Q) (Appendix C) was used to determine the participants' health status based on their responses to seven medical questions (Chodzko-Zajko et al., 2009). Participants who answered "yes" to any of these questions were required a physician's release prior to participation in the study (Appendix B). Fall risk was assessed using the Falls Efficacy Scale (Tinetti et al., 1990). Data on socio-economic status and pre-existing health conditions were also collected (Appendix O). Other criteria for inclusion in the research included: normal or corrected-normal vision, mobility (i.e., not wheelchair bound), no history of colorblindness, and English as their native language.

An a priori sample size estimation of 26 participants (alpha level of 0.05, power of 0.80) was calculated. Oversampling was utilized to ensure at least 26 participants would complete the study. However, 17 participants were recruited and 13 agreed to participate in the experimental group.

The senior centers' staff completed the online training module to become certified Bingocize® leaders. The training was approximately one hour and included exercise demonstrations, points on leading sessions, and safety precautions.

The participants were required to complete baseline data collection, attended at least 16 sessions, mid-study data collection, and post-intervention data collection were

compensated \$40 for their participation. The data for the participant was not used if they did not meet the above criteria. Participants also earned prizes if they won each round of Bingocize® and their names were put in the final draw in week 10 for a final prize of \$100.

*Table 1. Participants demographics*

Sex		Age (years)	Average Height	Average Weight
Female	Male		(cm)	(kg)
12	1	86.23 ± 3.90	157.62 ± 6.87	65.48 ± 19.86

### *Design*

Approval from WKU Institutional Review Board (IRB) was acquired before beginning the data collection phase. This study was initially planned to combine both between-group (condition) and within-subject (pre/mid/post) comparisons, facilities were supposed to be randomly assigned to experimental or control group as shown in Table 1 below: A) an experimental group that participates in Bingocize® (bingo and exercise) twice a week for 10 weeks, B) a control group that only participates in bingo. However, only the experimental group completed the intervention due to COVID-19 pandemic.

*Table 2: Design Layout of Participant Groups*

	Plays Bingo?	Exercises?
Group A (Experimental)	Yes	Yes
Group B (Bingo Control)	Yes	No

The research team traveled to the facilities and collected baseline data at the beginning of study. During the first session, participants were asked to read and sign the informed consent form, fill out the demographic questionnaire and Medical Outcome Study Sleep Scale forms, and perform the functional performance tests. Moreover, the physician release form was collected from the participants. The intervention began in the second week and continued for 10 weeks. The mid-testing was completed after 10 sessions and post-intervention data was collected after 20 sessions.

#### *Physical Activity Readiness Questionnaire (PAR-Q)*

The Physical Activity Readiness Questionnaire (PAR-Q) contains seven questions (Appendix C). If participants answered YES to one or more questions, they were asked to seek their physician's approval before participating (Appendix B).

#### *Falls Efficacy Scale (FES)*

The Falls Efficacy Scale (FES), developed by Tinetti et. Al (1999), was used to determine participants' fear of falling. FES includes 10 questions about activities that participants normally perform on a daily basis and participants need to rate how confident they are in performing these activities from 1-10, with 1 being very confident and 10 not confident at all. The sum of the scores was calculated for each participant and the higher score represented higher fear of falling (Appendix D).

#### *Physical and Functional Tests*

The participant identification number and date of birth were recorded for each participant and then, height, weight, blood pressure, blood glucose level, and wrist circumference were measured and recorded. Participants were asked to perform four different tests: Chair rise test (CDCa), Hand grip strength test (NIHR Southampton), 360

degree turn (Gill Williams, Mendes, & Tinetti, 1997; Borg, Wood-Dauphinee, Williams, & Maki, 1992; Van Swearingen, Paschal, Bonino, & Chen, 1998; Reuben & Siu, 1990) and Timed up and go (TUG) test (CDCb).

For the chair rise test, the participant was asked to sit in the middle of a chair. Then, they were instructed to stand up and sit down without using their hands. The number of times the participant could stand up and sit down in 30 seconds was recorded (CDCa) (Appendix F).

The Southampton protocol was used for the hand grip strength test. The participants were asked to sit on chair with their wrists over the arm of the chair. Then, they were instructed to squeeze the device as tightly as possible for three seconds. The test was performed three times for each hand (NIHR Southampton) (Appendix G).

For the 360 degree turn test, the participant was asked to turn 360 degrees in a full circle and the time to turn in a complete circle was recorded. The test was performed twice, and the average time was used (Gill Williams, Mendes, & Tinetti, 1997; Borg, Wood-Dauphinee, Williams, & Maki, 1992; Van Swearingen, Paschal, Bonino, & Chen, 1998; Reuben & Siu, 1990) (Appendix H).

The CDC protocol was followed for the Timed Up and Go test. A walkway of 3 meters (9.8 feet) was measured and marked before starting the test. The participants were asked to start from the sitting position and then they had to start walking towards the line, turn around, and sit down on the chair. The time was measured from starting position until the participants' buttocks touch the seat (CDCb) (Appendix I).

### *Overall Physical Activity*

The data from the activity trackers were used to measure the overall physical activity level. Fitbit Charge 3 HR is a reliable device to record these variables (ICC 0.92 to 0.97; SEM 1.45-2.10) (Nazari et al., 2019) and was used in this study. The trackers recorded data on physical activity, heart rate, sleep quantity and quality. The trackers were synced to a tablet during the first week of the study which was given to participants at the same time. The research team recharged and replaced the trackers every week. (Appendix J). Additionally, the instructions on how the participants would be reminded to wear the trackers were provided to the leaders (refer to Appendix K). The daily steps were obtained from the trackers, which included the step counts during the Bingocize<sup>®</sup> and non-Bingocize<sup>®</sup> hours. The trackers provided information about the number of steps taken during any period of time and since the time and duration of Bingocize<sup>®</sup> was known, the step counts during the Bingocize<sup>®</sup> and non- Bingocize<sup>®</sup> hours were analyzed. The data was downloaded from the trackers every week into an Excel spreadsheet at the end of study.

### *Sleep Quantity and Quality*

The sleep duration and sleep quality were obtained from the activity trackers every week and the data were downloaded into an Excel spreadsheet by the research team at the end of the study. The sleep quality was defined as the number of hours spent in the REM stage of sleep. Additionally, participants completed the Medical Outcomes Study Sleep Scale (Appendix L) at the beginning of the first, 11<sup>th</sup>, and 21<sup>st</sup> sessions.

## **Intervention**

The program was administered in the recreational area of an assisted-living facility twice per week for 60 minutes each session. The experimental groups wore activity trackers 24 hours a day during the Bingocize® and non- Bingocize® hours. After 10 weeks, the data were analyzed for the experimental group.

The experimental group played bingo and exercised. Participants in the experimental group performed 12-15 different exercises during each session. The exercises were focused on enhancing muscular strength, flexibility, balance, and cardiovascular fitness. A modified version of Borg's scale was used to monitor exercise intensity (Buckley and Borg, 2011) and participants were encouraged to maintain a moderate intensity (Appendix M).

### *Gameplay*

The materials needed for Bingocize® were provided to the facility, including Bingocize® cards, exercise equipment, and detailed instructions for the game leaders (Appendix Q).

The game leader started the game with three bingo rolls followed by the game leader instructing the participants to perform four different exercises. The detailed instructions were provided to the game leaders. The session continued with bingo rolls and a series of exercises. Prizes were awarded to the winners of each bingo game. Additional games were played to ensure completion of the exercise program (Crandall & Steenbergen, 2015). The game leaders were responsible for recording the attendance for each session.



## **Statistical Analyses**

A repeated measure analysis of variance (ANOVA) was utilized to compare the effects of the intervention at the beginning, after 5 weeks, and after 10 weeks on the overall physical activity, functional performance, blood glucose level, sleep quantity and quality in the experimental group. The statistical significance was set at  $p < 0.05$  and Statistical Package for the Social Sciences (SPSS) was used to analyze the data.

## Chapter 4: Results

Of the 17 participants who were recruited, 13 participants finished the study. Four participants dropped out due to family complications. The normality assumption was investigated, and two outliers were found for the hand grip strength test and 360° turn test. The outliers were removed from the data set and normality assumption was rechecked and met by investigating the histograms and Q-Q plots. To address any deviations from the sphericity assumptions, a Huynh-Feldt correction was applied to the degrees of freedom of the error and model terms for all four tests.

One-way repeated measure ANOVA revealed that Bingocize<sup>®</sup> had no significant effects on participants' chair stand test scores ( $F_{1.847, 22.269} = 9.521$ ;  $p = 0.304$ ;  $\eta^2 = 0.094$ ; N-B = 0.235).

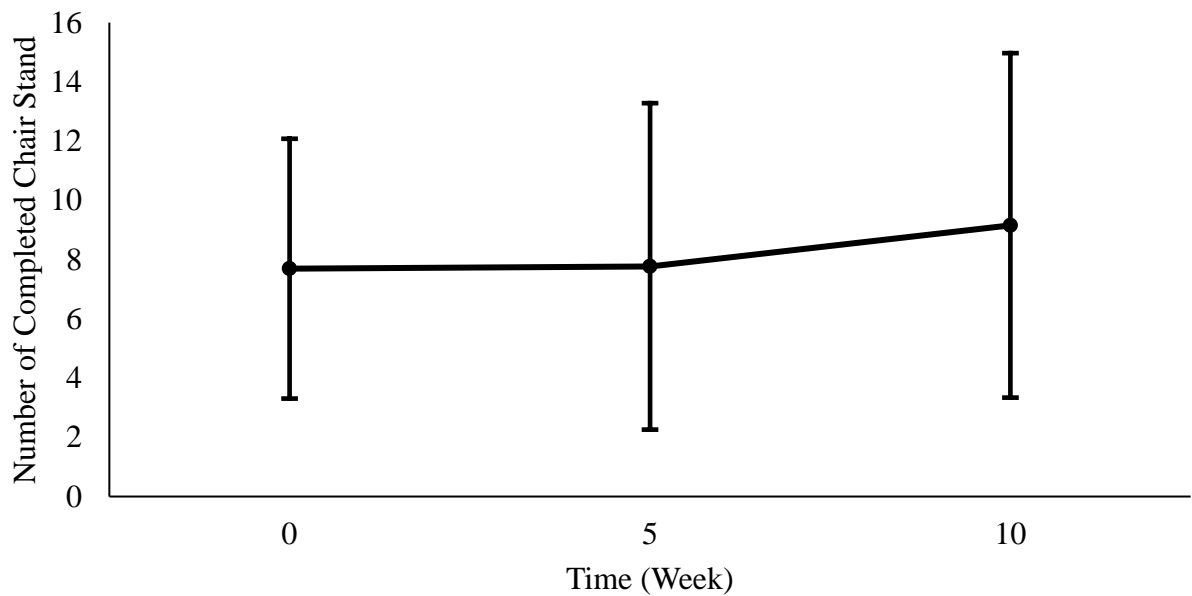


Figure 1. Effects of Bingocize<sup>®</sup> on chair stand scores.

One-way repeated measure ANOVA revealed that Bingocize<sup>®</sup> had no significant effects on participants' hand grip strength ( $F_{1.892, 18.915} = 1.656$ ;  $p = 0.218$ ;  $\eta^2 = 0.142$ ; N-B = 0.298).

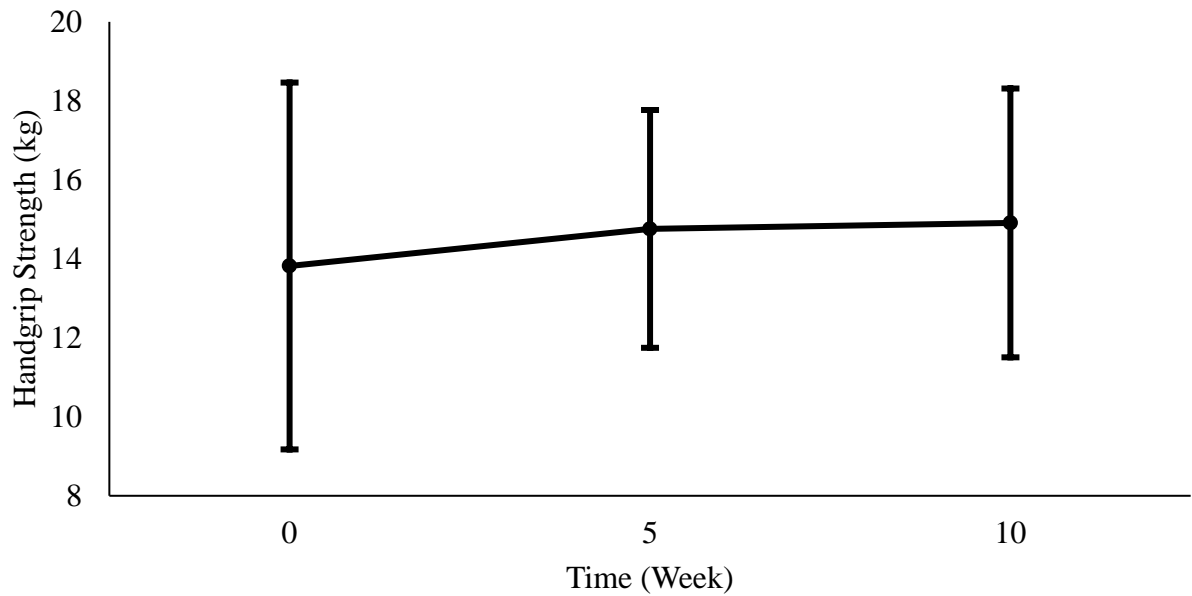


Figure 2. Effects of Bingocize<sup>®</sup> on hand grip strength.

One-way repeated measure ANOVA revealed that Bingocize<sup>®</sup> had no significant effects on participants' time to complete the 360° turn test ( $F_{1.635, 19.623} = 3.086$ ;  $p = 0.077$ ;  $\eta^2 = 0.205$ ; N-B = 0.482).

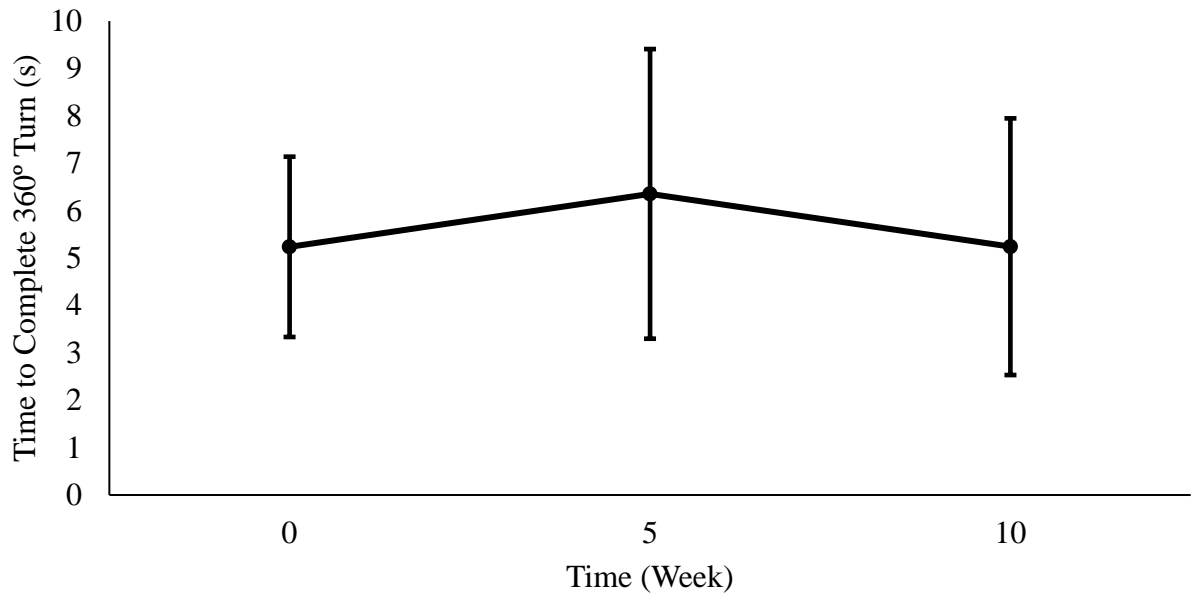


Figure 3. Effects of Bingocize® on time to complete 360° turn test.

One-way repeated measure ANOVA revealed that Bingocize® had no significant effects on participants' time to complete the TUG test ( $F_{1.847, 22.269} = 9.521$ ;  $p = 0.304$ ;  $\eta^2 = 0.094$ ;  $N-B = 0.235$ ).

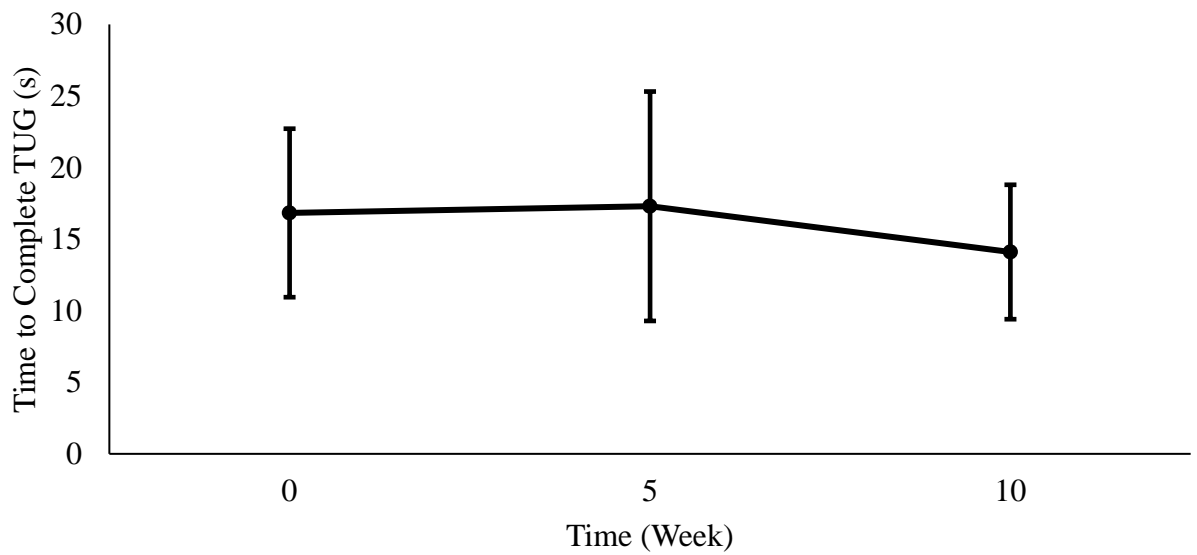


Figure 4. Effects of Bingocize® on time to complete the TUG test.

One-way repeated measure ANOVA revealed that blood glucose level significantly increased in participants ( $F_{2, 22} = 3.086$ ;  $p = 0.007$ ;  $\eta^2 = 0.363$ ; N-B = 0.850). Post-hoc analysis revealed that there was no significant change in blood glucose level from pre-testing to mid-testing or mid-testing to post-testing, but there was a significant increase from pre-testing to post-testing ( $p = 0.028$ ).

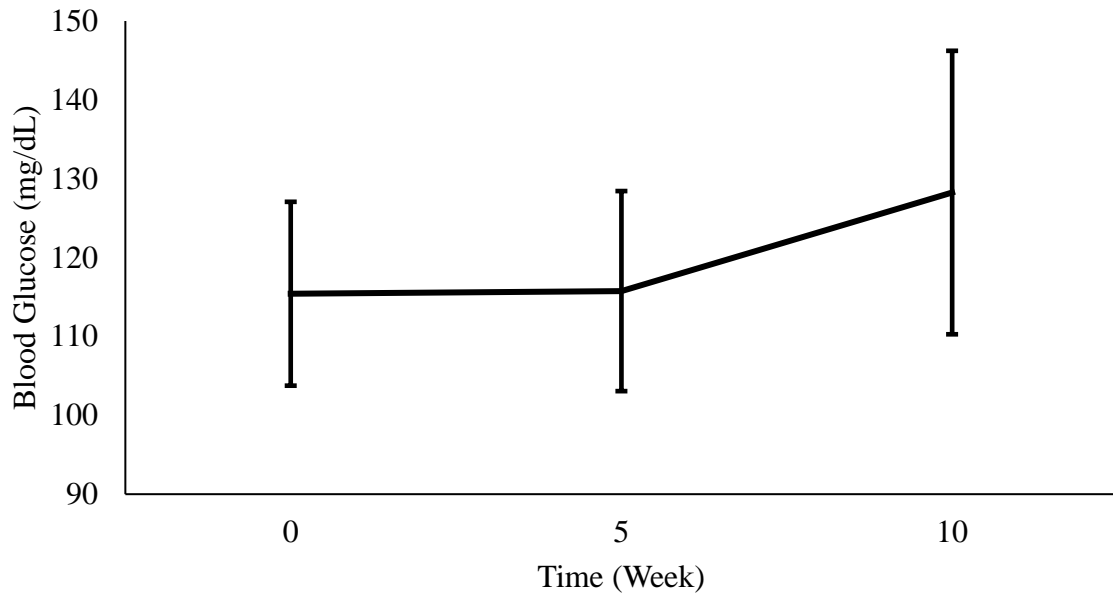


Figure 5. Effects of Bingocize<sup>®</sup> on blood glucose level.

For the data collected from the activity trackers, the normality assumption was investigated, and five outliers were found for number of steps taken, three outliers for sleep quantity, and five outliers for sleep quality. The outliers were removed from the data set and normality assumption was rechecked and met by investigating the histograms and Q-Q plots. To address any deviations from the sphericity assumptions, a Huynh-Feldt correction was applied to the degrees of freedom of the error and model terms. One-way repeated measure ANOVA revealed that Bingocize<sup>®</sup> had no significant effects on

participants' numbers of steps taken ( $F_{2.0, 14.0} = 1.260$ ;  $p = 0.314$ ;  $\eta^2 = 0.152$ ; N-B = 0.229), sleep quantity ( $F_{2.0, 14.0} = 1.260$ ;  $p = 0.314$ ;  $\eta^2 = 0.152$ ; N-B = 0.229), and quality ( $F_{2.0, 14.0} = 1.260$ ;  $p = 0.314$ ;  $\eta^2 = 0.152$ ; N-B = 0.229).

*Table 3 Number of steps taken, sleep quantity, and quality of 13 participants recorded by the activity trackers*

	Pre	Mid	Post
Number of Steps	1762.23 $\pm$ 1414.40	1904.63 $\pm$ 1445.86	1984.67 $\pm$ 1594.90
Sleep Quantity (min)	354.70 $\pm$ 130.22	334.65 $\pm$ 123.31	370.32 $\pm$ 127.50
Sleep Quality (min)	49.56 $\pm$ 43.64	46.10 $\pm$ 28.98	51.34 $\pm$ 26.84

Furthermore, participants' self-reported sleep quantity and quality were analyzed using the MOSSS. The survey showed improvements in sleep disturbance, short of breath or headache, somnolence, quantity from the beginning of study to the end (Table 3). Moreover, the survey revealed improvements after 5 weeks in sleep adequacy and sleep problems (Table 4).

*Table 4 Medical Outcome Study Sleep Scale from the beginning to the end for 13 participants*

	Pre	Mid	Post
Sleep Disturbance	29.79 ± 7.52	26.15 ± 7.64	27.98 ± 3.37
Snoring	20	35.38	21.67
Sleep Short of Breath or headache	6	10.77	3.07
Sleep Adequacy	58 ± 2.83	70 ± 14.14	56.15 ± 11.97
Sleep Somnolence	31.33 ± 15.14	27.18 ± 12.90	29.23 ± 8.14
Sleep Quantity	7.35 ± 1.68	7.85 ± 1.63	7.85 ± 1.68
Sleep Problems Index I	26.04 ± 14.79	22.82 ± 12.13	26.92 ± 16.36
Sleep Problems Index II	29.02 ± 13.01	24.79 ± 10.62	28.68 ± 13.30

## Chapter 5: Discussion

The purpose of this study was to examine the effects of Bingocize® on overall physical activity level, functional performance, blood glucose level, sleep quantity, and quality among older adults in long-term care facilities. While there were no significant changes in overall physical activity level, 30-second chair stand, hand grip strength, TUG, sleep quantity, and quality in participants, these variables trended towards improvement after 10 weeks of Bingocize®. The blood glucose level increased significantly among participants after 10 weeks of Bingocize®.

The overall physical activity level was examined by analyzing the number of overall participant footsteps per day. Although there was not a statistically significant change in the number of footsteps participants took, it increased from the beginning of the study ( $1762.23 \pm 1414.40$ ) to week 5 ( $1904.63 \pm 1445.86$ ) and week 10 ( $1984.67 \pm 1594.90$ ). This shows participants became more active throughout the program. de Souto Barreto et al. (2016) listed a set of recommendations on exercise and physical activity for older adults who reside in long-term care facilities. In the report, they suggest breaking the sedentary time for even 6 minutes per day can be helpful to the residents of long-term care facilities. This is consistent with World Health Organization (WHO) and CDC recommendations that minimal physical activity can be helpful to older adults. In addition to frequency and duration of physical activity, the intensity should be considered as well. For instance, Wanigatunga et al. (2017) examined the effects of structured exercise programs on overall physical activity level. In this study, all participants were instructed to complete the exercises at moderate-to-vigorous intensity level based on CDC recommendations (CDC, 2016) and the intensity was monitored during each session



using the Borg RPE scale. Their results showed that intensity is an important factor in increasing physical activity in older adults. Moreover, it can be assumed that participants in our study became more active because of Bingocize® since Bingocize® is a multi-component structured exercise intervention with different elements, including strength, balance, aerobic, and range of motion exercises, which are performed at higher intensity compared to participants' sedentary behavior before the program. Additionally, the number of steps taken increased after Bingocize® with participants taking more steps overall and specifically on days when Bingocize® sessions were held. Hence, it can be assumed that Bingocize® was helpful to participants.

Four different tests were performed to assess the functional performance in participants. While there was no statistically significant change in any of these tests, the results for three of four tests improved from the beginning to the end of study. The time to complete the 360° turn did not change after 10 weeks of Bingocize® (Figure 3). Previous studies (Crandall et al., n.d.; Crandall K & Shake, 2016; Crandall & Steenbergen, 2015a; Dispennette, n.d.; Dustin Falls et al., 2018) examined the effects of Bingocize® in community-dwelling older adults and found significant improvements in functional performance. However, the results of this study suggest that a longer period of time is needed for older adults in assisted living facilities. Other exercise programs found a longer duration was more effective in increasing physical fitness and balance and decreasing the fear of falling in older adults who reside in assisted-living facilities. For instance, Chen et al. (2010) found that Silver Yoga can increase physical fitness in older adults in assisted-living facilities if implemented for 24 weeks. In another study, Stanmore et al. (2019) found a 12-week exercise program can improve balance, fear of

falling, and pain. Therefore, it can be concluded that Bingocize® should be played for a longer period of time in assisted-living facilities to be effective.

The sleep quantity and quality were assessed for participants using two different tools: MOSSS survey and activity trackers. The MOSSS survey showed improvements in sleep disturbance, short of breath or headache, somnolence, quantity from the beginning of study to the end (Table 3). While there was no statistically significant change in sleep quantity and quality based on the data from the trackers, positive trends were observed after 10 weeks of Bingocize® for both variables. In order to reach a more conclusive result, a larger sample size is needed. Additionally, the data from the activity trackers indicate that some participants may have slept during the day. This may have negatively impacted the night time sleep quality in participants.

On the other hand, blood glucose level increased significantly in participants after 10 weeks. This finding was surprising considering we expected blood glucose level would decrease after 10 weeks. There are a few different explanations for why the blood glucose level increased in the participants. This could have happened as part of the aging process and this could have been analyzed further if we had data for a control group where they only played bingo. Also, participants may have not followed the research team instructions and had eaten on the day of post-testing before their blood glucose was tested.

While improvements in most variables were observed in participants after five weeks, the changes were not statistically significant. Positive trends were observed after 10 weeks, which suggests a longer duration program, may lead to more significant results in older adults in assisted-living facilities.

There were some limitations associated with this study. The first limitation was the small sample size, which may have affected the results. Based on sample sizes from the literature, an a priori power analysis determined a sample size of 26 participants to detect a medium-sized effect with equal number of participants in both control and experimental groups. However, the research team was unable to recruit participants for the control group due to a global pandemic. Although 17 participants were recruited for the experimental group at the beginning of study, four participants did not complete the program for reasons unrelated to Bingocize<sup>®</sup>. Two of them only participated in the baseline testing session and did not complete the program due to family issues, one person moved out of the facility, and one person dropped out because of other health issues. Therefore, only 13 participants completed the program. Moreover, the research team was not able to use the data for some of the participants, because there were outliers and had to be omitted.

Another limitation was the comprehensiveness of sleeping data from the activity trackers. For some of the participants, the activity trackers did not record their sleeping data. This could be due to the fact that some people move their hands in the sleep, but further investigation is needed to explain the inconsistencies.

For future Bingocize<sup>®</sup> research, it is suggested to extend the duration of the program for the assisted-living facilities. Although there were trends toward improvements in almost all variables in this study, a 12-week program may be more beneficial in assisted-living facilities instead of 10 weeks. Additionally, future research should examine the effects of Bingocize<sup>®</sup> with a larger sample size and with a control group. Moreover, the existing Bingocize<sup>®</sup> take-home cards, which encourages

participants to exercise more outside of the formal sessions, should be utilized in order to reach a minimum duration of exercise recommended by ACSM.

In conclusion, Bingocize<sup>®</sup> can be an effective exercise program to improve overall physical activity level, functional performance, sleep quantity and quality in older adults who live in assisted-living facilities, but further research with larger sample size and longer program is needed to establish its effectiveness in this population.

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## Appendix A: Exercise Description

Warm-Up Exercises	
Exercise	Description
Single Arm Crossover	Gently pull one arm across chest below the chin. Hold and repeat with opposite arm.
Triceps Stretch	Extend right arm straight up, palm facing forward. Bend your right elbow, letting your hand hinge down behind your head as if you were patting yourself on the back. With your left hand, place hand on right elbow, gently pulling until you feel a stretch down the back of your upper arm. Repeat with left arm.
Head Turns	With straight posture, slowly and gently turn head towards the left and hold for a few seconds. Repeat with right side. Do not hyperextend the head!
Round & Release	Participants sit tall, on the edge of a sturdy chair, with feet on the floor about hip-width apart. Cue to feel the weight on their “sit bones” and tailbone, which is about 0.5 inch above the chair. Weight is on the sit bones but NOT on the tailbone. Cue to exhale, sit back — back into the chair...how about curl backward, flexing the lower spine while firmly contracting the abdominals. Imagine pulling the navel to the spine and cue to rock back onto the tailbone into a posterior pelvic tilt. Then, cue to inhale and sit as tall as possible. They should feel their tailbone lift up and off the chair as the weight shifts to their “sit bones,” with the pelvis in a neutral position. The spine also lifts into good upright neutral alignment. Cue to lengthen the neck and lift the chest (Sanders, 2013).
Trunk Rotation	Participants to sit on the edge of the chair, with feet on the floor shoulder-width apart. “squeeze shoulder blades slightly together.” Have participants reach arms out to the sides, as if they were making a “T” (90 degrees, shoulder abduction) while maintaining scapular retraction. Cue participants to twist the upper body to the right and pulse, gently pushing further three

	times into spinal rotation, exhaling with each pulse. Inhale and return to center, then repeat to the left (Sanders, 2013).
Mermaids	Participants should begin by sitting on the edge of the chair, feet hip-width apart on the floor, spine erect and in neutral. Place one hand on the side of the chair for support. Then have them inhale and perform a continuous motion, sweeping the opposite arm out to the side and up overhead. Encourage participants to exhale as they continue the motion, moving through full range and finally into a side bend (spinal lateral flexion) where they pause, inhale, and return back to the starting position. Repeat on the other side (Sanders, 2013).
Head Half Circles	Gently rotate head forwards until chin reaches center of chest. Now, slowly rotate head backwards until eyes are directed upwards. Repeat with both sides. Do not hyperextend the head!
Calf Stretch with Chair	Place both hands on a chair. With one leg bent at a 90- degree angle and the opposing leg straight, lean into chair. Heels should not rise off the floor.
March in Place	Most individuals have either performed a march or have seen one. Perform this exercise by walking in place (the pace will be a little quicker than walking). However, on every step raise the knee so that the hip and knee both reach near 90 degrees of flexion. Make sure to pump arms back and forth; this will add to the cardiovascular benefit as well as preparing the shoulder girdle for movement. Note: participants may perform a slower march focusing on good knee and hip flexion.

Balance Exercises	
Exercise	Description
Staggered Stance	Being with feet together and hands at sides. Step forward with your right foot. Maintain this position for 10 seconds. Alternate putting the other foot in front.
Ankle Flex	Being with feet together and hands at sides. Step forward with your right foot. Maintain this position for 10 seconds. Alternate putting the other foot in front.
Grapevine	Begin standing with arms at sides, feet together. Step across in front of your left foot with right leg. Continue to step sideways uncrossing the right leg. Take 3 steps then reverse and cross your right leg behind your left leg. Continue to step sideways, uncrossing the left leg. Repeat 3 times in each direction
Static Balance (single leg)	Stand on a balance pad with eyes focused forward, arms crossed over the chest, and one leg elevated to about ankle level without touching the support leg. Repeat with opposing leg.
3-Dot Step with Reach	This exercise is designed to change the center of gravity while moving forward, sideways, and backwards. During the movement, use the arms by reaching out in the same direction of the step. Begin by standing with feet together and arms down to the sides of the body. Select a side to train. Note that during this exercise the opposite foot should never leave the ground. Now on the side chosen to work, take a step lunge forward (lunge; slightly bending front knee), about 2-3 feet. During this stepped lunge reach the arms out in front, away from the body. Now return to the starting position. Now with the same foot, step out to the side, about 2-3 feet; during the step reach your arms out in the same direction of the step (to the side). Return to the starting position. Now step backwards about 2-3 feet,



	<p>while allowing the arms to open backwards into a horizontal reach (hands together extended out from chest, open arms along the horizontal plane. Continue to open arms until they are 1800 apart). Note that when the backwards step is made, the front knee will bend and the back leg (stepped leg) will remain straight. Return to the starting position. Repeat these three steps 5 times on both sides of the body.</p>
Side-to-Side Steps with Arm Swings (Modified Skiers)	<p>Sidestep one direction and bring the opposite foot behind the stepped leg. Repeat this movement in the opposite directions. Let the arms swing naturally side-to-side in the movement of the stepped direction. Perform the side- to-side steps for 30 seconds.</p>
Side Steps	<p>Ensure that participants are more than 5 feet apart from one another. Begin with feet together and arms at your side. Either right or left, begin side stepping to the direction the arm is pointed. Note that the feet should come back together between each side step. Also, avoid turning out the lead foot. Ensure that both feet remain facing forward during the entire exercise. While stepping, add a lateral shoulder raise with the arm of the step direction. Relax arm down when feet are brought together. Perform equal repetitions in both directions.</p>
Side Steps on Balance Pad	<p>Begin exercise on either the right or left side of a balance pad. Participants will side step with one leg first, followed by the second until both legs are firmly anchored on the balance pad. Next, older adults will execute same procedure by stepping off the opposite side of the balance pad. Repeat for specific duration.</p>
Step Ups on Balance Pad	<p>Standing in front of the balance pads, older adults will step on the balance pad.</p>
Heel Raises on Balance Pad	<p>While standing on a balance pad, older adults are asked to raise their heels off the pad while keeping their knees straight. Hold this position for about 6 seconds, then slowly lower heels to the floor. Note: a chair may be used for support.</p>

Walk in place on Balance Pad	Walk in place for a designated time period. Older adults should focus more on correct form rather than number of steps. Older adults should mimic a march.
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Strength Building Exercises	
Exercise	Description
Leg Extension	While seated, extend right foot. Slowly return to starting position and repeat with left foot.
Hip Abduction	Using a chair for support, participants are asked to slowly raise one leg out to the side of their body, keeping their foot flexed. Then lower back toward their standing leg, keeping their hips centered.
Heel Raises	While standing behind a chair for support, participants raise their heels off the ground while keeping their knees straight. Slowly lower heels to the ground. Repeat this activity for desired reps.
Chair Squat	<p>This exercise requires a chair and stable ground to stand on. Begin by sitting in the chair with your arms extended straight out in front of you. Now engage your leg muscles so that you stand up out of the chair. Refrain from leaning forward. Also, make sure you do not sway side to side. If this exercise is too challenging, then add a sturdy support, such as another person, chair, counter top, table, etc. Repeat exercise by returning to the seated position. Note: Posture control is the same when transferring the body from a seated to standing position and standing to seated position.</p> <p>Tip: During the exercise imagine a line that extends upward from the end of your toes. Try to keep your head and knees behind this line.</p>
Rear Leg Extensions	This exercise requires a chair and a stable ground to stand on. Begin by standing behind the chair and holding on to the back on the chair for support. Feet should be hip-width apart. Place one foot behind you and keep that leg extended, without locking your knees. Keeping your head and back aligned (make sure to not arch the back), begin to lift the leg behind you.

Single Leg Standing Hamstring Curls	This exercise requires a chair and a stable ground to stand on. Begin by standing behind the chair and holding on to the back on the chair for support. Feet should be hip-width apart. With one leg on the ground for support, begin to flex at the knee with the other leg until the heel of your foot comes in contact with your gluteus. Then slowly extend the leg back to standing position.
Seated Crunches	While seated, slowly raise one knee towards the chest, while simultaneously curling your upper body to meet your knee. Hold contraction for one second, then return to seated position.
Seated Oblique Crunch	While seated and with your arms crossed across your chest, slowly raise one knee up, while simultaneously curling your upper body down. Twist the torso so that the knee of the leg you are raising, and the elbow of the opposite side come in contact. Hold the contraction for one second, then return to seated position.
Seated Good Morning	Begin in the seated position, with your legs wider than shoulder width apart. While keeping the spine erect and extended, slowly bend forward at the hips. Then slowly bend back up (again keeping the spine erect and extended) into seated position.
Reverse Fly	Hold resistance band directly in front of chest. Arms should be extended away from body and straight. While holding the rubber portion of the band, slowly pull arms away from older adults' center, allowing band to stretch across chest. Once band has been fully extended, slowly release to starting position.
Chest Fly	Hold the resistance band handles, with the resistance band behind your upper back. Position your arms out to your side and parallel to the ground, with a slight bend. Slowly bring your hands together, while also maintaining the same slight bend in the arms (do not bend the arms anymore while bringing the hands together). Once both of your hands come in contact, slowly return to your starting position.

Adopted from Dispennette (2018)

## Appendix B: Physician's Release Form

Patient's Name \_\_\_\_\_

Title: Bingocize®

This page will give you the information you will need to understand why this Bingocize® program is being done and why your patient is being invited to participate. It will also describe any known risks, inconveniences or discomforts that your patient may have while participating. We encourage you to ask questions at any time, including via email or phone.

### ➤ PURPOSE AND BACKGROUND

The benefits of physical activity participation in older adults include slowing the physical changes related to aging, promoting psychological and cognitive well-being, managing chronic diseases, improving health-related quality of life, and increasing longevity. Exercises that specifically focus on functional fitness variables, such as balance, strength and flexibility, are important factors for preventing falls in older adults.

Although the benefits of physical activity have been well documented, very few older adults participate in recommended amounts for preventing falls and improving quality of life. Various reasons for this lack of participation in physical activity include discomfort, fear of injury, social isolation, and fear of falling. Fortunately, researchers have identified factors that will motivate older adults to participate in physical activity. Some of these factors are moderate intensity exercise, group-based interventions, and increasing self-confidence, improving attitudes toward physical activity, and providing social support for activity.

Given the need to develop programs that increase physical activity in older adults, the purpose of the program is to improve physical activity level, functional performance ability (balance, mobility, endurance), and sleep quality.

### ➤ PROCEDURES

Participants will be asked to do the complete physical tests of balance, endurance, and mobility. These tests include but are not limited to: (a) endurance (e.g., number of times you can stand up and sit down in a chair in 30 seconds), (b) balance tests, and (d) mobility (the Timed up and Go test). Survey instruments will be used to assess sleep quality and falls efficacy. An activity tracker will be used to track daily step count and sleep minutes.

Each session will last approximately 45-60 minutes and will occur two times per week. During the sessions, exercises will be alternated with bingo number calling. Participants who win BINGO and those who excel during the exercise sessions (e.g., best attitude, most reps completed, etc.) will receive small prizes at the end of each session.

### ➤ RISKS

Potential risks from participation in the program are typical of those related to participating in physical activity. Specifically, there is a risk of physical injury or discomfort, including muscle soreness. However, we will do our best to ensure that the program progresses gradually and that you are given ample instructions as to how to perform exercises safely or how to perform modifications if your patient cannot do specific exercises.

➤ **BENEFITS**

The direct benefits to your patient include the potential to improve physical health, including cardiorespiratory fitness, balance, mobility, sleep and falls efficacy. In addition, there are social benefits to participating. Finally, we will award small prizes to bingo winners.

➤ **QUESTIONS**

If you have any questions or concerns about your patient's participation in this program, please call Sepehr Rassi at 270-421-8985.

**Physician's Signature** \_\_\_\_\_

**Date** \_\_\_\_\_

**Printed name** \_\_\_\_\_

## Appendix C: PHYSICAL ACTIVITY READINESS QUESTIONNAIRE (PAR-Q)

	Questions	Yes	No
1	Has your doctor ever said that you have a heart condition and that you should only perform physical activity recommended by a doctor?		
2	Do you feel pain in your chest when you perform physical activity?		
3	In the past month, have you had chest pain when you were not performing any physical activity?		
4	Do you lose your balance because of dizziness or do you ever lose consciousness?		
5	Do you have a bone or joint problem that could be made worse by a change in your physical activity?		
6	Is your doctor currently prescribing any medication for your blood pressure or for a heart condition?		
7	Do you know of any other reason why you should not engage in physical activity?		

*If you have answered “Yes” to one or more of the above questions, consult your physician before engaging in physical activity. Tell your physician which questions you answered “Yes” to. After a medical evaluation, seek advice from your physician on what type of activity is suitable for your current condition.*

Adopted from National Academy of Sports Medicine

## Appendix D: Falls Efficacy Scale

Name: \_\_\_\_\_

Date: \_\_\_\_\_

On a scale from 1 to 10, with 1 being very confident and 10 being not confident at all, how confident are you that you do the following activities without falling?

<b>Activity:</b>	<b>Score:</b> <b>1 = very confident</b> <b>10 = not confident at all</b>
Take a bath or shower	
Reach into cabinets or closets	
Walk around the house	
Prepare meals not requiring carrying heavy or hot objects	
Get in and out of bed	
Answer the door or telephone	
Get in and out of a chair	
Getting dressed and undressed	
Personal grooming (i.e. washing your face)	
Getting on and off of the toilet	
<b>Total Score</b>	

A total score of greater than 70 indicates that the person has a fear of falling

Adapted from Tinetti et al (1990)



## Appendix E: Data Collection Sheet

### Pre

Participant ID # \_\_\_\_\_

DOB: \_\_\_\_\_

Tester Initials \_\_\_\_\_

1. Height (cm) \_\_\_\_\_

Tester Initials \_\_\_\_\_

2. Weight (Kg) \_\_\_\_\_

Tester Initials \_\_\_\_\_

3. Blood pressure \_\_\_\_\_

Tester Initials \_\_\_\_\_

4. Wrist Circumference \_\_\_\_\_

Tester Initials \_\_\_\_\_

5. Blood Glucose Level \_\_\_\_\_

Tester Initials \_\_\_\_\_

a. Chair Rise      Number \_\_\_\_\_

Score \_\_\_\_\_

Tester Initials \_\_\_\_\_

b. Grip Strength

1) Right \_\_\_\_\_ Left \_\_\_\_\_

2) Right \_\_\_\_\_ Left \_\_\_\_\_

3) Right \_\_\_\_\_ Left \_\_\_\_\_

Tester Initials \_\_\_\_\_

c. 360 Degree Turn      Time 1) \_\_\_\_\_

2) \_\_\_\_\_

Tester Initials \_\_\_\_\_

d. TUG Test      Time \_\_\_\_\_

- Assistive Device and/or Bracing Used: \_\_\_\_\_

## **Mid**

**Participant ID #** \_\_\_\_\_

**DOB:** \_\_\_\_\_

**Tester Initials** \_\_\_\_\_

**1. Height (cm)** \_\_\_\_\_

**Tester Initials** \_\_\_\_\_

**2. Weight (Kg)** \_\_\_\_\_

**Tester Initials** \_\_\_\_\_

**3. Blood pressure** \_\_\_\_\_

**Tester Initials** \_\_\_\_\_

**4. Wrist Circumference** \_\_\_\_\_

**Tester Initials** \_\_\_\_\_

**5. Blood Glucose Level** \_\_\_\_\_

**Tester Initials** \_\_\_\_\_

**a. Chair Rise**      **Number** \_\_\_\_\_

**Score** \_\_\_\_\_

**Tester Initials** \_\_\_\_\_

**b. Grip Strength**

**1) Right** \_\_\_\_\_ **Left** \_\_\_\_\_

**2) Right** \_\_\_\_\_ **Left** \_\_\_\_\_

**3) Right** \_\_\_\_\_ **Left** \_\_\_\_\_

**Tester Initials** \_\_\_\_\_

**c. 360 Degree Turn**      **Time 1)** \_\_\_\_\_

**2)** \_\_\_\_\_

**Tester Initials** \_\_\_\_\_

**d. TUG Test**      **Time** \_\_\_\_\_

- **Assistive Device and/or Bracing Used:** \_\_\_\_\_

## **Post**

**Participant ID #** \_\_\_\_\_

**DOB:** \_\_\_\_\_

**Tester Initials** \_\_\_\_\_

**1. Height (cm)** \_\_\_\_\_

**Tester Initials** \_\_\_\_\_

**2. Weight (kg)** \_\_\_\_\_

**Tester Initials** \_\_\_\_\_

**3. Blood pressure** \_\_\_\_\_

**Tester Initials** \_\_\_\_\_

**4. Wrist Circumference** \_\_\_\_\_

**Tester Initials** \_\_\_\_\_

**5. Blood Glucose Level** \_\_\_\_\_

**Tester Initials** \_\_\_\_\_

**a. Chair Rise**      **Number** \_\_\_\_\_

**Score** \_\_\_\_\_

**Tester Initials** \_\_\_\_\_

**b. Grip Strength**

**1) Right** \_\_\_\_\_ **Left** \_\_\_\_\_

**2) Right** \_\_\_\_\_ **Left** \_\_\_\_\_

**3) Right** \_\_\_\_\_ **Left** \_\_\_\_\_

**Tester Initials** \_\_\_\_\_

**c. 360 Degree Turn**      **Time 1)** \_\_\_\_\_

**2)** \_\_\_\_\_

**Tester Initials** \_\_\_\_\_

**d. TUG Test**      **Time** \_\_\_\_\_

**Assistive Device and/or Bracing Used:** \_\_\_\_\_

## **Appendix F: Chair Rise Test Protocol**

**Purpose:** To test leg strength and endurance.

**Instructions:**

1. Sit in the middle of the chair.
2. Place your hands on the opposite shoulder crossed at the wrists.
3. Keep your feet flat on the floor.
4. Keep your back straight and keep your arms against your chest.
5. On “Go”, rise to a full standing position and then sit back down again.
6. Repeat this for 30 seconds.

**Tester Notes:**

On “Go” begin timing.

If the patient must use his/her arms to stand, stop the test. Record “0” for the number and score.

Count the number of times the patient comes to a full standing position in 30 seconds.

If the patient is over halfway to a standing position when 30 seconds have elapsed, count it as a stand.

Record the number of times the patient stands in 30 seconds.

Adopted from CDC

## **Appendix G: Grip Strength Test Protocol**

**Purpose:** To measure handgrip strength.

**Instructions:**

1. Sit the participant comfortably in a standard chair with legs, back support and fixed arms. Use the same chair for every measurement.
2. Ask them to rest their forearms on the arms of the chair with their wrist just over the end of the arm of the chair—wrist in a neutral position, thumb facing upwards.
3. Demonstrate how to use the Jamar handgrip dynamometer to show that gripping very tightly registers the best score.
4. Start with the right hand.
5. Position the hand so that the thumb is round one side of the handle and the four fingers are around the other side. The instrument should feel comfortable in the hand. Alter the position of the handle if necessary.
6. The observer should rest the base of the dynamometer on the palm of their hand as the subject holds the dynamometer. The aim of this is to support the weight of the dynamometer (to negate the effect of gravity on peak strength), but care should be taken not to restrict its movement.
7. Encourage the participant to squeeze as long and as tightly as possible or until the needle stops rising. Once the needle stops rising the participant can be instructed to stop squeezing.
8. Read grip strength in kilograms from the outside dial and record the result to the nearest 1 kg on the data entry form.
9. Repeat measurement in the left hand.

10. Do two further measurements for each hand alternating sides to give three readings in total for each side.
11. The best of the six grip strength measurements is used in statistical analyses so as to encourage the subjects to get as high a score as possible.
12. Also record hand dominance, i.e. right, left or ambidextrous (people who can genuinely write with both hands)

Adopted from NIHR Southampton, 2014

## **Appendix H: 360 Turn Protocol**

**Purpose:** To measure dynamic balance.

### **Instructions:**

When I say go, I want you to turn around at your normal pace making sure to go in a complete circle and take steps as you turn. Make sure you end up facing me.

I'll show you (demonstrate the turn). You choose which direction you want to turn. When I say 'go' start turning. Ready, go.

Record the time for both trials to the nearest tenth of a second

Cut Point >3.8 sec is indicator of fall risk

### **Tester Notes:**

Place a piece of masking tape on the floor for a starting position. The participant stands with arms at his/her side and feet comfortably apart and pointing straight ahead at the tape. Start timing from the word GO and stop when the participant's shoulders are square facing you again. Have the participant do two trials. The participant may turn in either direction.

## **Appendix I: Timed Up and Go Test Protocol**

### **Instructions:**

1. Instruct the patient to sit on the chair and place his/her back against the chair and rest his/her arms chair's arms.
2. The upper extremities should not be on the assistive device (if used for walking), but it should be nearby.
3. Demonstrate the test to the patient.
4. When the patient is ready, say "Go".
5. The stopwatch should start when you say "Go" and should be stopped with the patient's buttocks touch the seat.

### **Tester Notes:**

1. The patient should sit on a standard armchair, placing his/her back against the chair and resting his/her arms chair's arms. Any assistive device used for walking should be nearby.
2. Regular footwear and customary walking aids should be used.
3. The patient should walk to a line that is 3 meters (9.8 feet) away, turn around at the line, walk back to the chair, and sit down.
4. The test ends when the patient's buttocks touch the seat.
5. Patients should be instructed to use a comfortable and safe walking speed.
6. A stopwatch should be used to time the test (in seconds).

Adopted from Podsiadlo and Richardson, 1991



## Appendix J: Activity Tracker Instructions

1. The activity tracker has to be worn at all times.
2. The activity tracker has to be worn on **non-dominant** hand.
3. The LED display has to be outside of the wrist and facing the participant.
4. In case you have a trouble fastening the tracker, try fastening it a few times before putting on the participants' wrist.
5. Make sure that the tracker is collecting data. You can ask the participant to take 20 steps and see if the tracker has recorded it.
6. The research group will replace the trackers each session in order to recharge them.
  - a. If possible, replace each person's tracker with the one they used before.
7. Make note of who is wearing each activity tracker.

Participant ID #	Old Activity Tracker #	New Activity Tracker #

### **Appendix K: Activity Trackers Reminder Instructions**

1. Participants will be asked about their preferred method of contact and time of day.

The research group or a facility staff will contact them every day and remind them that they have to wear the trackers 24/7.

- a. If Phone Call has been marked as the preferred method of contact, the research group member can say the followings:

*“Hi (Name of Participant),*

*My name is (Your Name) and I am calling you to remind you that you*

*need to wear your activity tracker at all times. They are water resistant*

*and you can wear them while you are taking a shower, but please*

*remember to wear them again afterwards. Please let us know if the*

*trackers do not feel comfortable or you have any problems with them”*

	<b>9-11 am</b>	<b>11am-1pm</b>	<b>1-3 pm</b>	<b>3-5 pm</b>	<b>5-7pm</b>
<b>Email</b>					
<b>Phone Call</b>					
<b>Text Message</b>					

## 2. Reminder Bingo:

This bingo game is designed to remind the participants at various time that they need to wear the trackers. If the participants wear the trackers for 7 days, Thursday to Thursday, they will be awarded additional prizes. The participants' cards will be checked with the data collected from the activity trackers.

	Breakfast	Lunch	Dinner	Before Sleep
Thursday				
Friday				
Saturday				
Sunday				
Monday				
Tuesday				
Wednesday				
Thursday				

## **Appendix M: Medical Outcomes Study Sleep Scale**

1. How long did it usually take for you to fall asleep during the past 4 weeks?

(Circle One)

- a. 0-15 minutes
- b. 16-30 minutes
- c. 31-45 minutes
- d. 46-60 minutes
- e. More than 60 minutes

2. On the average, how many hours did you sleep each night during the past 4 weeks?

How often during the past 4 weeks did you ...

	All of the Time	Most of the Time	A Good Bit of Time	Some of the Time	A Little of the Time	None of the Time
3. feel that your sleep was not quiet (moving restlessly, feeling tense, speaking, etc., while sleeping?	1	2	3	4	5	6
4. get enough sleep to feel rested upon waking in the morning?	1	2	3	4	5	6
5. awaken short of breath or with a headache?	1	2	3	4	5	6
6. feel drowsy or sleepy during the day?	1	2	3	4	5	6
7. have trouble falling asleep?	1	2	3	4	5	6
8. awaken during your sleep time and have	1	2	3	4	5	6

trouble falling asleep again?						
9. have trouble staying awake during the day?	1	2	3	4	5	6
10. snore during your sleep?	1	2	3	4	5	6
11. take naps (5 minutes or longer) during the day?	1	2	3	4	5	6
12. get the amount of sleep you needed?	1	2	3	4	5	6

Adopted from Hays and Stewart (1992)

## Appendix N: Borg's Rating of Perceived Exertion (RPE) Scale

Perceived Exertion Rating	Description of Exertion
6	No exertion at all
7	Extremely Light
8	
9	Very Light
10	
11	Light
12	
13	Somewhat Hard
14	
15	Hard
16	
17	Very Hard
18	
19	Extremely Hard
20	Maximal Exertion



## **Appendix N: INFORMED CONSENT DOCUMENT**

**Only WKU IRB stamped and approved forms are to be used with participants**

Project Title: Effects of Bingocize® On Overall Physical Activity, Functional Performance, Blood Glucose Level, Sleep Quantity And Quality Among Older Adults in Long-Term Care Facilities

Investigators: Sepehr Rassi, Kinesiology, Recreation & Sport, sepehr.rassi459@topper.wku.edu;  
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Dr. Jason Crandall, Kinesiology, Recreation & Sport, jason.crandall@wku.edu  
Dr. Matthew Shake, Psychological Science, matthew.shake@wku.edu  
Dr. Mark Schafer, Kinesiology, Recreation & Sport, mark.schafer@wku.edu

You are being asked to participate in a project conducted through Western Kentucky University. The University requires that you give your signed agreement to participate in this project.

**You must be 18 years of age or older to participate in this research study.**

The investigator will explain to you in detail the purpose of the project, the procedures to be used, and the potential benefits and possible risks of participation. You may ask any questions you have to help you understand the project. A basic explanation of the project is written below. Please read this explanation and discuss with the researcher any questions you may have.

If you then decide to participate in the project, please sign this form in the presence of the person who explained the project to you. You should be given a copy of this form to keep.

### **1. Nature and Purpose of the Project:**

Although the benefits of physical activity have been well documented, very few older adults participate in recommended amounts planned exercise and physical activity. Regular exercise is beneficial for older adults since it can increase functional performance, improve health-related quality of life, manage chronic diseases, and improve sleep.

Bingocize® is an exercise program that combines playing bingo, physical activity, and educating the public on health-related topics such as environmental fall risks, proper diet, and weight management.

The purpose of this project is to examine the effects of Bingocize® program on overall physical activity level, functional performance, blood glucose level, sleep quantity and sleep quality.

### **2. Explanation of Procedures:** (include approximate amount of time requested of the participant)



If you agree to participate in this study, you will be assigned to either Bingo group or Bingocize<sup>®</sup> group. The bingo group will play bingo twice a week for 10 weeks and will receive prizes upon winning each bingo game. Each session should last 45-60 minutes

The Bingocize<sup>®</sup> group will play bingo and exercise. These sessions are performed in a group with other individuals. Bingocize<sup>®</sup> is scheduled 2 times per week and lasts 45-60 minutes per session. Each session will begin with a 5-minute warm up and will alternate between bingo, and exercise. The exercise can be performed in a sitting or standing position and will be adjusted to your ability. You will be encouraged to maintain proper techniques and perform the exercises with moderate intensity. Each exercise will last between 30 to 60 seconds.

You will complete balance, mobility, and strength tests before and after 10 weeks. These tests will include:

30 seconds chair rise test: number of times you can stand up and sit down in 30 seconds.

Timed up and go test: the time that will take you to stand up from a chair, walk 10 feet, turn around, walk back to the chair, and sit down.

360 degree turn test: the time that will take you to turn a full circle.

Hand grip strength test: measurement of how hard you can squeeze the dynamometer.

It will take 15-20 minutes to complete these tests.

Your blood glucose level will be measured using finger stick method at the beginning of study, after five weeks, and at the end of study.

You will also need to fill out a questionnaire about your sleep habits at the beginning of study and at the end of study.

An activity tracker will be provided for you to wear on your wrist all day and while sleeping. The activity tracker will be used to track your daily step count, minutes sleeping and sleep disturbances each night.

### **3. Discomfort and Risks:**

Potential risks from participation in the study are typical of those related to participating in physical activity. Specifically, there is a risk of physical injury or discomfort, including muscle soreness. However, we will do our best to ensure that the program progresses gradually and that you are given ample instructions as to how to perform exercises safely or how to perform modifications if you cannot do specific exercises. There is also slight discomfort associated with the finger stick method.

### **4. Benefits:**

You will be paid \$40 for participating in this study. Also, there will be a drawing for \$100 at the end of the study. Other benefits include the potential to improve your physical health, including

your endurance, muscular strength, balance, flexibility and sleep. In addition, there are social benefits to participating and small prizes are awarded to bingo game winners.

## 5. Confidentiality:

Data collected will be entered into a data analysis software application (Excel) and configured for statistical analysis. All data collected in this study will use standard methods to ensure the confidentiality of participants. Code numbers will be used to de-identify the participants. Data collection sheets identify participants solely by number, as do computer files containing data on the dependent variables included in this study. The supervising faculty will maintain all data and documents relating to this study in a secure, locked environment for a minimum of three years on campus. Data, video, and documents will be destroyed after that point.

6. **Refusal/Withdrawal:** Refusal to participate in this study will have no effect on any future services you may be entitled to from the University. Anyone who agrees to participate in this study is free to withdraw from the study at any time with no penalty.

*You understand also that it is not possible to identify all potential risks in an experimental procedure, and you believe that reasonable safeguards have been taken to minimize both the known and potential but unknown risks.*

\_\_\_\_\_  
Signature of Participant      Date

\_\_\_\_\_  
Witness      Date

- I agree to the audio/video recording of the research. (**Initial here**) \_\_\_\_\_



VAL ON THIS CONSENT FORM INDICATES THAT  
HAS BEEN REVIEWED AND APPROVED BY  
CKY UNIVERSITY INSTITUTIONAL REVIEW  
BOARD Pyles, Human Protections Administrator  
TELEPHONE: (270) 745-3360

WKU IRB #19-415  
Approved 7/22/2019  
End Date 7/22/2020  
EXPEDITED  
Original 5/17/2019

## Appendix O: Demographic Questionnaire

Date:

ID#:

1. Date of Birth (mm/dd/yyyy)
2. Gender ☐ male ☐ female
3. Ethnicity
  - ☐ African American (Black)
  - ☐ American Indian or Alaska Native
  - ☐ Asian
  - ☐ Caucasian (White)
  - ☐ Native Hawaiian or other Pacific Islander
4. Is English your first language? ☐ Yes ☐ No
5. What is your marital status?
  - ☐ married
  - ☐ separated/divorced
  - ☐ widow/widower
  - ☐ with partner
  - ☐ single
6. What is the highest level of education you have completed?
  - ☐ Less than high school
  - ☐ Some high school
  - ☐ High school graduate or GED
  - ☐ Some college or vocational school
  - ☐ College graduate or higher

## **Present/Past Health History**

Have you ever had, or do you currently have any of the followings? (Check if yes)

- ☐ Colorblindness
- ☐ Glaucoma or other chronic eye problem
- ☐ Severe Neurological Impairment (e.g., Parkinson's, Huntington's diseases)
- ☐ Rheumatic Fever
- ☐ Recent Operation
- ☐ Osteoporosis
- ☐ Arthritis or other bone/joint diseases
- ☐ Edema (swelling of ankles)
- ☐ High blood pressure
- ☐ Low blood pressure
- ☐ Injury to back or knees
- ☐ Seizures
- ☐ Lung disease
- ☐ Heart attack or known heart disease
- ☐ Fainting or dizziness
- ☐ Diabetes
- ☐ High cholesterol
- ☐ Orthopnea (the need to sit up to breathe comfortably), or paroxysmal (sudden, unexpected breathing difficulty attack), or nocturnal dyspnea (shortness of breath at night)
- ☐ Shortness of breath when resting or with mild exertion
- ☐ Chest pains
- ☐ Palpitations or tachycardia (unusually strong or rapid heartbeat)
- ☐ Intermittent claudication (calf muscle cramping)
- ☐ Pain and discomfort in the chest, neck, jaw, arms, or other areas
- ☐ Known heart murmur
- ☐ Unusual fatigue or shortness of breath with your usual activities
- ☐ Temporary loss of visual acuity or speech, or short-term numbness or weakness in one

side, arm, or leg of your body

\_\_\_\_\_ Cancer

\_\_\_\_\_ Diabetic Neuropathy (nerve damage in the feet or legs due to diabetes)

\_\_\_\_\_ Bleeding disorder (Hemophilia, Von Willebrand disease, Factor II, V, VII, X, or XI deficiencies)

\_\_\_\_\_ Other (please describe): \_\_\_\_\_

1. Have you participated in an exercise program in the last 30 days? Yes \_\_\_\_\_ No \_\_\_\_\_

If yes, briefly describe the

program: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

2. Have you ever performed resistance (weight) training exercises in the past?

Yes \_\_\_\_\_ No \_\_\_\_\_

3. Do you have injuries (bone or muscle disabilities) that may interfere with exercising?

Yes \_\_\_\_\_ No \_\_\_\_\_ If yes, briefly

describe \_\_\_\_\_

4. Please list the medications you are taking.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

5. Are you taking any of the following medications?

☐ Aspiring

☐ Plavix

☐ Coumadin/Warfarin

☐ Aggrenox

☐ Xarelto

☐ Lovenox

☐ Eliquis

☐ Pradaxa

6. Have you fallen in the past year? \_\_\_\_\_ yes \_\_\_\_\_ no

1. If "yes," how many times? \_\_\_\_\_

2. If "yes," were you injured? \_\_\_\_\_

7. Do you feel unsteady when standing or walking? \_\_\_\_\_ yes \_\_\_\_\_ no
8. Do you feel worried about falling? \_\_\_\_\_ yes \_\_\_\_\_ no

**In case we ever need to get in touch with you or an emergency contact, please complete the following:**

Personal Address:

\_\_\_\_\_

Street

City

State

Zip

Phone Number: \_\_\_\_\_

Email address: \_\_\_\_\_

In case of emergency, whom may we contact?

Name: \_\_\_\_\_ Relationship: \_\_\_\_\_

Phone Number: \_\_\_\_\_

Personal physician:

Name: \_\_\_\_\_ Phone: \_\_\_\_\_

Fax: \_\_\_\_\_



## Appendix Q: Bingocize® Sessions for Leaders

SESSION 1	
BINGO ROLLS (3)	
<p><b>**Remember to print Exercise Only Take-Home Card (week 1) to give to each participant after the session today!!**</b></p> <p><b><u>Read aloud to the participants:</u></b></p> <p>Over our next several weeks, we will have fun <u>playing</u> Bingocize®. We'll play bingo and do a few simple exercises that will improve your mental and physical health. Did you know?</p> <ul style="list-style-type: none"> <li>• For a healthy heart, exercise or be physically active for at least 30 minutes on most or all days of the week. Follow a heart-healthy diet, and keep a healthy weight.</li> <li>• You can take small steps to prevent or delay the onset of type 2 diabetes such as being active and making smart food choices. If you already have type 2 diabetes, exercise and physical activity can help you manage the disease and help you stay healthy longer.</li> <li>• Regular exercise can reduce arthritis-related joint pain and stiffness. It also can help with losing weight, which reduces stress on the joints.</li> <li>• Your bones and muscles will be stronger if you are physically active. Weight-bearing exercises done three to four times per week can help prevent osteoporosis.</li> </ul> <p>Before we get started, though, here are some important things to keep in mind as you exercise:</p> <ul style="list-style-type: none"> <li>• Maintain correct posture during the exercise</li> <li>• Stop if you encounter pain (a little discomfort is okay, but pain is NOT)</li> <li>• Modifications are available for most of the exercises if you have special circumstances, such as you can't raise your arm over shoulder height, etc.</li> </ul> <p><i>Being more physically active will make you feel better!!</i></p> <p>Source: National Institute on Aging, 2019</p>	
BINGO ROLLS (3)	
Morning Walk Seated	30 seconds
<ul style="list-style-type: none"> <li>• While in the seated position, begin walking in place. The pace will be a little quicker than walking. If you can, on every step, raise the knee so that the hip and knee both reach near 90 degrees.</li> <li>• To increase difficulty, pump arms back and forth.</li> </ul>	
Tie Your Shoes Seated	30 seconds
<ul style="list-style-type: none"> <li>• Begin in a seated position with both legs straight and heels touching the floor. Slowly raise both feet towards the front of your leg, keeping both legs straight. Lower both feet back to the starting position.</li> </ul>	
BINGO ROLLS (3)	
Top Shelf Reach Seated	30 seconds

<ul style="list-style-type: none"> <li>● Begin by sitting on the edge of the chair, feet hip-width apart on the floor. Keep your spine erect. Place one hand on the side of the chair for support. Breathe in, and sweep the opposite arm out to the side and up overhead. Breathe out as you continue the motion, moving through full range and finally into a side bend. Pause, breathe in, and return back to the starting position. Repeat on the opposite side.</li> </ul>	
Trunk Rotation Seated	30 seconds
<ul style="list-style-type: none"> <li>● Sit on the edge of the chair, with feet on the floor, shoulder-width apart. Squeeze your shoulder blades slightly together. Reach your arms out to the sides, as if making a “T”, while still squeezing your shoulder blades together. Twist your upper body to the right and pulse, gently pushing further three times into spinal rotation. Exhale with each pulse. Inhale and return to center, then repeat to the left.</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Toes to the Sky Seated	30 seconds
<ul style="list-style-type: none"> <li>● Begin in a seated position with good posture, eyes facing forward, palms on your thighs, and feet hip-width apart. Extend your right foot. Slowly return to starting position and repeat with your left foot.</li> </ul>	
Chair Stands	30 seconds
<ul style="list-style-type: none"> <li>● Begin in a seated position, good posture, and eyes facing forward, feet hip-width apart.</li> </ul> <p>To decrease difficulty:</p> <ul style="list-style-type: none"> <li>○ Push up with hands on seat/arms of wheelchair</li> <li>○ Use cane or walker</li> </ul> <p>To increase difficulty:</p> <ul style="list-style-type: none"> <li>○ Cross arms across chest when standing</li> <li>○ Hold weight between hands</li> </ul> <p>As you move upward, maintain a neutral spine by moving head, neck, and spine together. Move only the hip, knee, and ankle joints as you stand. Keep shoulders down throughout the exercise, and keep knees from moving beyond toes. Stay under control as you return to the seated position.</p>	
<b>BINGO ROLLS (3)</b>	
Stiff Arthur’s Hip Seated	30 seconds
<ul style="list-style-type: none"> <li>● Shift weight to the right hip, and lift left hip off the chair. Shift your weight to the left hip, and lift your right hip off the chair.</li> </ul>	
Seated Balance Exercises	30 seconds
<ul style="list-style-type: none"> <li>● Sit with eyes closed for 30 seconds. Sit with eyes closed while turning head side to side. Sit with eyes closed while moving head up and down.</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Morning Walk Seated	30 seconds

<ul style="list-style-type: none"> <li>• While in the seated position, begin walking in place. The pace will be a little quicker than walking. If you can, on every step raise the knee so that the hip and knee both reach near 90 degrees.</li> <li>• To increase difficulty, pump arms back and forth.</li> </ul>	
Side Steps Seated	30 seconds
<ul style="list-style-type: none"> <li>• Begin in a seated position with feet together and hands on your thighs. Raise your right foot off the ground, and step as far to the right as you can without leaving your chair. Your feet should come back together between each side step. Now repeat with the left foot.</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Thumb to Fingers	30 seconds
<ul style="list-style-type: none"> <li>• Start with your hand in a neutral, relaxed position with your fingers and thumbs straightened. Bend your thumb across your palm, touching the tip of your thumb to the bottom of your small finger. If you can't make your thumb touch, just stretch as far as you can. Return your thumb to the starting position. Repeat multiple times with each hand.</li> </ul>	
Table Roll	30 seconds
<ul style="list-style-type: none"> <li>• Roll the hand therapy ball with your fingertips to the ball. Then repeat the exercise multiple times on each hand.</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Trunk Rotation Seated	30 seconds
<ul style="list-style-type: none"> <li>• Sit on the edge of the chair, with feet on the floor shoulder-width apart. Squeeze your shoulder blades slightly together. Reach your arms out to the sides, as if making a "T", while still squeezing your shoulder blades together. Twist your upper body to the right and pulse, gently pushing further three times into spinal rotation. Exhale with each pulse. Inhale and return to center, then repeat to the left.</li> </ul>	
Breaststroke Seated	30 seconds
<ul style="list-style-type: none"> <li>• Sit on the edge of your chair. Sit tall with the crown of the head high. Lift your arms to bring the hands in front of the chest, reaching forward. Perform a breaststroke, turning hands from palms down to palms up. Arms should move horizontally. Lift the chest, shoulder blades are down and back while squeezing them together. Breathe out as you return to the start position.</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Tie Your Shoes Seated	30 seconds
<ul style="list-style-type: none"> <li>• Begin in a seated position with both legs straight and heels touching the floor. Slowly raise both feet towards the front of your leg, keeping both legs straight. Lower both feet back to the starting position.</li> </ul>	
Goodbye, Neighbor! Standing	30 seconds
<ul style="list-style-type: none"> <li>• Stand. Then turn to the person on each side of you and shake their hand or give them a big hug!</li> </ul>	
<b>REVIEW QUESTIONS AND CORRECT RESPONSES WITH PARTICIPANTS</b>	

**BINGO ROLLS (CONTINUE UNTIL FINAL WINNER)**

**\*\*Remember to give your participants their Bingocize® Take-Home Cards today and explain that they should work on completing the task(s) and exercises this week and return next week for a prize\*\***

SESSION 2	
BINGO ROLLS (3)	
<p><b><u>Read aloud to the participants:</u></b></p> <p><i>The takeaway message from our first session was <u>exercise can improve your health</u>. Our time together will be centered on four types of exercise: endurance, strength, balance, and flexibility exercises.</i></p> <ol style="list-style-type: none"> <li>1. <u>Endurance exercise</u> builds up your energy storage so you can have a greater capacity to do daily tasks.</li> <li>2. <u>Strength exercises</u> help to build those muscles of yours. Strong muscles are essential to helping you get up from a chair by yourself, lift your grandchildren, or walk through the park.</li> <li>3. <u>Balancing exercises</u> have a hand in preventing falls, helping you stand with more confidence, and helping you walk with less assistance.</li> <li>4. <u>Flexibility and range of motion exercises</u> will aid you in moving around more freely, and with less pain or stiffness.</li> </ol> <p>We will learn more about each of these four types of exercise over the next few weeks. Before we get started, though, here are some important things to keep in mind as you exercise:</p> <ul style="list-style-type: none"> <li>• Maintain correct posture during the exercise</li> <li>• Stop if you encounter pain (a little discomfort is okay, but pain is NOT)</li> <li>• Modifications are available for most of the exercises if you have special circumstances, such as you can't raise your arm over shoulder height, etc.</li> </ul> <p><i>Reminder: As we dive into these exercises, it is important to push yourself, but make sure to find a pace that makes you "feel good". Our main goal is to have fun!</i></p> <p>Source: National Council on Aging, 2017</p>	
BINGO ROLLS (3)	
Morning Walk Seated	30 seconds
<ul style="list-style-type: none"> <li>• While in the seated position, begin walking in place. The pace will be a little quicker than walking. If you can, on every step, raise the knee so that the hip and knee both reach near 90 degrees.</li> <li>• To increase difficulty, pump arms back and forth.</li> </ul>	
Tie Your Shoes Seated	30 seconds
<ul style="list-style-type: none"> <li>• Begin in a seated position with both legs straight and heels touching the floor. Slowly raise both feet towards the front of your leg, keeping both legs straight. Lower both feet back to the starting position.</li> </ul>	
BINGO ROLLS (3)	
Top Shelf Reach Seated	30 seconds
<ul style="list-style-type: none"> <li>• Begin by sitting on the edge of the chair, feet hip-width apart on the floor. Keep your spine erect. Place one hand on the side of the chair for support. Breathe in and sweep the opposite arm out to the side and up overhead. Breathe out as you continue the motion, moving through full range and finally into a side bend. Pause, breathe in, and return back to the starting position. Repeat on the opposite side.</li> </ul>	

Trunk Rotation Seated	30 seconds
<ul style="list-style-type: none"> <li>Sit on the edge of the chair, with feet on the floor shoulder-width apart. Squeeze your shoulder blades slightly together. Reach your arms out to the sides, as if making a “T”, while still squeezing your shoulder blades together. Twist your upper body to the right and pulse, gently pushing further three times into spinal rotation. Exhale with each pulse. Inhale and return to center, then repeat to the left.</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Toes to the Sky Seated	30 seconds
<ul style="list-style-type: none"> <li>Begin in a seated position with good posture, eyes facing forward, palms on your thighs, and feet hip-width apart. Extend your right foot. Slowly return to starting position and repeat with your left foot.</li> </ul>	
Chair Stands	30 seconds
<ul style="list-style-type: none"> <li>Begin in a seated position, good posture, and eyes facing forward, feet hip-width apart.</li> </ul> <p>To decrease difficulty:</p> <ul style="list-style-type: none"> <li>Push up with hands on seat/arms of wheelchair</li> <li>Use cane or walker</li> </ul> <p>To increase difficulty:</p> <ul style="list-style-type: none"> <li>Cross arms across chest when standing</li> <li>Hold weight between hands</li> </ul> <p>As you move upward, maintain a neutral spine by moving head, neck, and spine together. Move only the hip, knee, and ankle joints as you stand. Keep shoulders down throughout the exercise, and keep knees from moving beyond toes. Stay under control as you return to the seated position.</p>	
<b>BINGO ROLLS (3)</b>	
Stiff Arthur’s Hip Seated	30 seconds
<ul style="list-style-type: none"> <li>Shift weight to the right hip, and lift left hip off of the chair. Shift your weight to the left hip, and lift your right hip off of the chair.</li> </ul>	
Seated Balance Exercises	30 seconds
<ul style="list-style-type: none"> <li>Sit with eyes closed for 30 seconds. Sit with eyes closed while turning head side to side. Sit with eyes closed while moving head up and down.</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Morning Walk Seated	30 seconds
<ul style="list-style-type: none"> <li>While in the seated position, begin walking in place. The pace will be a little quicker than walking. If you can, on every step, raise the knee so that the hip and knee both reach near 90 degrees.</li> <li>To increase difficulty, pump arms back and forth.</li> </ul>	
Side Steps Seated	30 seconds
<ul style="list-style-type: none"> <li>Begin in a seated position with feet together and hands on your thighs. Raise your right foot off the ground and step as far to the right as you can without leaving your chair. Your feet should come back together between each side step. Now repeat with the left foot.</li> </ul>	

BINGO ROLLS (3)	
Thumb to Fingers	30 seconds
<ul style="list-style-type: none"> <li>Start with your hand in a neutral, relaxed position with your fingers and thumbs straightened. Bend your thumb across your palm, touching the tip of your thumb to the bottom of your small finger. If you can't make your thumb touch, just stretch as far as you can. Return your thumb to the starting position. Repeat multiple times with each hand.</li> </ul>	
Table Roll	30 seconds
<ul style="list-style-type: none"> <li>Roll the hand therapy ball with your fingertips to the ball. Then repeat the exercise multiple times on each hand.</li> </ul>	
BINGO ROLLS (3)	
Trunk Rotation Seated	30 seconds
<ul style="list-style-type: none"> <li>Sit on the edge of the chair, with feet on the floor shoulder-width apart. Squeeze your shoulder blades slightly together. Reach your arms out to the sides, as if making a "T", while still squeezing your shoulder blades together. Twist your upper body to the right and pulse, gently pushing further three times into spinal rotation. Exhale with each pulse. Inhale and return to center, then repeat to the left.</li> </ul>	
Breaststroke Seated	30 seconds
<ul style="list-style-type: none"> <li>Sit on the edge of your chair. Sit tall with the crown of the head high. Lift your arms to bring the hands in front of the chest, reaching forward. Perform a breaststroke, turning hands from palms down to palms up. Arms should move horizontally. Lift the chest, shoulder blades are down and back while squeezing them together. Breathe out as you return to the start position.</li> </ul>	
BINGO ROLLS (3)	
Tie Your Shoes Seated	30 seconds
<ul style="list-style-type: none"> <li>Begin in a seated position with both legs straight and heels touching the floor. Slowly raise both feet towards the front of your leg, keeping both legs straight. Lower both feet back to the starting position.</li> </ul>	
Hi, Neighbor! Seated	30 seconds
<ul style="list-style-type: none"> <li>With straight posture, slowly and gently turn your head toward the left. Hold for a few seconds. Repeat with the right side. Do not hyperextend your head!</li> </ul>	
REVIEW QUESTIONS AND CORRECT RESPONSES WITH PARTICIPANTS	
BINGO ROLLS (CONTINUE UNTIL FINAL WINNER)	

**\*\*Remind your participants to keep working on their Bingocize® Take-Home Cards to bring back next week\*\***

SESSION 3	
BINGO ROLLS (3)	
<p><b>**Remember to print Exercise Only Take-Home Card (week 2) to give to each participant after the session today!!**</b></p> <p><b><u>Read aloud to the participants:</u></b> Out walking with friends, doing chores around the house, and dancing to the beat of your favorite song are all examples of endurance exercises that can strengthen your heart and lungs so you have more energy to carry out your everyday activities.</p> <p>Before we get started, though, here are some important things to keep in mind as you exercise:</p> <ul style="list-style-type: none"> <li>• Maintain correct posture during the exercise</li> <li>• Stop if you encounter pain (a little discomfort is okay, but pain is NOT)</li> <li>• Modifications are available for most of the exercises if you have special circumstances, such as you can't raise your arm over shoulder height, etc.</li> </ul> <p><i>You may feel a little sore from last week... But that's perfectly normal! Your body is already starting to adjust and get stronger. We will now begin to increase the amount of time we exercise. Although it is good to push yourself, you should do so at a pace that makes you "feel good". Now, let's have some fun!</i></p> <p>Source: Centers for Disease Control; National Center for Injury Prevention, 2018</p>	
BINGO ROLLS (3)	
Morning Walk Seated	40 seconds
<ul style="list-style-type: none"> <li>• While in the seated position, begin walking in place. The pace will be a little quicker than walking. If you can, on every step, raise the knee so that the hip and knee both reach near 90 degrees. To increase difficulty, pump arms back and forth.</li> </ul>	
Spell Your Name Seated	40 seconds
<ul style="list-style-type: none"> <li>• Begin in a seated position with feet hip-width apart. Raise one leg off the ground, keeping the knee at a 90 degree angle. With your ankle only, spell your name. Repeat with the opposite leg.</li> </ul>	
BINGO ROLLS (3)	
Top Shelf Reach Seated	40 seconds
<ul style="list-style-type: none"> <li>• Begin by sitting on the edge of the chair, feet hip-width apart on the floor. Keep your spine erect. Place one hand on the side of the chair for support. Breathe in and sweep the opposite arm out to the side and up overhead. Breathe out as you continue the motion, moving through full range and finally into a side bend. Pause, breathe in, and return back to the starting position. Repeat on the opposite side.</li> </ul>	
Trunk Rotation Seated	40 seconds



<ul style="list-style-type: none"> <li>Sit on the edge of the chair, with feet on the floor shoulder-width apart. Squeeze your shoulder blades slightly together. Reach your arms out to the sides, as if making a “T”, while still squeezing your shoulder blades together. Twist your upper body to the right and pulse, gently pushing further three times into spinal rotation. Exhale with each pulse. Inhale and return to center, then repeat to the left.</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Cueing Drill (make sure participants spread out)	40 seconds
<ul style="list-style-type: none"> <li>Begin in the standing position. Take one step forward. Take one step backward. Turn around and face the opposite direction. Turn around to the starting position. Crouch down with your knees bent. Place your hands on your knees. Stand up tall and clap your hands ten times. Stand with your right foot up, and hold. Stand with your left foot up, and hold. Step your right foot forward, and reach up with your left arm. Step with your left foot forward, and reach with your right arm. Bring your feet back together, and your arms to your sides. Raise up on your toes. And lower. Turn your head to the right. Return to the center. Turn your head to the left. And return to the center.</li> </ul>	
Chair Stands	40 seconds
<ul style="list-style-type: none"> <li>Begin in a seated position, good posture, and eyes facing forward, feet hip-width apart.</li> </ul> <p>To decrease difficulty:</p> <ul style="list-style-type: none"> <li>Push up with hands on seat/arms of wheelchair</li> <li>Use cane or walker</li> </ul> <p>To increase difficulty:</p> <ul style="list-style-type: none"> <li>Cross arms across chest when standing</li> <li>Hold weight between hands</li> </ul> <p>As you move upward, maintain a neutral spine by moving head, neck, and spine together. Move only the hip, knee, and ankle joints as you stand. Keep shoulders down throughout the exercise, and keep knees from moving beyond toes. Stay under control as you return to the seated position.</p>	
<b>BINGO ROLLS (3)</b>	
Chest Press Seated	40 seconds
<ul style="list-style-type: none"> <li>Place the resistance band behind your upper back. Position your arms out to your side and parallel to the ground, with a slight bend. Slowly bring your hands together, while also maintaining the same slight bend in the arms. Once both of your hands come in contact, slowly return to the starting position. For more resistance, grab the resistance band itself.</li> </ul>	
Seated Balance Exercises	40 seconds
<ul style="list-style-type: none"> <li>Sit with eyes closed for 30 seconds. Sit with eyes closed while turning head side to side. Sit with eyes closed while moving head up and down</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Morning Walk Seated	40 seconds

<ul style="list-style-type: none"> <li>• While in the seated position, begin walking in place. The pace will be a little quicker than walking. If you can, on every step raise the knee so that the hip and knee both reach near 90 degrees.</li> <li>• To increase difficulty, pump arms back and forth.</li> </ul>	
Side Steps Seated	40 seconds
<ul style="list-style-type: none"> <li>• Begin in a seated position with feet together and hands on your thighs. Raise your right foot off the ground, and step as far to the right as you can without leaving your chair. Your feet should come back together between each side step. Now repeat with the left foot.</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Thumb to Fingers	40 seconds
<ul style="list-style-type: none"> <li>• Start with your hand in a neutral, relaxed position with your fingers and thumbs straightened. Bend your thumb across your palm, touching the tip of your thumb to the bottom of your small finger. If you can't make your thumb touch, just stretch as far as you can. Return your thumb to the starting position. Repeat multiple times with each hand.</li> </ul>	
C-Grip	40 seconds
<ul style="list-style-type: none"> <li>• Start by holding your hand and fingers straight and close together. Gently curve your fingers into a "C" shape, as if your hand is wrapped around a can. Moving slowly and smoothly, return your hand to the starting position. Then repeat the exercise multiple times on each hand.</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Trunk Rotation Seated	40 seconds
<ul style="list-style-type: none"> <li>• Sit on the edge of the chair, with feet on the floor shoulder-width apart. Squeeze your shoulder blades slightly together. Reach your arms out to the sides, as if making a "T", while still squeezing your shoulder blades together. Twist your upper body to the right and pulse, gently pushing further three times into spinal rotation. Exhale with each pulse. Inhale and return to center, then repeat to the left.</li> </ul>	
Breaststroke Seated	40 seconds
<ul style="list-style-type: none"> <li>• Sit on the edge of your chair. Sit tall with the crown of the head high. Lift your arms to bring the hands in front of the chest, reaching forward. Perform a breaststroke, turning hands from palms down to palms up. Arms should move horizontally. Lift the chest, shoulder blades are down and back while squeezing them together. Breathe out as you return to the start position.</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Tie Your Shoes Seated	40 seconds
<ul style="list-style-type: none"> <li>• Begin in a seated position with both legs straight and heels touching the floor. Slowly raise both feet towards the front of your leg, keeping both legs straight. Lower both feet back to the starting position.</li> </ul>	
Hi, Neighbor! Seated	40 seconds
<ul style="list-style-type: none"> <li>• With straight posture, slowly and gently turn your head toward the left. Hold for a few seconds. Repeat with the right side. Do not hyperextend your head!</li> </ul>	

REVIEW QUESTIONS AND CORRECT RESPONSES WITH PARTICIPANTS
BINGO ROLLS (CONTINUE UNTIL FINAL WINNER)

**\*\*Remember to give your participants their Bingocize® Take-Home Cards today and explain that they should work on completing the task(s) and exercises this week and return next week for a prize\*\***

## SESSION 4

### BINGO ROLLS (3)

**Read aloud to the participants:**

You may still feel a little sore and tired, but hang in there. You are already getting stronger and your fitness is getting better! Remember from our last session:

- Endurance exercise is one of the four pillars of physical fitness.
- These are activities can be done over short periods of time like walking, dancing, or household chores.
- This type of exercise can make everyday activities feel less tiring.

Before we get started, though, here are some important things to keep in mind as you exercise:

- Maintain correct posture during the exercise
- Stop if you encounter pain (a little discomfort is okay, but pain is NOT)
- Modifications are available for most of the exercises if you have special circumstances, such as you can't raise your arm over shoulder height, etc.

*Reminder: During the exercise portion of the program, it is important to push yourself, but make sure to find a pace that makes you "feel good".*

Source: National Council on Aging, 2018

### BINGO ROLLS (3)

Morning Walk Seated	40 seconds
<ul style="list-style-type: none"> <li>While in the seated position, begin walking in place. The pace will be a little quicker than walking. If you can, on every step, raise the knee so that the hip and knee both reach near 90 degrees. To increase difficulty, pump arms back and forth.</li> </ul>	
Spell Your Name Seated	40 seconds
<ul style="list-style-type: none"> <li>Begin in a seated position with feet hip-width apart. Raise one leg off the ground, keeping the knee at a 90 degree angle. With your ankle only, spell your name. Repeat with the opposite leg.</li> </ul>	
BINGO ROLLS (3)	
Top Shelf Reach Seated	40 seconds
<ul style="list-style-type: none"> <li>Begin by sitting on the edge of the chair, feet hip-width apart on the floor. Keep your spine erect. Place one hand on the side of the chair for support. Breathe in and sweep the opposite arm out to the side and up overhead. Breathe out as you continue the motion, moving through full range and finally into a side bend. Pause, breathe in, and return back to the starting position. Repeat on the opposite side.</li> </ul>	
Trunk Rotation Seated	40 seconds

<ul style="list-style-type: none"> <li>Sit on the edge of the chair, with feet on the floor shoulder-width apart. Squeeze your shoulder blades slightly together. Reach your arms out to the sides, as if making a “T”, while still squeezing your shoulder blades together. Twist your upper body to the right and pulse, gently pushing further three times into spinal rotation. Exhale with each pulse. Inhale and return to center, then repeat to the left.</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Cueing Drill (make sure participants spread out)	40 seconds
<ul style="list-style-type: none"> <li>Begin in the standing position. Take one step forward. Take one step backward. Turn around and face the opposite direction. Turn around to the starting position. Crouch down with your knees bent. Place your hands on your knees. Stand up tall and clap your hands ten times. Stand with your right foot up, and hold. Stand with your left foot up, and hold. Step your right foot forward, and reach up with your left arm. Step with your left foot forward, and reach with your right arm. Bring your feet back together, and your arms to your sides. Raise up on your toes. And lower. Turn your head to the right. Return to the center. Turn your head to the left. And return to the center.</li> </ul>	
Chair Stands	40 seconds
<ul style="list-style-type: none"> <li>Begin in a seated position, good posture, and eyes facing forward, feet hip-width apart.</li> </ul> <p>To decrease difficulty:</p> <ul style="list-style-type: none"> <li>Push up with hands on seat/arms of wheelchair</li> <li>Use cane or walker</li> </ul> <p>To increase difficulty:</p> <ul style="list-style-type: none"> <li>Cross arms across chest when standing</li> <li>Hold weight between hands</li> </ul> <p>As you move upward, maintain a neutral spine by moving head, neck, and spine together. Move only the hip, knee, and ankle joints as you stand. Keep shoulders down throughout the exercise, and keep knees from moving beyond toes. Stay under control as you return to the seated position.</p>	
<b>BINGO ROLLS (3)</b>	
Chest Press Seated	40 seconds
<ul style="list-style-type: none"> <li>Place the resistance band behind your upper back. Position your arms out to your side and parallel to the ground, with a slight bend. Slowly bring your hands together, while also maintaining the same slight bend in the arms. Once both of your hands come in contact, slowly return to the starting position. For more resistance, grab the resistance band itself.</li> </ul>	
Seated Balance Exercises	40 seconds
<ul style="list-style-type: none"> <li>Sit with eyes closed for 30 seconds. Sit with eyes closed while turning head side to side. Sit with eyes closed while moving head up and down</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Morning Walk Seated	40 seconds

<ul style="list-style-type: none"> <li>• While in the seated position, begin walking in place. The pace will be a little quicker than walking. If you can, on every step, raise the knee so that the hip and knee both reach near 90 degrees.</li> <li>• To increase difficulty, pump arms back and forth.</li> </ul>	
Side Steps Seated	40 seconds
<ul style="list-style-type: none"> <li>• Begin in a seated position with feet together and hands on your thighs. Raise your right foot off the ground and step as far to the right as you can without leaving your chair. Your feet should come back together between each side step. Now repeat with the left foot.</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Thumb to Fingers	40 seconds
<ul style="list-style-type: none"> <li>• Start with your hand in a neutral, relaxed position with your fingers and thumbs straightened. Bend your thumb across your palm, touching the tip of your thumb to the bottom of your small finger. If you can't make your thumb touch, just stretch as far as you can. Return your thumb to the starting position. Repeat multiple times with each hand.</li> </ul>	
C-Grip	40 seconds
<ul style="list-style-type: none"> <li>• Start by holding your hand and fingers straight and close together. Gently curve your fingers into a "C" shape, as if your hand is wrapped around a can. Moving slowly and smoothly, return your hand to the starting position. Then repeat the exercise multiple times on each hand.</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Trunk Rotation Seated	40 seconds
<ul style="list-style-type: none"> <li>• Sit on the edge of the chair, with feet on the floor shoulder-width apart. Squeeze your shoulder blades slightly together. Reach your arms out to the sides, as if making a "T", while still squeezing your shoulder blades together. Twist your upper body to the right and pulse, gently pushing further three times into spinal rotation. Exhale with each pulse. Inhale and return to center, then repeat to the left.</li> </ul>	
Breaststroke Seated	40 seconds
<ul style="list-style-type: none"> <li>• Sit on the edge of your chair. Sit tall with the crown of the head high. Lift your arms to bring the hands in front of the chest, reaching forward. Perform a breaststroke, turning hands from palms down to palms up. Arms should move horizontally. Lift the chest, shoulder blades are down and back while squeezing them together. Breathe out as you return to the start position.</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Tie Your Shoes Seated	40 seconds
<ul style="list-style-type: none"> <li>• Begin in a seated position with both legs straight and heels touching the floor. Slowly raise both feet towards the front of your leg, keeping both legs straight. Lower both feet back to the starting position.</li> </ul>	

Hi, Neighbor! Seated	40 seconds
<ul style="list-style-type: none"> <li>With straight posture, slowly and gently turn your head toward the left. Hold for a few seconds. Repeat with the right side. Do not hyperextend your head!</li> </ul>	
REVIEW QUESTIONS AND CORRECT RESPONSES WITH PARTICIPANTS	
BINGO ROLLS (CONTINUE UNTIL FINAL WINNER)	

**\*\*Remind your participants to keep working on their Bingocize® Take-Home Cards to bring back next week\*\***

SESSION 5	
BINGO ROLLS (3)	
<p><b>**Remember to print Exercise Only Take-Home Card (week 3) to give to each participant after the session today!!**</b></p> <p><b><u>Read aloud to the participants:</u></b> So we've learned that endurance helps your heart and lungs—now let's talk about your muscles. Strength exercises help you perform activities like carrying groceries and grandchildren, climbing up the stairs, or gardening. As we continue with Bingocize®, you'll find that your muscles will be able to perform tasks like these with more ease.</p> <p>Before we get started, though, here are some important things to keep in mind as you exercise:</p> <ul style="list-style-type: none"> <li>• Maintain correct posture during the exercise</li> <li>• Stop if you encounter pain (a little discomfort is okay, but pain is NOT)</li> <li>• Modifications are available for most of the exercises if you have special circumstances, such as you can't raise your arm over shoulder height, etc.</li> </ul> <p><i>Reminder: During the exercise portion of the program, it is important to push yourself, but make sure to find a pace that makes you "feel good".</i></p> <p>Source: National Institutes on Aging, 2018</p>	
BINGO ROLLS (3)	
Morning Walk Standing	40 seconds
<ul style="list-style-type: none"> <li>• Stand up and begin walking in place. The pace will be a little quicker than walking. If you can, on every step, raise the knee so that the hip and knee both reach near 90 degrees.</li> <li>• To increase difficulty, pump arms back and forth.</li> </ul>	
Spell Your Name Seated	40 seconds
<ul style="list-style-type: none"> <li>• Begin in a seated position with feet hip-width apart. Raise one leg off the ground, keeping the knee at a 90 degree angle. With your ankle only, spell your name. Repeat with the opposite leg.</li> </ul>	
BINGO ROLLS (3)	
Good Morning!	40 seconds
<ul style="list-style-type: none"> <li>• Begin in the seated position, with your legs wider than shoulder-width apart. Keep your spine erect and extended. Slowly bend forward at the hips. Then slowly bend back up, again keeping your spine erect and extended, into the seated position.</li> </ul>	
Chair Scoot	40 seconds
<ul style="list-style-type: none"> <li>• Scoot forward in your chair. Now scoot back in your chair.</li> </ul>	
BINGO ROLLS (3)	
Grapevine (make sure participants spread out)	40 seconds



<ul style="list-style-type: none"> <li>● Begin by standing with your arms at your sides with feet together. Step across, in front of your left foot with your right leg. Continue to step sideways, un-crossing the right leg. Now reverse, and cross your right leg behind your left leg. Continue to step sideways, un-crossing the left leg.</li> </ul>	
Chair Stands	40 seconds
<ul style="list-style-type: none"> <li>● Begin in a seated position, good posture, and eyes facing forward, feet hip-width apart.</li> </ul> <p>To decrease difficulty:</p> <ul style="list-style-type: none"> <li>○ Push up with hands on seat/arms of wheelchair</li> <li>○ Use cane or walker</li> </ul> <p>To increase difficulty:</p> <ul style="list-style-type: none"> <li>○ Cross arms across chest when standing</li> <li>○ Hold weight between hands</li> </ul> <p>As you move upward, maintain a neutral spine by moving head, neck, and spine together. Move only the hip, knee, and ankle joints as you stand. Keep shoulders down throughout the exercise, and keep knees from moving beyond toes. Stay under control as you return to the seated position.</p>	
<b>BINGO ROLLS (3)</b>	
Arm Curl Seated	40 seconds
<ul style="list-style-type: none"> <li>● In a seated position, place the resistance band beneath both feet. Hands should be gripping band handles with palms facing outward. While holding the upper arm stationary, curl the band forward. Only the forearm should move. Curl the band as far as possible, and slowly bring your hands back to the starting position.</li> </ul>	
Arm Extensions Seated	40 seconds
<ul style="list-style-type: none"> <li>● Extend your right arm straight up, palm facing forward. Bend your right elbow, letting your hand hinge down behind your head, as if you were patting yourself on the back. Place your left hand on your right elbow. Gently pull until you feel a stretch down the back of your upper arm. Repeat with your left arm.</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Morning Walk Standing	40 seconds
<ul style="list-style-type: none"> <li>● Stand up and begin walking in place. The pace will be a little quicker than walking. If you can, on every step raise the knee so that the hip and knee both reach near 90 degrees.</li> <li>● To increase difficulty, pump arms back and forth.</li> </ul>	
Side Steps Seated	40 seconds
<ul style="list-style-type: none"> <li>● Begin in a seated position with feet together and hands on your thighs. Raise your right foot off the ground and step as far to the right as you can without leaving your chair. Your feet should come back together between each side step. Now repeat with the left foot.</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Thumb to Fingers	40 seconds

<ul style="list-style-type: none"> <li>Start with your hand in a neutral, relaxed position with your fingers and thumbs straightened. Bend your thumb across your palm, touching the tip of your thumb to the bottom of your small finger. If you can't make your thumb touch, just stretch as far as you can. Return your thumb to the starting position. Repeat multiple times with each hand.</li> </ul>	
C-Grip	40 seconds
<ul style="list-style-type: none"> <li>Start by holding your hand and fingers straight and close together. Gently curve your fingers into a "C" shape, as if your hand is wrapped around a can. Moving slowly and smoothly, return your hand to the starting position. Then repeat the exercise multiple times on each hand.</li> </ul>	
BINGO ROLLS (3)	
Trunk Rotation Standing	40 seconds
<ul style="list-style-type: none"> <li>Stand up with feet on the floor shoulder-width apart. Squeeze your shoulder blades slightly together. Reach your arms out to the sides, as if making a "T", while still squeezing your shoulder blades together. Twist your upper body to the right and pulse, gently pushing further three times into spinal rotation. Exhale with each pulse. Inhale and return to center, then repeat to the left.</li> </ul>	
Breaststroke Standing	40 seconds
<ul style="list-style-type: none"> <li>Stand up straight with the crown of the head high. Lift your arms to bring the hands in front of the chest, reaching forward. Perform a breaststroke, turning hands from palms down to palms up. Arms should move horizontally. Lift the chest, shoulder blades are down and back while squeezing them together. Breathe out as you return to the start position.</li> </ul>	
BINGO ROLLS (3)	
Calf Raise Standing	40 seconds
<ul style="list-style-type: none"> <li>Stand behind a chair, and place both hands on the back of the chair. With one leg bent at a 90 degree angle and the opposing leg straight, lean into the chair. Heels should not rise off the floor. Switch legs after 20 seconds, and repeat the exercise.</li> </ul>	
Hi, Neighbor! Standing	40 seconds
<ul style="list-style-type: none"> <li>With straight posture, slowly and gently turn your head toward the left. Hold for a few seconds. Repeat with the right side. Do not hyperextend your head!</li> </ul>	
REVIEW QUESTIONS AND CORRECT RESPONSES WITH PARTICIPANTS	
BINGO ROLLS (CONTINUE UNTIL FINAL WINNER)	

**\*\*Remember to give your participants their Bingocize® Take-Home Cards today and explain that they should work on completing the task(s) and exercises this week and return next week for a prize\*\***

SESSION 6	
BINGO ROLLS (3)	
<p><b><u>Read aloud to the participants:</u></b> Remember strength exercises make your muscles stronger and more powerful. There are lots of ways you can make your muscles stronger. You can use resistance bands like the ones we use when we play Bingocize®. You can also use your own body weight as resistance like when you stand up and down during our chair stands. You can also use common household items as resistance. For example, soup cans and old milk jugs filled with water are perfect for adding some resistance to your exercises.</p> <p>Before we get started, though, here are some important things to keep in mind as you exercise:</p> <ul style="list-style-type: none"> <li>• Maintain correct posture during the exercise</li> <li>• Stop if you encounter pain (a little discomfort is okay, but pain is NOT)</li> <li>• Modifications are available for most of the exercises if you have special circumstances, such as you can't raise your arm over shoulder height, etc.</li> </ul> <p>Source: National Institutes on Aging, 2018</p>	
BINGO ROLLS (3)	
Morning Walk Standing	40 seconds
<ul style="list-style-type: none"> <li>• Stand up and begin walking in place. The pace will be a little quicker than walking. If you can, on every step, raise the knee so that the hip and knee both reach near 90 degrees. To increase difficulty pump arms back and forth</li> </ul>	
Spell Your Name Seated	40 seconds
<ul style="list-style-type: none"> <li>• Begin in a seated position with feet hip-width apart. Raise one leg off the ground, keeping the knee at a 90 degree angle. With your ankle only, spell your name. Repeat with the opposite leg.</li> </ul>	
BINGO ROLLS (3)	
Good Morning!	40 seconds
<ul style="list-style-type: none"> <li>• Begin in the seated position, with your legs wider than shoulder-width apart. Keep your spine erect and extended. Slowly bend forward at the hips. Then slowly bend back up, again keeping your spine erect and extended, into the seated position.</li> </ul>	
Chair Scoot	40 seconds
<ul style="list-style-type: none"> <li>• Scoot forward in your chair. Now scoot back in your chair.</li> </ul>	
BINGO ROLLS (3)	
Grapevine (make sure participants spread out)	40 seconds
<ul style="list-style-type: none"> <li>• Begin by standing with your arms at your sides with feet together. Step across, in front of your left foot with your right leg. Continue to step sideways, un-crossing the right leg. Now reverse, and cross your right leg behind your left leg. Continue to step sideways, un-crossing the left leg.</li> </ul>	
Chair Stands	40 seconds

<ul style="list-style-type: none"> <li>● Begin in a seated position, good posture, and eyes facing forward, feet hip-width apart.</li> </ul> <p>To decrease difficulty:</p> <ul style="list-style-type: none"> <li>○ Push up with hands on seat/arms of wheelchair</li> <li>○ Use cane or walker</li> </ul> <p>To increase difficulty:</p> <ul style="list-style-type: none"> <li>○ Cross arms across chest when standing</li> <li>○ Hold weight between hands</li> </ul> <p>As you move upward, maintain a neutral spine by moving head, neck, and spine together. Move only the hip, knee, and ankle joints as you stand. Keep shoulders down throughout the exercise, and keep knees from moving beyond toes. Stay under control as you return to the seated position.</p>	
<b>BINGO ROLLS (3)</b>	
Arm Curl Seated	40 seconds
<ul style="list-style-type: none"> <li>● In a seated position, place the resistance band beneath both feet. Hands should be gripping band handles with palms facing outward. While holding the upper arm stationary, curl the band forward. Only the forearm should move. Curl the band as far as possible, and slowly bring your hands back to the starting position.</li> </ul>	
Arm Extensions Seated	40 seconds
<ul style="list-style-type: none"> <li>● Extend your right arm straight up, palm facing forward. Bend your right elbow, letting your hand hinge down behind your head as if you were patting yourself on the back. Place your left hand on your right elbow. Gently pull until you feel a stretch down the back of your upper arm. Repeat with your left arm.</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Morning Walk Standing	40 seconds
<ul style="list-style-type: none"> <li>● Stand up and begin walking in place. The pace will be a little quicker than walking. If you can, on every step raise the knee so that the hip and knee both reach near 90 degrees.</li> <li>● To increase difficulty, pump arms back and forth.</li> </ul>	
Side Steps Seated	40 seconds
<ul style="list-style-type: none"> <li>● Begin in a seated position with feet together and hands on your thighs. Raise your right foot off the ground, and step as far to the right as you can without leaving your chair. Your feet should come back together between each side step. Now repeat with the left foot.</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Thumb to Fingers	40 seconds
<ul style="list-style-type: none"> <li>● Start with your hand in a neutral, relaxed position with your fingers and thumbs straightened. Bend your thumb across your palm, touching the tip of your thumb to the bottom of your small finger. If you can't make your thumb touch, just stretch as far as you can. Return your thumb to the starting position. Repeat multiple times with each hand.</li> </ul>	
C-Grip	40 seconds

<ul style="list-style-type: none"> <li>Start by holding your hand and fingers straight and close together. Gently curve your fingers into a “C” shape, as if your hand is wrapped around a can. Moving slowly and smoothly, return your hand to the starting position. Then repeat the exercise multiple times on each hand.</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Trunk Rotation Standing	40 seconds
<ul style="list-style-type: none"> <li>Stand up with feet on the floor shoulder-width apart. Squeeze your shoulder blades slightly together. Reach your arms out to the sides, as if making a “T”, while still squeezing your shoulder blades together. Twist your upper body to the right and pulse, gently pushing further three times into spinal rotation. Exhale with each pulse. Inhale and return to center, then repeat to the left.</li> </ul>	
Breaststroke Standing	40 seconds
<ul style="list-style-type: none"> <li>Stand up straight with the crown of the head high. Lift your arms to bring the hands in front of the chest, reaching forward. Perform a breaststroke, turning hands from palms down to palms up. Arms should move horizontally. Lift the chest, shoulder blades are down and back while squeezing them together. Breathe out as you return to the start position.</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Calf Raise Standing	40 seconds
<ul style="list-style-type: none"> <li>Stand behind a chair, and place both hands on the back of the chair. With one leg bent at a 90 degree angle and the opposing leg straight, lean into the chair. Heels should not rise off the floor. Switch legs after 20 seconds, and repeat the exercise.</li> </ul>	
Hi, Neighbor! Standing	40 seconds
<ul style="list-style-type: none"> <li>With straight posture, slowly and gently turn your head toward the left. Hold for a few seconds. Repeat with the right side. Do not hyperextend your head!</li> </ul>	
<b>REVIEW QUESTIONS AND CORRECT RESPONSES WITH PARTICIPANTS</b>	
<b>BINGO ROLLS (CONTINUE UNTIL FINAL WINNER)</b>	

**\*\*Remind your participants to keep working on their Bingocize® Take-Home Cards to bring back next week\*\***

SESSION 7	
BINGO ROLLS (3)	
<p><b>**Remember to print Exercise Only Take-Home Card (week 4) to give to each participant after the session today!!**</b></p> <p><b><u>Read aloud to the participants:</u></b></p> <p>It's week four and you are doing great; both your mind and body are getting stronger! Feeling more energized? Sleeping better? Feeling more confident? Pay attention to how you feel as we progress through the program. Balance exercise is another one of the four types of exercise. Balance is very important to help prevent falls and keep you mobile and independent.</p> <p>Before we get started, though, here are some important things to keep in mind as you exercise:</p> <ul style="list-style-type: none"> <li>• Maintain correct posture during the exercise</li> <li>• Stop if you encounter pain (a little discomfort is okay, but pain is NOT)</li> <li>• Modifications are available for most of the exercises if you have special circumstances, such as you can't raise your arm over shoulder height, etc.</li> </ul> <p><i>Reminder: During the exercise portion of the program, it is important to push yourself, but make sure to find a pace that makes you "feel good".</i></p> <p>Source: National Council on Aging, National Institute on Aging, 2018</p>	
BINGO ROLLS (3)	
Morning Walk Standing	40 seconds
<ul style="list-style-type: none"> <li>• While standing, begin walking in place. The pace will be a little quicker than walking. If you can, on every step, raise the knee so that the hip and knee both reach near 90 degrees. To increase difficulty pump arms back and forth</li> </ul>	
Good morning!	40 seconds
<ul style="list-style-type: none"> <li>• Begin in the seated position, with your legs wider than shoulder-width apart. Keep your spine erect and extended. Slowly bend forward at the hips. Then slowly bend back up, again keeping your spine erect and extended, into the seated position.</li> </ul>	
BINGO ROLLS (3)	
Rear Hip Extensions Standing	40 seconds
<ul style="list-style-type: none"> <li>• Stand behind your chair, and hold onto the back for support. Your feet should be hip width apart, eyes looking forward. Keeping your head and back aligned, lift one leg behind you, keeping it straight. Repeat with the opposite leg. To add a balance challenge, hover your hands over the back of the chair, and/or close your eyes.</li> </ul>	
Seated Crunches	40 seconds
<ul style="list-style-type: none"> <li>• While seated, slowly raise one knee towards your chest, while simultaneously curling your upper body to meet your knee. Hold for one second, then return to the seated position. Repeat with the opposite leg.</li> </ul>	
BINGO ROLLS (3)	

Modified Skier (make sure participants spread out)	40 seconds
<ul style="list-style-type: none"> <li>From a standing position, side step in one direction, and bring the opposite foot behind the stepped leg. Repeat this movement in the opposite direction. Let the arms swing naturally side-to-side in the movement of the stepped direction.</li> </ul>	
Chair Stands	40 seconds
<ul style="list-style-type: none"> <li>Begin in a seated position, good posture, and eyes facing forward, feet hip-width apart.</li> </ul> <p>To decrease difficulty:</p> <ul style="list-style-type: none"> <li>Push up with hands on seat/arms of wheelchair</li> <li>Use cane or walker</li> </ul> <p>To increase difficulty:</p> <ul style="list-style-type: none"> <li>Cross arms across chest when standing</li> <li>Hold weight between hands</li> </ul> <p>As you move upward, maintain a neutral spine by moving head, neck, and spine together. Move only the hip, knee, and ankle joints as you stand. Keep shoulders down throughout the exercise, and keep knees from moving beyond toes. Stay under control as you return to the seated position.</p>	
<b>BINGO ROLLS (3)</b>	
Lateral Raises	40 seconds
<ul style="list-style-type: none"> <li>While seated, place the resistance band beneath both feet. With hands gripping tightly, slowly raise both arms to the side until parallel with the floor. Hold for two seconds, then <u>slowly</u> release to starting position. To make this exercise easier, alternate raising each arm.</li> </ul>	
Low Row Seated	40 seconds
<ul style="list-style-type: none"> <li>From the starting position, begin by drawing your hands straight back towards your sides, near the armpits. While drawing your arms back, your elbows will bend. Make sure they stay in tight near your sides. During the exercise, squeeze the muscles together in the mid-back to help draw in the resistance band. Imagine there is a tennis ball between your shoulder blades, and you are trying to hold it there using only your back muscles. Once the resistance band handles reach the side of the body, begin slowly lowering the resistance band back to the starting position.</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Morning Walk Standing	40 seconds
<ul style="list-style-type: none"> <li>While in the seated position, begin walking in place. The pace will be a little quicker than walking. If you can, on every step raise the knee so that the hip and knee both reach near 90 degrees.</li> <li>To increase difficulty, pump arms back and forth.</li> </ul>	
Side Steps Standing	40 seconds
<ul style="list-style-type: none"> <li>Begin in a seated position with feet together and hands on your thighs. Raise your right foot off the ground, and step as far to the right as you can without leaving your chair. Your feet should come back together between each side step. Now repeat with the left foot.</li> </ul>	

BINGO ROLLS (3)	
Power Grip	40 seconds
<ul style="list-style-type: none"> <li>Using a hand therapy ball, squeeze the ball with fingers and thumb. Then repeat the exercise multiple times on each hand.</li> </ul>	
C-Grip	40 seconds
<ul style="list-style-type: none"> <li>Start by holding your hand and fingers straight and close together. Gently curve your fingers into a “C” shape, as if your hand is wrapped around a can. Moving slowly and smoothly, return your hand to the starting position. Then repeat the exercise multiple times on each hand.</li> </ul>	
BINGO ROLLS (3)	
Ballerina	40 seconds
<ul style="list-style-type: none"> <li>Bring both arms up over head, put hands together, release hands, then put both arms back down.</li> </ul>	
Single Arm Crossover	40 seconds
<ul style="list-style-type: none"> <li>Gently pull one arm across your chest, below the chin. Hold, and repeat with the opposite arm.</li> </ul>	
BINGO ROLLS (3)	
Charleston/Flapper Dance	40 seconds
<ul style="list-style-type: none"> <li>Place hands on knees and cross knees back and forth</li> </ul>	
Hi, Neighbor! Seated	40 seconds
<ul style="list-style-type: none"> <li>With straight posture, slowly and gently turn your head toward the left. Hold for a few seconds. Repeat with the right side. Do not hyperextend your head!</li> </ul>	
REVIEW QUESTIONS AND CORRECT RESPONSES WITH PARTICIPANTS	
BINGO ROLLS (CONTINUE UNTIL FINAL WINNER)	

**\*\*Remember to give your participants their Bingocize® Take-Home Cards today and explain that they should work on completing the task(s) and exercises this week and return next week for a prize\*\***



SESSION 8	
BINGO ROLLS (3)	
<p><b><u>Read aloud to the participants:</u></b></p> <p>Last week we learned about how balance exercises can help you to stand and move more confidently. Remember, balance exercises:</p> <ul style="list-style-type: none"> <li>• Can be done at almost any time, any place, and as often as you like</li> <li>• Improve your performance in everyday activities such as walking up and down the stairs</li> <li>• Reduce your chances of tripping and falling</li> </ul> <p>Before we get started, though, here are some important things to keep in mind as you exercise:</p> <ul style="list-style-type: none"> <li>• Maintain correct posture during the exercise</li> <li>• Stop if you encounter pain (a little discomfort is okay, but pain is NOT)</li> <li>• Modifications are available for most of the exercises if you have special circumstances, such as you can't raise your arm over shoulder height, etc.</li> </ul> <p><i>Reminder: During the exercise portion of the program, it is important to push yourself, but make sure to find a pace that makes you "feel good".</i></p> <p>Source: National Council on Aging, National Institute on Aging, 2018</p>	
BINGO ROLLS (3)	
Morning Walk Standing	40 seconds
<ul style="list-style-type: none"> <li>• While in the seated position, begin walking in place. The pace will be a little quicker than walking. If you can, on every step, raise the knee so that the hip and knee both reach near 90 degrees. To increase difficulty, pump arms back and forth.</li> </ul>	
Good morning!	40 seconds
<ul style="list-style-type: none"> <li>• Begin in the seated position, with your legs wider than shoulder-width apart. Keep your spine erect and extended. Slowly bend forward at the hips. Then slowly bend back up, again keeping your spine erect and extended, into the seated position.</li> </ul>	
BINGO ROLLS (3)	
Heel Raises Standing	40 seconds
<ul style="list-style-type: none"> <li>• From a seated position, begin with your feet hip-width apart and eyes facing forward. Raise your heels off the ground, while keeping your knees straight. Slowly lower your heels back to the ground.</li> </ul>	
Seated Crunches	40 seconds
<ul style="list-style-type: none"> <li>• While seated, slowly raise one knee towards your chest, while simultaneously curling your upper body to meet your knee. Hold for one second, then return to the seated position. Repeat with the opposite leg.</li> </ul>	
BINGO ROLLS (3)	
Three Dot Step (make sure participants spread out)	40 seconds

<ul style="list-style-type: none"> <li>● Begin by standing with your feet together and arms down to the sides. During this exercise, the opposite foot should never leave the ground. Take a step lunge forward, about two to three feet. During this step lunge, reach the arms out in front, away from the body. Now, return to the starting position. With the same foot, step out to the side about two to three feet. During the step, reach your arms out in the same direction as the step to the side. Return to the starting position. Now step backwards about two to three feet, while allowing the arms to open backwards into a horizontal reach. During the backwards step, the front knee will bend and the back leg will remain straight. Return to the starting position.</li> </ul>	
Chair Stands	40 seconds
<ul style="list-style-type: none"> <li>● Begin in a seated position, good posture, and eyes facing forward, feet hip-width apart.</li> </ul> <p>To decrease difficulty:</p> <ul style="list-style-type: none"> <li>○ Push up with hands on seat/arms of wheelchair</li> <li>○ Use cane or walker</li> </ul> <p>To increase difficulty:</p> <ul style="list-style-type: none"> <li>○ Cross arms across chest when standing</li> <li>○ Hold weight between hands</li> </ul> <p>As you move upward, maintain a neutral spine by moving head, neck, and spine together. Move only the hip, knee, and ankle joints as you stand. Keep shoulders down throughout the exercise, and keep knees from moving beyond toes. Stay under control as you return to the seated position.</p>	
<b>BINGO ROLLS (3)</b>	
Lateral Raises	40 seconds
<ul style="list-style-type: none"> <li>● While seated, place the resistance band beneath both feet. With hands gripping tightly, slowly raise both arms to the side until parallel with the floor. Hold for two seconds, then <u>slowly</u> release to starting position. To make this exercise easier, alternate raising each arm.</li> </ul>	
Low Row Seated	40 seconds
<ul style="list-style-type: none"> <li>● From the starting position, begin by drawing your hands straight back towards your sides, near the armpits. While drawing your arms back, your elbows will bend. Make sure they stay in tight near your sides. During the exercise, squeeze the muscles together in the mid-back to help draw in the resistance band. Imagine there is a tennis ball between your shoulder blades and you are trying to hold it there using only your back muscles. Once the resistance band handles reach the side of the body, begin slowly lowering the resistance band back to the starting position.</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Morning Walk Standing	40 seconds
<ul style="list-style-type: none"> <li>● While standing, begin walking in place. The pace will be a little quicker than walking. If you can, on every step, raise the knee so that the hip and knee both reach near 90 degrees.</li> <li>● To increase difficulty: pump arms back and forth</li> </ul>	

Side Steps Seated	40 seconds
<ul style="list-style-type: none"> <li>Begin in a seated position with feet together and hands on your thighs. Raise your right foot off the ground and step as far to the right as you can without leaving your chair. Your feet should come back together between each side step. Now repeat with the left foot.</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Thumb to Fingers	40 seconds
<ul style="list-style-type: none"> <li>Start with your hand in a neutral, relaxed position with your fingers and thumbs straightened. Bend your thumb across your palm, touching the tip of your thumb to the bottom of your small finger. If you can't make your thumb touch, just stretch as far as you can. Return your thumb to the starting position. Repeat multiple times with each hand.</li> </ul>	
C-Grip	40 seconds
<ul style="list-style-type: none"> <li>Start by holding your hand and fingers straight and close together. Gently curve your fingers into a "C" shape, as if your hand is wrapped around a can. Moving slowly and smoothly, return your hand to the starting position. Then repeat the exercise multiple times on each hand.</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Side Flexion Seated	40 seconds
<ul style="list-style-type: none"> <li>In a seated position, bend your trunk to the right to bring your right elbow to the outside of your right hip. Now repeat on the left.</li> </ul>	
Single Arm Crossover	40 seconds
<ul style="list-style-type: none"> <li>Gently pull one arm across your chest, below the chin. Hold, and repeat with the opposite arm.</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Rolling-Disco/John Travolta	40 seconds
<ul style="list-style-type: none"> <li>Rotating arms around one another; pointing side to side-"Staying Alive" move</li> </ul>	
Hi, Neighbor! Seated	40 seconds
<ul style="list-style-type: none"> <li>With straight posture, slowly and gently turn your head toward the left. Hold for a few seconds. Repeat with the right side. Do not hyperextend your head!</li> </ul>	
<b>REVIEW QUESTIONS AND CORRECT RESPONSES WITH PARTICIPANTS</b>	
<b>BINGO ROLLS (CONTINUE UNTIL FINAL WINNER)</b>	

**\*\*Remind your participants to keep working on their Bingocize® Take-Home Cards to bring back next week\*\***

SESSION 9	
BINGO ROLLS (3)	
<p><b>**Remember to print Exercise Only Take-Home Card (week 5) to give to each participant after the session today!!**</b></p> <p><b><u>Read aloud to the participants:</u></b></p> <p>So far, we've talked about endurance, strength, and balance exercises. The fourth and final type of exercise is flexibility and range of motion. Flexibility and range of motion exercises improve your overall health by:</p> <ul style="list-style-type: none"> <li>• Stretching and loosening your muscles</li> <li>• Helping you move more freely throughout the day</li> <li>• Helping your joints reach their full potential with less pain</li> </ul> <p>Before we get started, though, here are some important things to keep in mind as you exercise:</p> <ul style="list-style-type: none"> <li>• Maintain correct posture during the exercise</li> <li>• Stop if you encounter pain (a little discomfort is okay, but pain is NOT)</li> <li>• Modifications are available for most of the exercises if you have special circumstances, such as you can't raise your arm over shoulder height, etc.</li> </ul> <p>Source: National Council on Aging, National Institute on Aging, 2018</p>	
BINGO ROLLS (3)	
Morning Walk Seated	40 seconds
<ul style="list-style-type: none"> <li>• While in the seated position, begin walking in place. The pace will be a little quicker than walking. If you can, on every step, raise the knee so that the hip and knee both reach near 90 degrees. To increase difficulty, pump arms back and forth.</li> </ul>	
Single Leg Hamstring Curl Standing	40 seconds
<ul style="list-style-type: none"> <li>• Stand behind your chair, and hold onto the back for support. Your feet should be hip width apart, eyes looking forward. With one leg on the ground for support, begin to flex at the knee with the other leg, until the heel of your foot comes into contact with your bottom. Slowly extend the leg back to the standing position. Repeat on the opposite side. Add a balance challenge by hovering your hands over the back of the chair and/or closing your eyes. (Move closer to any participants choosing to add balance changes.)</li> </ul>	
BINGO ROLLS (3)	
Staggered Stance	40 seconds
<ul style="list-style-type: none"> <li>• Begin with feet together and hands at sides. Step forward with your right foot. Maintain this position for 10 seconds. Alternate putting the other foot in front.</li> </ul>	
Oblique Crunches Seated	40 seconds

<ul style="list-style-type: none"> <li>While seated, slowly raise one knee up, while simultaneously curling the upper body down. Twist your torso, so that the knee of the leg you are raising and the elbow of the opposite side come in contact. Hold for one second, then return to the seated position. Repeat with the opposite knee.</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Grapevine (make sure participants spread out)	40 seconds
<ul style="list-style-type: none"> <li>Begin by standing with your arms at your sides with feet together. Step across, in front of your left foot with your right leg. Continue to step sideways, un-crossing the right leg. Now reverse, and cross your right leg behind your left leg. Continue to step sideways, un-crossing the left leg.</li> </ul>	
Chair Stands	40 seconds
<ul style="list-style-type: none"> <li>Begin in a seated position, good posture, and eyes facing forward, feet hip-width apart.</li> </ul> <p>To decrease difficulty:</p> <ul style="list-style-type: none"> <li>Push up with hands on seat/arms of wheelchair</li> <li>Use cane or walker</li> </ul> <p>To increase difficulty:</p> <ul style="list-style-type: none"> <li>Cross arms across chest when standing</li> <li>Hold weight between hands</li> </ul> <p>As you move upward, maintain a neutral spine by moving head, neck, and spine together. Move only the hip, knee, and ankle joints as you stand. Keep shoulders down throughout the exercise, and keep knees from moving beyond toes. Stay under control as you return to the seated position.</p>	
<b>BINGO ROLLS (3)</b>	
Chest Press Standing	40 seconds
<ul style="list-style-type: none"> <li>Hold the resistance band handles, with the resistance band behind your upper back. For more resistance, grab the resistance band itself. Position your arms out to your side and parallel to the ground, with a slight bend. Slowly bring your hands together, while also maintaining the same slight bend in the arms. Once both of your hands come in contact, slowly return to the starting position.</li> </ul>	
Arm Curl Standing	40 seconds
<ul style="list-style-type: none"> <li>From a standing position, place the resistance band beneath both feet. Hands should be gripping band handles with palms facing outward. While holding the upper arm stationary, curl the band forward. Only the forearm should move. Curl the band as far as possible, and slowly bring your hands back to the starting position.</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Morning Walk Standing	40 seconds
<ul style="list-style-type: none"> <li>While standing begin walking in place. The pace will be a little quicker than walking. If you can, on every step raise the knee so that the hip and knee both reach near 90 degrees.</li> <li>To increase difficulty, pump arms back and forth.</li> </ul>	

Heel Raises Standing	40 seconds
<ul style="list-style-type: none"> <li>While standing behind a chair for support, raise your heels off the floor, while keeping your knees straight. Slowly lower heels to the ground. To make this exercise more difficult, stand on a balance pad or soft pillow.</li> </ul>	
BINGO ROLLS (3)	
Thumb to Fingers	40 seconds
<ul style="list-style-type: none"> <li>Start with your hand in a neutral, relaxed position with your fingers and thumbs straightened. Bend your thumb across your palm, touching the tip of your thumb to the bottom of your small finger. If you can't make your thumb touch, just stretch as far as you can. Return your thumb to the starting position. Repeat multiple times with each hand.</li> </ul>	
C-Grip	40 seconds
<ul style="list-style-type: none"> <li>Start by holding your hand and fingers straight and close together. Gently curve your fingers into a "C" shape, as if your hand is wrapped around a can. Moving slowly and smoothly, return your hand to the starting position. Then repeat the exercise multiple times on each hand.</li> </ul>	
BINGO ROLLS (3)	
Seated Balance Exercise	40 seconds
<ul style="list-style-type: none"> <li>Sit with eyes closed for 30 seconds. Sit with eyes closed while turning head side to side. Sit with eyes closed while moving head up and down.</li> </ul>	
Ballerina	40 seconds
<ul style="list-style-type: none"> <li>Bring both arms up over head, put hands together, release hands, then put both arms back down.</li> </ul>	
BINGO ROLLS (3)	
Rolling-Disco/John Travolta	40 seconds
<ul style="list-style-type: none"> <li>Rotating arms around one another; pointing side to side-"Staying Alive" move</li> </ul>	
Hi, Neighbor! Seated	40 seconds
<ul style="list-style-type: none"> <li>With straight posture, slowly and gently turn your head toward the left. Hold for a few seconds. Repeat with the right side. Do not hyperextend your head!</li> </ul>	
REVIEW QUESTIONS AND CORRECT RESPONSES WITH PARTICIPANTS	
BINGO ROLLS (CONTINUE UNTIL FINAL WINNER)	

**\*\*Remember to give your participants their Bingocize® Take-Home Cards today and explain that they should work on completing the task(s) and exercises this week and return next week for a prize\*\***

SESSION 10	
BINGO ROLLS (3)	
<p><b><u>Read aloud to the participants:</u></b></p> <p>Last time, we talked about how flexibility and range of motion exercises improve your health by helping your body with stretching, moving, and joint pain. Feel free to try the Bingocize® flexibility and range of motion exercises at home. Remember, you can do these every day!</p> <p>Before we get started, though, here are some important things to keep in mind as you exercise:</p> <ul style="list-style-type: none"> <li>• Maintain correct posture during the exercise</li> <li>• Stop if you encounter pain (a little discomfort is okay, but pain is NOT)</li> <li>• Modifications are available for most of the exercises if you have special circumstances, such as you can't raise your arm over shoulder height, etc.</li> </ul> <p>Source: National Council on Aging, National Institute on Aging, 2018</p>	
BINGO ROLLS (3)	
Morning Walk Seated	40 seconds
<ul style="list-style-type: none"> <li>• While in the seated position, begin walking in place. The pace will be a little quicker than walking. If you can, on every step raise the knee so that the hip and knee both reach near 90 degrees.</li> <li>• To increase difficulty pump, arms back and forth.</li> </ul>	
Single Leg Hamstring Curl Standing	40 seconds
<ul style="list-style-type: none"> <li>• Stand behind your chair, and hold onto the back for support. Your feet should be hip-width apart, eyes looking forward. With one leg on the ground for support, begin to flex at the knee with the other leg, until the heel of your foot comes into contact with your bottom. Slowly extend the leg back to the standing position. Repeat on the opposite side. Add a balance challenge by hovering your hands over the back of the chair and/or closing your eyes. (Move closer to any participants choosing to add balance changes.)</li> </ul>	
BINGO ROLLS (3)	
Staggered Stance	40 seconds
<ul style="list-style-type: none"> <li>• Begin with feet together and hands at sides. Step forward with your right foot. Maintain this position for 10 seconds. Alternate putting the other foot in front.</li> </ul>	
Oblique Crunches Seated	40 seconds

<ul style="list-style-type: none"> <li>While seated, slowly raise one knee up, while simultaneously curling the upper body down. Twist your torso, so that the knee of the leg you are raising and the elbow of the opposite side come in contact. Hold for one second, then return to the seated position. Repeat with the opposite knee.</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Grapevine (make sure participants spread out)	40 seconds
<ul style="list-style-type: none"> <li>Begin by standing with your arms at your sides with feet together. Step across, in front of your left foot with your right leg. Continue to step sideways, un-crossing the right leg. Now reverse, and cross your right leg behind your left leg. Continue to step sideways, un-crossing the left leg.</li> </ul>	
Chair Stands	40
<ul style="list-style-type: none"> <li>Begin in a seated position, good posture, and eyes facing forward, feet hip-width apart.</li> </ul> <p>To decrease difficulty:</p> <ul style="list-style-type: none"> <li>Push up with hands on seat/arms of wheelchair</li> <li>Use cane or walker</li> </ul> <p>To increase difficulty:</p> <ul style="list-style-type: none"> <li>Cross arms across chest when standing</li> <li>Hold weight between hands</li> </ul> <p>As you move upward, maintain a neutral spine by moving head, neck, and spine together. Move only the hip, knee, and ankle joints as you stand. Keep shoulders down throughout the exercise, and keep knees from moving beyond toes. Stay under control as you return to the seated position.</p>	
<b>BINGO ROLLS (3)</b>	
Chest Press Standing	40 seconds
<ul style="list-style-type: none"> <li>Hold the resistance band handles, with the resistance band behind your upper back. For more resistance, grab the resistance band itself. Position your arms out to your side and parallel to the ground, with a slight bend. Slowly bring your hands together, while also maintaining the same slight bend in the arms. Once both of your hands come in contact, slowly return to the starting position.</li> </ul>	
Arm Curl Standing	40 seconds
<ul style="list-style-type: none"> <li>From a standing position, place the resistance band beneath both feet. Hands should be gripping band handles with palms facing outward. While holding the upper arm stationary, curl the band forward. Only the forearm should move. Curl the band as far as possible, and slowly bring your hands back to the starting position.</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Morning Walk Standing	40 seconds
<ul style="list-style-type: none"> <li>While standing begin walking in place. The pace will be a little quicker than walking. If you can, on every step raise the knee so that the hip and knee both reach near 90 degrees.</li> <li>To increase difficulty, pump arms back and forth.</li> </ul>	
Heel Raises Standing	40 seconds



<ul style="list-style-type: none"> <li>While standing behind a chair for support, raise your heels off the floor, while keeping your knees straight. Slowly lower heels to the ground. To make this exercise more difficult, stand on a balance pad or soft pillow.</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Thumb to Fingers	40 seconds
<ul style="list-style-type: none"> <li>Start with your hand in a neutral, relaxed position with your fingers and thumbs straightened. Bend your thumb across your palm, touching the tip of your thumb to the bottom of your small finger. If you can't make your thumb touch, just stretch as far as you can. Return your thumb to the starting position. Repeat multiple times with each hand.</li> </ul>	
C-Grip	40 seconds
<ul style="list-style-type: none"> <li>Start by holding your hand and fingers straight and close together. Gently curve your fingers into a "C" shape, as if your hand is wrapped around a can. Moving slowly and smoothly, return your hand to the starting position. Then repeat the exercise multiple times on each hand.</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Seated Balance Exercise	40 seconds
<ul style="list-style-type: none"> <li>Sit with eyes closed for 30 seconds. Sit with eyes closed while turning head side to side. Sit with eyes closed while moving head up and down.</li> </ul>	
Ballerina	40 seconds
<ul style="list-style-type: none"> <li>Bring both arms up over head, put hands together, release hands, then put both arms back down.</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Rolling-Disco/John Travolta	40 seconds
<ul style="list-style-type: none"> <li>Rotating arms around one another; pointing side to side-"Staying Alive" move</li> </ul>	
Hi, Neighbor! Seated	40 seconds
<ul style="list-style-type: none"> <li>With straight posture, slowly and gently turn your head toward the left. Hold for a few seconds. Repeat with the right side. Do not hyperextend your head!</li> </ul>	
<b>REVIEW QUESTIONS AND CORRECT RESPONSES WITH PARTICIPANTS</b>	
<b>BINGO ROLLS (CONTINUE UNTIL FINAL WINNER)</b>	

**\*\*Remind your participants to keep working on their Bingocize® Take-Home Cards to bring back next week\*\***

## SESSION 11

### BINGO ROLLS (3)

**\*\*Remember to print Exercise Only Take-Home Card (week 6) to give to each participant after the session today!!\*\***

#### **Read aloud to the participants:**

Welcome to week six! Time flies when you are having fun playing Bingocize®! You're doing great! How are you feeling? *(Allow time for participants to discuss their improvements so far).* We've talked about all the ways exercise can make your body feel better, but what about your brain? Scientists continue to find evidence that exercise is one of the best ways to help improve your brain. For example:

- When you exercise, your brain starts to create stronger and smarter brain cells.
- Exercise helps your brain cells connect with one another, which improves your memory and thinking skills.
- Exercise creates new blood vessels, which are the main energy source for your hardworking brain cells.

Before we get started, though, here are some important things to keep in mind as you exercise:

- Maintain correct posture during the exercise
- Stop if you encounter pain (a little discomfort is okay, but pain is NOT)
- Modifications are available for most of the exercises if you have special circumstances, such as you can't raise your arm over shoulder height, etc.

Source: National Council on Aging, National Institute on Aging, 2017

### BINGO ROLLS (3)

Morning Walk Standing	45 seconds
<ul style="list-style-type: none"> <li>• While standing, begin walking in place. The pace will be a little quicker than walking. If you can, on every step, raise the knee so that the hip and knee both reach near 90 degrees. To increase difficulty, pump arms back and forth.</li> </ul>	
Single Leg Hamstring Curl Standing	45 seconds
<ul style="list-style-type: none"> <li>• Stand behind your chair, and hold onto the back for support. Your feet should be hip-width apart, eyes looking forward. With one leg on the ground for support, begin to flex at the knee with the other leg, until the heel of your foot comes into contact with your bottom. Slowly extend the leg back to the standing position. Repeat on the opposite side. Add a balance challenge by hovering your hands over the back of the chair and/or closing your eyes. (Move closer to any participants choosing to add balance changes.)</li> </ul>	
BINGO ROLLS (3)	
Staggered Stance	45 seconds
<ul style="list-style-type: none"> <li>• Begin with feet together and hands at sides. Step forward with your right foot. Maintain this position for 10 seconds. Alternate putting the other foot in front.</li> </ul>	
Oblique Crunches Seated	45 seconds

<ul style="list-style-type: none"> <li>While seated, slowly raise one knee up while simultaneously curling the upper body down. Twist your torso, so that the knee of the leg you are raising and the elbow of the opposite side come in contact. Hold for one second, then return to the seated position. Repeat with the opposite knee.</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Grapevine (make sure participants spread out)	45 seconds
<ul style="list-style-type: none"> <li>Begin by standing with your arms at your sides with feet together. Step across, in front of your left foot with your right leg. Continue to step sideways, un-crossing the right leg. Now reverse, and cross your right leg behind your left leg. Continue to step sideways, un-crossing the left leg.</li> </ul>	
Chair Stands	45 seconds
<ul style="list-style-type: none"> <li>Begin in a seated position, good posture, and eyes facing forward, feet hip-width apart.</li> </ul> <p>To decrease difficulty:</p> <ul style="list-style-type: none"> <li>Push up with hands on seat/arms of wheelchair</li> <li>Use cane or walker</li> </ul> <p>To increase difficulty:</p> <ul style="list-style-type: none"> <li>Cross arms across chest when standing</li> <li>Hold weight between hands</li> </ul> <p>As you move upward, maintain a neutral spine by moving head, neck, and spine together. Move only the hip, knee, and ankle joints as you stand. Keep shoulders down throughout the exercise, and keep knees from moving beyond toes. Stay under control as you return to the seated position.</p>	
<b>BINGO ROLLS (3)</b>	
Chest Press Standing	45 seconds
<ul style="list-style-type: none"> <li>Hold the resistance band handles, with the resistance band behind your upper back. For more resistance, grab the resistance band itself. Position your arms out to your side and parallel to the ground, with a slight bend. Slowly bring your hands together, while also maintaining the same slight bend in the arms. Once both of your hands come in contact, slowly return to the starting position.</li> </ul>	
Arm Curl Standing	45 seconds
<ul style="list-style-type: none"> <li>From a standing position, place the resistance band beneath both feet. Hands should be gripping band handles with palms facing outward. While holding the upper arm stationary, curl the band forward. Only the forearm should move. Curl the band as far as possible, and slowly bring your hands back to the starting position.</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Morning Walk Standing	45 seconds
<ul style="list-style-type: none"> <li>While standing begin walking in place. The pace will be a little quicker than walking. If you can, on every step raise the knee so that the hip and knee both reach near 90 degrees.</li> <li>To increase difficulty, pump arms back and forth.</li> </ul>	
Heel Raises Standing	45 seconds

<ul style="list-style-type: none"> <li>While standing behind a chair for support, raise your heels off the floor, while keeping your knees straight. Slowly lower heels to the ground. To make this exercise more difficult, stand on a balance pad or soft pillow.</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Thumb to Fingers	45 seconds
<ul style="list-style-type: none"> <li>Start with your hand in a neutral, relaxed position with your fingers and thumbs straightened. Bend your thumb across your palm, touching the tip of your thumb to the bottom of your small finger. If you can't make your thumb touch, just stretch as far as you can. Return your thumb to the starting position. Repeat multiple times with each hand.</li> </ul>	
Power Grip	45 seconds
<ul style="list-style-type: none"> <li>Using a hand therapy ball, squeeze the ball with fingers and thumb. Then repeat the exercise multiple times on each hand.</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Seated Balance Exercise	45 seconds
<ul style="list-style-type: none"> <li>Sit with eyes closed for 30 seconds. Sit with eyes closed while turning head side to side. Sit with eyes closed while moving head up and down.</li> </ul>	
Ballerina	45 seconds
<ul style="list-style-type: none"> <li>Bring both arms up over head, put hands together, release hands, then put both arms back down.</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Rolling-Disco/John Travolta	45 seconds
<ul style="list-style-type: none"> <li>Rotating arms around one another; pointing side to side-"Staying Alive" move</li> </ul>	
Hi, Neighbor! Seated	45 seconds
<ul style="list-style-type: none"> <li>With straight posture, slowly and gently turn your head toward the left. Hold for a few seconds. Repeat with the right side. Do not hyperextend your head!</li> </ul>	
<b>REVIEW QUESTIONS AND CORRECT RESPONSES WITH PARTICIPANTS</b>	
<b>BINGO ROLLS (CONTINUE UNTIL FINAL WINNER)</b>	

**\*\*Remember to give your participants their Bingocize® Take-Home Cards today and explain that they should work on completing the task(s) and exercises this week and return next week for a prize\*\***

## SESSION 12

### BINGO ROLLS (3)

#### **Read aloud to the participants:**

We are over halfway through the Bingocize® program and you are all doing so well! Last time, we talked about all the ways exercise improves your brain. Remember, when we bulk up our brain cells with exercise, they are better able to win the fight against age-related declines in brain function.

Before we get started, though, here are some important things to keep in mind as you exercise:

- Maintain correct posture during the exercise
- Stop if you encounter pain (a little discomfort is okay, but pain is NOT)
- Modifications are available for most of the exercises if you have special circumstances, such as you can't raise your arm over shoulder height, etc.

Source: National Council on Aging, National Institute on Aging, 2018

### BINGO ROLLS (3)

Morning Walk Standing	45 seconds
<ul style="list-style-type: none"> <li>While standing, begin walking in place. The pace will be a little quicker than walking. If you can, on every step, raise the knee so that the hip and knee both reach near 90 degrees. To increase difficulty, pump arms back and forth.</li> </ul>	
Single Leg Hamstring Curl Standing	45 seconds
<ul style="list-style-type: none"> <li>Stand behind your chair and hold onto the back for support. Your feet should be hip width apart, eyes looking forward. With one leg on the ground for support, begin to flex at the knee with the other leg until the heel of your foot comes into contact with your bottom. Slowly extend the leg back to the standing position. Repeat on the opposite side. Add a balance challenge by hovering your hands over the back of the chair and/or closing your eyes. (Move closer to any participants choosing to add balance changes)</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Staggered Stance	45 seconds
<ul style="list-style-type: none"> <li>Begin with feet together and hands at sides. Step forward with your right foot. Maintain this position for 10 seconds. Alternate putting the other foot in front.</li> </ul>	
Oblique Crunches Seated	45 seconds
<ul style="list-style-type: none"> <li>While seated, slowly raise one knee up, while simultaneously curling the upper body down. Twist your torso, so that the knee of the leg you are raising and the elbow of the opposite side come in contact. Hold for one second, then return to the seated position. Repeat with the opposite knee.</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Grapevine (make sure participants spread out)	45 seconds
<ul style="list-style-type: none"> <li>Begin by standing with your arms at your sides with feet together. Step across, in front of your left foot with your right leg. Continue to step sideways, un-crossing the right leg. Now reverse, and cross your right leg behind your left leg. Continue to step sideways, un-crossing the left leg.</li> </ul>	

Chair Stands	45 seconds
<ul style="list-style-type: none"> <li>● Begin in a seated position, good posture, and eyes facing forward, feet hip-width apart.</li> </ul> <p>To decrease difficulty:</p> <ul style="list-style-type: none"> <li>○ Push up with hands on seat/arms of wheelchair</li> <li>○ Use cane or walker</li> </ul> <p>To increase difficulty:</p> <ul style="list-style-type: none"> <li>○ Cross arms across chest when standing</li> <li>○ Hold weight between hands</li> </ul> <p>As you move upward, maintain a neutral spine by moving head, neck, and spine together. Move only the hip, knee, and ankle joints as you stand. Keep shoulders down throughout the exercise, and keep knees from moving beyond toes. Stay under control as you return to the seated position.</p>	
<b>BINGO ROLLS (3)</b>	
Chest Press Standing	45 seconds
<ul style="list-style-type: none"> <li>● Hold the resistance band handles, with the resistance band behind your upper back. For more resistance, grab the resistance band itself. Position your arms out to your side and parallel to the ground, with a slight bend. Slowly bring your hands together, while also maintaining the same slight bend in the arms. Once both of your hands come in contact, slowly return to the starting position.</li> </ul>	
Arm Curl Standing	45 seconds
<ul style="list-style-type: none"> <li>● From a standing position, place the resistance band beneath both feet. Hands should be gripping band handles with palms facing outward. While holding the upper arm stationary, curl the band forward. Only the forearm should move. Curl the band as far as possible, and slowly bring your hands back to the starting position.</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Morning Walk Standing	45 seconds
<ul style="list-style-type: none"> <li>● While standing, begin walking in place. The pace will be a little quicker than walking. If you can, on every step raise the knee so that the hip and knee both reach near 90 degrees.</li> <li>● To increase difficulty, pump arms back and forth.</li> </ul>	
Heel Raises Standing	45 seconds
<ul style="list-style-type: none"> <li>● While standing behind a chair for support, raise your heels off the floor while keeping your knees straight. Slowly lower heels to the ground. To make this exercise more difficult, stand on a balance pad or soft pillow.</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Thumb to Fingers	45 seconds
<ul style="list-style-type: none"> <li>● Start with your hand in a neutral, relaxed position with your fingers and thumbs straightened. Bend your thumb across your palm, touching the tip of your thumb to the bottom of your small finger. If you can't make your thumb touch, just stretch as far as you can. Return your thumb to the starting position. Repeat multiple times with each hand.</li> </ul>	
Power Grip	45 seconds

<ul style="list-style-type: none"> <li>Using a hand therapy ball, squeeze the ball with fingers and thumb. Then repeat the exercise multiple times on each hand.</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Seated Balance Exercise	45 seconds
<ul style="list-style-type: none"> <li>Sit with eyes closed for 30 seconds. Sit with eyes closed while turning head side to side. Sit with eyes closed while moving head up and down.</li> </ul>	
Ballerina	45 seconds
<ul style="list-style-type: none"> <li>Bring both arms up over head, put hands together, release hands, then put both arms back down.</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Rolling-Disco/John Travolta	45 seconds
<ul style="list-style-type: none"> <li>Rotating arms around one another; pointing side to side-"Staying Alive" move</li> </ul>	
Hi, Neighbor! Seated	45 seconds
<ul style="list-style-type: none"> <li>With straight posture, slowly and gently turn your head toward the left. Hold for a few seconds. Repeat with the right side. Do not hyperextend your head!</li> </ul>	
<b>REVIEW QUESTIONS AND CORRECT RESPONSES WITH PARTICIPANTS</b>	
<b>BINGO ROLLS (CONTINUE UNTIL FINAL WINNER)</b>	

**\*\*Remind your participants to keep working on their Bingocize® Take-Home Cards to bring back next week\*\***

## SESSION 13

### BINGO ROLLS (3)

**\*\*Remember to print Exercise Only Take-Home Card (week 7) to give to each participant after the session today!!\*\***

#### **Read aloud to the participants:**

Welcome to week seven! I hope you are having fun and feeling the positive effects of being a *Bingocizer*! In addition to improving memory and thinking skills, physical activity can also boost your mood. Researchers have found exercise:

- Reduces feelings of depression and stress
- Boosts your energy levels
- Can improve sleep
- Makes you feel more in control

So, the next time you're feeling stressed out, or anxious, or have trouble sleeping, try to find a way to get up and get moving!

Before we get started, though, here are some important things to keep in mind as you exercise:

- Maintain correct posture during the exercise
- Stop if you encounter pain (a little discomfort is okay, but pain is NOT)
- Modifications are available for most of the exercises if you have special circumstances, such as you can't raise your arm over shoulder height, etc.

Source: National Council on Aging, National Institute on Aging, 2018

### BINGO ROLLS (3)

Morning Walk Standing	30 seconds
<ul style="list-style-type: none"> <li>While standing, begin walking in place. The pace will be a little quicker than walking. If you can, on every step, raise the knee so that the hip and knee both reach near 90 degrees. To increase difficulty pump arms back and forth</li> </ul>	
Static Balance	30 seconds
<ul style="list-style-type: none"> <li>Stand with eyes focused forward and one leg elevated to about ankle level without touching the support leg. Hold, now repeat with the opposing leg.</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Staggered Stance	30 seconds
<ul style="list-style-type: none"> <li>Begin with feet together and hands at sides. Step forward with your right foot. Maintain this position for 10 seconds. Alternate putting the other foot in front.</li> </ul>	
Oblique Crunches Seated	30 seconds
<ul style="list-style-type: none"> <li>While seated, slowly raise one knee up, while simultaneously curling the upper body down. Twist your torso, so that the knee of the leg you are raising and the elbow of the opposite side come in contact. Hold for one second, then return to the seated position. Repeat with the opposite knee.</li> </ul>	



BINGO ROLLS (3)	
Grapevine (make sure participants spread out)	30 seconds
<ul style="list-style-type: none"> <li>Begin by standing with your arms at your sides with feet together. Step across, in front of your left foot with your right leg. Continue to step sideways, un-crossing the right leg. Now reverse, and cross your right leg behind your left leg. Continue to step sideways, un-crossing the left leg.</li> </ul>	
Swimming Dance	30 seconds
<ul style="list-style-type: none"> <li>While standing, move arms in a swimming motion, then plug nose, and shimmy with one arm raised above the head.</li> </ul>	
BINGO ROLLS (3)	
Chest Press Standing	30 seconds
<ul style="list-style-type: none"> <li>Hold the resistance band handles, with the resistance band behind your upper back. For more resistance, grab the resistance band itself. Position your arms out to your side and parallel to the ground, with a slight bend. Slowly bring your hands together, while also maintaining the same slight bend in the arms. Once both of your hands come in contact, slowly return to the starting position.</li> </ul>	
Arm Curl Standing	30 seconds
<ul style="list-style-type: none"> <li>From a standing position, place the resistance band beneath both feet. Hands should be gripping band handles with palms facing outward. While holding the upper arm stationary, curl the band forward. Only the forearm should move. Curl the band as far as possible, and slowly bring your hands back to the starting position.</li> </ul>	
BINGO ROLLS (3)	
Morning Walk Standing	30 seconds
<ul style="list-style-type: none"> <li>While standing begin walking in place. The pace will be a little quicker than walking. If you can, on every step raise the knee so that the hip and knee both reach near 90 degrees.</li> <li>To increase difficulty, pump arms back and forth.</li> </ul>	
Heel Raises Standing	30 seconds
<ul style="list-style-type: none"> <li>While standing behind a chair for support, raise your heels off the floor while keeping your knees straight. Slowly lower heels to the ground. To make this exercise more difficult, stand on a balance pad or soft pillow.</li> </ul>	
BINGO ROLLS (3)	
Thumb to Fingers	30 seconds
<ul style="list-style-type: none"> <li>Start with your hand in a neutral, relaxed position with your fingers and thumbs straightened. Bend your thumb across your palm, touching the tip of your thumb to the bottom of your small finger. If you can't make your thumb touch, just stretch as far as you can. Return your thumb to the starting position. Repeat multiple times with each hand.</li> </ul>	
Power Grip	30 seconds
<ul style="list-style-type: none"> <li>Using a hand therapy ball, squeeze the ball with fingers and thumb. Then repeat the exercise multiple times on each hand.</li> </ul>	

BINGO ROLLS (3)	
Seated Balance Exercise	30 seconds
<ul style="list-style-type: none"> <li>Sit with eyes closed for 30 seconds. Sit with eyes closed while turning head side to side. Sit with eyes closed while moving head up and down.</li> </ul>	
Ballerina	30 seconds
<ul style="list-style-type: none"> <li>Bring both arms up over head, put hands together, release hands, then put both arms back down.</li> </ul>	
BINGO ROLLS (3)	
Rolling-Disco/John Travolta	30 seconds
<ul style="list-style-type: none"> <li>Rotating arms around one another; pointing side to side-"Staying Alive" move</li> </ul>	
Hi, Neighbor! Seated	30 seconds
<ul style="list-style-type: none"> <li>With straight posture, slowly and gently turn your head toward the left. Hold for a few seconds. Repeat with the right side. Do not hyperextend your head!</li> </ul>	
I hope you had fun today! See you next week!	
BINGO ROLLS (CONTINUE UNTIL FINAL WINNER)	

**\*\*Remember to give your participants their Bingocize® Take-Home Cards today and explain that they should work on completing the task(s) and exercises this week and return next week for a prize\*\***

## SESSION 14

### BINGO ROLLS (3)

#### **Read aloud to the participants:**

You may have trouble finding the time and motivation to exercise. That's understandable. We all have those days. However, there are some simple things you can try to help you stay on track. Here are just a few.

- Don't let your busy schedule keep you from exercising. Work it into your regular day. For example, walk every aisle of the grocery store or the entire mall.
- Join a fitness facility close to home that caters to your needs.
- Take the stairs instead of the elevator.
- Take a walk with friends or coworkers.
- Make exercise fun.

Before we get started, though, here are some important things to keep in mind as you exercise:

- Maintain correct posture during the exercise
- Stop if you encounter pain (a little discomfort is okay, but pain is NOT)
- Modifications are available for most of the exercises if you have special circumstances, such as you can't raise your arm over shoulder height, etc.

Source: National Council on Aging, National Institute on Aging, 2018

### BINGO ROLLS (3)

Morning Walk Standing	30 seconds
<ul style="list-style-type: none"> <li>While standing begin walking in place. The pace will be a little quicker than walking. If you can, on every step raise the knee so that the hip and knee both reach near 90 degrees. To increase difficulty, pump arms back and forth.</li> </ul>	
Static Balance	30 seconds
<ul style="list-style-type: none"> <li>Stand with eyes focused forward and one leg elevated to about ankle level without touching the support leg. Hold, now repeat with the opposing leg.</li> </ul>	
BINGO ROLLS (3)	
Staggered Stance	30 seconds
<ul style="list-style-type: none"> <li>Begin with feet together and hands at sides. Step forward with your right foot. Maintain this position for 10 seconds. Alternate putting the other foot in front.</li> </ul>	
Oblique Crunches Seated	30 seconds
<ul style="list-style-type: none"> <li>While seated, slowly raise one knee up, while simultaneously curling the upper body down. Twist your torso, so that the knee of the leg you are raising and the elbow of the opposite side come in contact. Hold for one second, then return to the seated position. Repeat with the opposite knee.</li> </ul>	
BINGO ROLLS (3)	

Grapevine (make sure participants spread out)	30 seconds
<ul style="list-style-type: none"> <li>Begin by standing with your arms at your sides with feet together. Step across, in front of your left foot with your right leg. Continue to step sideways, un-crossing the right leg. Now reverse, and cross your right leg behind your left leg. Continue to step sideways, un-crossing the left leg.</li> </ul>	
Swimming Dance	30 seconds
<ul style="list-style-type: none"> <li>While standing, move arms in a swimming motion, then plug nose, and shimmy with one arm raised above the head</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Chest Press Standing	30 seconds
<ul style="list-style-type: none"> <li>Hold the resistance band handles, with the resistance band behind your upper back. For more resistance, grab the resistance band itself. Position your arms out to your side and parallel to the ground, with a slight bend. Slowly bring your hands together, while also maintaining the same slight bend in the arms. Once both of your hands come in contact, slowly return to the starting position.</li> </ul>	
Arm Curl Standing	30 seconds
<ul style="list-style-type: none"> <li>From a standing position, place the resistance band beneath both feet. Hands should be gripping band handles with palms facing outward. While holding the upper arm stationary, curl the band forward. Only the forearm should move. Curl the band as far as possible, and slowly bring your hands back to the starting position.</li> </ul>	
<b>BINGO ROLLS (3)</b>	
The Twist	30 seconds
<ul style="list-style-type: none"> <li>Stand with your feet shoulder-width apart. Put equal weight on both feet. Keep your knees flexible, and keep your torso squared evenly with your hips.</li> <li>Move one foot forward. Gently budge one foot ahead of the other. The front foot should not be a full length ahead of the back foot, and there should be some overlap between them.</li> <li>Hold your arms away from the body. Extend both arms outward and away from the body. Don't extend them straight out. You should keep them bent slightly at the elbow.</li> <li>As you twist, your arms will follow the movement of your hips. As your weight shifts to one side and your waist twists back, the arm of that same side will naturally move downward and back. To keep balance, the other arm should move upward and forward.</li> <li>Twist your hips. Swing your hips dramatically from side to side. As you twist your hips, your waist and legs should also twist or rotate from side to side in a similar manner.</li> <li>Shift your body weight. As you rock from side to side, shift your center of gravity or body weight so that it is supported by the ball of your foot. You should alternate from foot to foot, placing your weight over one foot as you twist to that side and over to the other foot as you twist back.</li> </ul>	
Heel Raises Standing	30 seconds

<ul style="list-style-type: none"> <li>While standing behind a chair for support, raise your heels off the floor while keeping your knees straight. Slowly lower heels to the ground. To make this exercise more difficult, stand on a balance pad or soft pillow.</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Thumb to Fingers	30 seconds
<ul style="list-style-type: none"> <li>Start with your hand in a neutral, relaxed position with your fingers and thumbs straightened. Bend your thumb across your palm, touching the tip of your thumb to the bottom of your small finger. If you can't make your thumb touch, just stretch as far as you can. Return your thumb to the starting position. Repeat multiple times with each hand.</li> </ul>	
Baking Biscuits	30 seconds
<ul style="list-style-type: none"> <li>Roll the hand therapy ball with your fingertips to the ball. Then repeat the exercise multiple times on each hand.</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Seated Balance Exercise	30 seconds
<ul style="list-style-type: none"> <li>Sit with eyes closed for 30 seconds. Sit with eyes closed while turning head side to side. Sit with eyes closed while moving head up and down.</li> </ul>	
Ballerina	30 seconds
<ul style="list-style-type: none"> <li>Bring both arms up over head, put hands together, release hands, then put both arms back down.</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Rolling-Disco/John Travolta	30 seconds
<ul style="list-style-type: none"> <li>Rotating arms around one another; pointing side to side-"Staying Alive" move</li> </ul>	
Hi, Neighbor! Seated	30 seconds
<ul style="list-style-type: none"> <li>With straight posture, slowly and gently turn your head toward the left. Hold for a few seconds. Repeat with the right side. Do not hyperextend your head!</li> </ul>	
I hope you had fun today! See you next week!	
<b>BINGO ROLLS (CONTINUE UNTIL FINAL WINNER)</b>	

**\*\*Remind your participants to keep working on their Bingocize® Take-Home Cards to bring back next week\*\***

SESSION 15	
BINGO ROLLS (3)	
<p><b>**Remember to print Exercise Only Take-Home Card (week 8) to give to each participant after the session today!!**</b></p> <p><b><u>Read aloud to the participants:</u></b></p> <p>You and your doctor are part of a team—along with nurses, physician assistants, pharmacists, and other healthcare providers—working together to manage your medical problems and keep you healthy. Exercise can positively impact many chronic health conditions, so make sure exercise is a part of your healthcare plan by discussing with your doctor.</p> <p>Before we get started, though, here are some important things to keep in mind as you exercise:</p> <ul style="list-style-type: none"> <li>• Maintain correct posture during the exercise</li> <li>• Stop if you encounter pain (a little discomfort is okay, but pain is NOT)</li> <li>• Modifications are available for most of the exercises if you have special circumstances, such as you can't raise your arm over shoulder height, etc.</li> </ul> <p>Source: National Council on Aging, 2017</p>	
BINGO ROLLS (3)	
Grapevine	50 seconds
<ul style="list-style-type: none"> <li>• Begin by standing with your arms at your sides with feet together. Step across, in front of your left foot with your right leg. Continue to step sideways, un-crossing the right leg. Now reverse, and cross your right leg behind your left leg. Continue to step sideways, un-crossing the left leg.</li> </ul>	
Heel Raises Standing	50 seconds
<ul style="list-style-type: none"> <li>• While standing behind a chair for support, raise your heels off the floor while keeping your knees straight. Slowly lower heels to the ground. To make this exercise more difficult, stand on a balance pad or soft pillow.</li> </ul>	
BINGO ROLLS (3)	
Calf Stretch Standing	50 seconds
<ul style="list-style-type: none"> <li>• Stand behind a chair and place both hands on the back of the chair. With one leg bent at a 90 degree angle and the opposing leg straight, lean into the chair. Heels should not rise off the floor. Switch legs and repeat the exercise.</li> </ul>	
Top Shelf Reach Standing	50 seconds
<ul style="list-style-type: none"> <li>• Breathe in and sweep the opposite arm out to the side and up overhead. Breathe out as you continue the motion, moving through full range and finally into a side bend. Pause, breathe in, and return back to the starting position. Repeat on the opposite side.</li> </ul>	
BINGO ROLLS (3)	
Modified Skier	50 seconds

<ul style="list-style-type: none"> <li>From a standing position, side step in one direction, and bring the opposite foot behind the stepped leg. Repeat this movement in the opposite direction. Let the arms swing naturally side-to-side in the movement of the stepped direction.</li> </ul>	
Chair Stands	50 seconds
<ul style="list-style-type: none"> <li>Begin in a seated position, good posture, and eyes facing forward, feet hip-width apart.</li> </ul> <p>To decrease difficulty:</p> <ul style="list-style-type: none"> <li>Push up with hands on seat/arms of wheelchair</li> <li>Use cane or walker</li> </ul> <p>To increase difficulty:</p> <ul style="list-style-type: none"> <li>Cross arms across chest when standing</li> <li>Hold weight between hands</li> </ul> <p>As you move upward, maintain a neutral spine by moving head, neck, and spine together. Move only the hip, knee, and ankle joints as you stand. Keep shoulders down throughout the exercise, and keep knees from moving beyond toes. Stay under control as you return to the seated position.</p>	
<b>BINGO ROLLS (3)</b>	
Open the Cupboard	50 seconds
<ul style="list-style-type: none"> <li>In a standing position, hold the resistance band directly in front of your chest. Arms should be extended away from your body and straight. While holding the rubber portion of the band, slowly pull your arms away from your center. Allowing the band to stretch across your chest. Once the band has been fully extended, slowly release to the starting position.</li> </ul>	
Arm Curl Standing	50 seconds
<ul style="list-style-type: none"> <li>From a standing position, place the resistance band beneath both feet. Hands should be gripping band handles with palms facing outward. While holding the upper arm stationary, curl the band forward. Only the forearm should move. Curl the band as far as possible, and slowly bring your hands back to the starting position.</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Morning Walk Standing	50 seconds
<ul style="list-style-type: none"> <li>While standing begin walking in place. The pace will be a little quicker than walking. If you can, on every step raise the knee so that the hip and knee both reach near 90 degrees.</li> <li>To increase difficulty, pump arms back and forth.</li> </ul>	
Side Steps Standing	50 seconds
<ul style="list-style-type: none"> <li>Begin with feet together and arms at your side. Take one step to the right. Your feet should come back together between each side step. Ensure that both feet remain facing forward while stepping. Add a side shoulder raise with the arm of the stepped direction. Relax arm down when feet are brought together. Now repeat to the left.</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Thumb to Fingers	50 seconds

<ul style="list-style-type: none"> <li>Start with your hand in a neutral, relaxed position with your fingers and thumbs straightened. Bend your thumb across your palm, touching the tip of your thumb to the bottom of your small finger. If you can't make your thumb touch, just stretch as far as you can. Return your thumb to the starting position. Repeat multiple times with each hand.</li> </ul>	
Power Grip	50 seconds
<ul style="list-style-type: none"> <li>Using a hand therapy ball, squeeze the ball with fingers and thumb. Then repeat the exercise multiple times on each hand.</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Trunk Rotation Standing	50 seconds
<ul style="list-style-type: none"> <li>From a standing position, begin by squeezing your shoulder blades slightly together. Reach your arms out to the sides, as if making a "T", while still squeezing your shoulder blades together. Twist your upper body to the right. Hold, and exhale. Breathe in and return to the center, then repeat to the left.</li> </ul>	
Ballerina	50 seconds
<ul style="list-style-type: none"> <li>Bring both arms up over head, put hands together, release hands, then put both arms back down.</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Seated Crunches	50 seconds
<ul style="list-style-type: none"> <li>While seated, slowly raise one knee towards your chest. While simultaneously curling your upper body to meet your knee. Hold for one second, then return to the seated position. Repeat with the opposite leg.</li> </ul>	
Hi, Neighbor! Seated	50 seconds
<ul style="list-style-type: none"> <li>With straight posture, slowly and gently turn your head toward the left. Hold for a few seconds. Repeat with the right side. Do not hyperextend your head!</li> </ul>	
<b>REVIEW QUESTIONS AND CORRECT RESPONSES WITH PARTICIPANTS</b>	
<b>BINGO ROLLS (CONTINUE UNTIL FINAL WINNER)</b>	

**\*\*Remember to give your participants their Bingocize® Take-Home Cards today and explain that they should work on completing the task(s) and exercises this week and return next week for a prize\*\***



SESSION 16	
BINGO ROLLS (3)	
<p><b><u>Read aloud to the participants:</u></b></p> <p>As we wrap up the 8<sup>th</sup> week of Bingocize®, I hope you are feeling the benefits of regular exercise including:</p> <ul style="list-style-type: none"> <li>• More energy to do your daily activities</li> <li>• Sleeping through the night and feeling better when you get up</li> <li>• Moving around better with less or no pain.</li> <li>• Feeling happier and less anxious</li> </ul> <p>Before we get started, though, here are some important things to keep in mind as you exercise:</p> <ul style="list-style-type: none"> <li>• Maintain correct posture during the exercise</li> <li>• Stop if you encounter pain (a little discomfort is okay, but pain is NOT)</li> <li>• Modifications are available for most of the exercises if you have special circumstances, such as you can't raise your arm over shoulder height, etc.</li> </ul> <p>Source: National Council on Aging, 2017</p>	
BINGO ROLLS (3)	
Grapevine	50 seconds
<ul style="list-style-type: none"> <li>• Begin by standing with your arms at your sides with feet together. Step across, in front of your left foot with your right leg. Continue to step sideways, un-crossing the right leg. Now reverse, and cross your right leg behind your left leg. Continue to step sideways, un-crossing the left leg.</li> </ul>	
Heel Raises Standing	50 seconds
<ul style="list-style-type: none"> <li>• While standing behind a chair for support, raise your heels off the floor while keeping your knees straight. Slowly lower heels to the ground. To make this exercise more difficult, stand on a balance pad or soft pillow.</li> </ul>	
BINGO ROLLS (3)	
Calf Stretch Standing	50 seconds
<ul style="list-style-type: none"> <li>• Stand behind a chair and place both hands on the back of the chair. With one leg bent at a 90 degree angle and the opposing leg straight, lean into the chair. Heels should not rise off the floor. Switch legs and repeat the exercise.</li> </ul>	
Top Shelf Reach Standing	50 seconds
<ul style="list-style-type: none"> <li>• Breathe in and sweep the opposite arm out to the side and up overhead. Breathe out as you continue the motion, moving through full range and finally into a side bend. Pause, breathe in, and return back to the starting position. Repeat on the opposite side.</li> </ul>	
BINGO ROLLS (3)	
Modified Skier	50 seconds

<ul style="list-style-type: none"> <li>From a standing position, side step in one direction and bring the opposite foot behind the stepped leg. Repeat this movement in the opposite direction. Let the arms swing naturally side-to-side in the movement of the stepped direction.</li> </ul>	
Chair Stands	50 seconds
<ul style="list-style-type: none"> <li>Begin in a seated position, good posture, and eyes facing forward, feet hip-width apart.</li> </ul> <p>To decrease difficulty:</p> <ul style="list-style-type: none"> <li>Push up with hands on seat/arms of wheelchair</li> <li>Use cane or walker</li> </ul> <p>To increase difficulty:</p> <ul style="list-style-type: none"> <li>Cross arms across chest when standing</li> <li>Hold weight between hands</li> </ul> <p>As you move upward, maintain a neutral spine by moving head, neck, and spine together. Move only the hip, knee, and ankle joints as you stand. Keep shoulders down throughout the exercise, and keep knees from moving beyond toes. Stay under control as you return to the seated position.</p>	
<b>BINGO ROLLS (3)</b>	
Open the Cupboard	50 seconds
<ul style="list-style-type: none"> <li>In a standing position, hold the resistance band directly in front of your chest. Arms should be extended away from your body and straight. While holding the rubber portion of the band, slowly pull your arms away from your center. Allowing the band to stretch across your chest. Once the band has been fully extended, slowly release to the starting position.</li> </ul>	
Arm Curl Standing	50 seconds
<ul style="list-style-type: none"> <li>From a standing position, place the resistance band beneath both feet. Hands should be gripping band handles with palms facing outward. While holding the upper arm stationary, curl the band forward. Only the forearm should move. Curl the band as far as possible, and slowly bring your hands back to the starting position.</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Morning Walk Standing	50 seconds
<ul style="list-style-type: none"> <li>While standing begin walking in place. The pace will be a little quicker than walking. If you can, on every step raise the knee so that the hip and knee both reach near 90 degrees.</li> <li>To increase difficulty, pump arms back and forth.</li> </ul>	
Side Steps Standing	50 seconds
<ul style="list-style-type: none"> <li>Begin with feet together and arms at your side. Take one step to the right. Your feet should come back together between each side step. Ensure that both feet remain facing forward while stepping. Add a side shoulder raise with the arm of the stepped direction. Relax arm down when feet are brought together. Now repeat to the left.</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Thumb to Fingers	50 seconds

<ul style="list-style-type: none"> <li>Start with your hand in a neutral, relaxed position with your fingers and thumbs straightened. Bend your thumb across your palm, touching the tip of your thumb to the bottom of your small finger. If you can't make your thumb touch, just stretch as far as you can. Return your thumb to the starting position. Repeat multiple times with each hand.</li> </ul>	
Power Grip	50 seconds
<ul style="list-style-type: none"> <li>Using a hand therapy ball, squeeze the ball with fingers and thumb. Then repeat the exercise multiple times on each hand.</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Trunk Rotation Standing	50 seconds
<ul style="list-style-type: none"> <li>From a standing position, begin by squeezing your shoulder blades slightly together. Reach your arms out to the sides, as if making a "T", while still squeezing your shoulder blades together. Twist your upper body to the right. Hold, and exhale. Breathe in and return to the center, then repeat to the left.</li> </ul>	
Ballerina	50 seconds
<ul style="list-style-type: none"> <li>Bring both arms up over head, put hands together, release hands, then put both arms back down.</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Seated Crunches	50 seconds
<ul style="list-style-type: none"> <li>While seated, slowly raise one knee towards your chest, while simultaneously curling your upper body to meet your knee. Hold for one second, then return to the seated position. Repeat with the opposite leg.</li> </ul>	
Hi, Neighbor! Seated	50 seconds
<ul style="list-style-type: none"> <li>With straight posture, slowly and gently turn your head toward the left. Hold for a few seconds. Repeat with the right side. Do not hyperextend your head!</li> </ul>	
<b>REVIEW QUESTIONS AND CORRECT RESPONSES WITH PARTICIPANTS</b>	
<b>BINGO ROLLS (CONTINUE UNTIL FINAL WINNER)</b>	

**\*\*Remind your participants to keep working on their Bingocize® Take-Home Cards to bring back next week\*\***

## SESSION 17

### BINGO ROLLS (3)

**\*\*Remember to print Exercise Only Take-Home Card (week 9) to give to each participant after the session today!!\*\***

**Read aloud to the participants:** We're so close to the finish line! I know there will be times that you don't feel like exercising, so as a reminder here are some of the great things you are doing for your body by staying active!

- Improving your balance and range of motion
- Boosting your immune system to lessen your chance of getting sick
- Increasing your muscle strength
- Feeling more limber
- Improving your brain health

Before we get started, though, here are some important things to keep in mind as you exercise:

- Maintain correct posture during the exercise
- Stop if you encounter pain (a little discomfort is okay, but pain is NOT)
- Modifications are available for most of the exercises if you have special circumstances, such as you can't raise your arm over shoulder height, etc.

Source: <https://go4life.nia.nih.gov/how-exercise-can-help-you/>

### BINGO ROLLS (3)

Grapevine	55 seconds
<ul style="list-style-type: none"> <li>Begin by standing with your arms at your sides with feet together. Step across, in front of your left foot with your right leg. Continue to step sideways, un-crossing the right leg. Now reverse, and cross your right leg behind your left leg. Continue to step sideways, un-crossing the left leg.</li> </ul>	
Heel Raises Standing	55 seconds
<ul style="list-style-type: none"> <li>While standing behind a chair for support, raise your heels off the floor while keeping your knees straight. Slowly lower heels to the ground. To make this exercise more difficult, stand on a balance pad or soft pillow.</li> </ul>	
BINGO ROLLS (3)	
Calf Stretch Standing	55 seconds
<ul style="list-style-type: none"> <li>Stand behind a chair and place both hands on the back of the chair. With one leg bent at a 90 degree angle and the opposing leg straight, lean into the chair. Heels should not rise off the floor. Switch legs and repeat the exercise.</li> </ul>	
Top Shelf Reach Standing	55 seconds
<ul style="list-style-type: none"> <li>Breathe in and sweep the opposite arm out to the side and up overhead. Breathe out as you continue the motion, moving through full range and finally into a side bend. Pause, breathe in, and return back to the starting position. Repeat on the opposite side.</li> </ul>	
BINGO ROLLS (3)	

Modified Skier	55 seconds
<ul style="list-style-type: none"> <li>From a standing position, side step in one direction, and bring the opposite foot behind the stepped leg. Repeat this movement in the opposite direction. Let the arms swing naturally side-to-side in the movement of the stepped direction.</li> </ul>	
Chair Stands	55 seconds
<ul style="list-style-type: none"> <li>Begin in a seated position, good posture, and eyes facing forward, feet hip-width apart.</li> </ul> <p>To decrease difficulty:</p> <ul style="list-style-type: none"> <li>Push up with hands on seat/arms of wheelchair</li> <li>Use cane or walker</li> </ul> <p>To increase difficulty:</p> <ul style="list-style-type: none"> <li>Cross arms across chest when standing</li> <li>Hold weight between hands</li> </ul> <p>As you move upward, maintain a neutral spine by moving head, neck, and spine together. Move only the hip, knee, and ankle joints as you stand. Keep shoulders down throughout the exercise, and keep knees from moving beyond toes. Stay under control as you return to the seated position.</p>	
<b>BINGO ROLLS (3)</b>	
Open the Cupboard	55 seconds
<ul style="list-style-type: none"> <li>In a standing position, hold the resistance band directly in front of your chest. Arms should be extended away from your body and straight. While holding the rubber portion of the band, slowly pull your arms away from your center. Allowing the band to stretch across your chest. Once the band has been fully extended, slowly release to the starting position.</li> </ul>	
Arm Curl Standing	55 seconds
<ul style="list-style-type: none"> <li>From a standing position, place the resistance band beneath both feet. Hands should be gripping band handles with palms facing outward. While holding the upper arm stationary, curl the band forward. Only the forearm should move. Curl the band as far as possible, and slowly bring your hands back to the starting position.</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Morning Walk Standing	55 seconds
<ul style="list-style-type: none"> <li>While standing begin walking in place. The pace will be a little quicker than walking. If you can, on every step raise the knee so that the hip and knee both reach near 90 degrees.</li> <li>To increase difficulty, pump arms back and forth.</li> </ul>	
Side Steps Standing	55 seconds
<ul style="list-style-type: none"> <li>Begin with feet together and arms at your side. Take one step to the right. Your feet should come back together between each side step. Ensure that both feet remain facing forward while stepping. Add a side shoulder raise with the arm of the stepped direction. Relax arm down when feet are brought together. Now repeat to the left.</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Thumb to Fingers	55 seconds

<ul style="list-style-type: none"> <li>Start with your hand in a neutral, relaxed position with your fingers and thumbs straightened. Bend your thumb across your palm, touching the tip of your thumb to the bottom of your small finger. If you can't make your thumb touch, just stretch as far as you can. Return your thumb to the starting position. Repeat multiple times with each hand.</li> </ul>	
Power Grip	55 seconds
<ul style="list-style-type: none"> <li>Using a hand therapy ball, squeeze the ball with fingers and thumb. Then repeat the exercise multiple times on each hand.</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Trunk Rotation Standing	55 seconds
<ul style="list-style-type: none"> <li>From a standing position, begin by squeezing your shoulder blades slightly together. Reach your arms out to the sides, as if making a "T", while still squeezing your shoulder blades together. Twist your upper body to the right. Hold, and exhale. Breathe in and return to the center, then repeat to the left.</li> </ul>	
Ballerina	55 seconds
<ul style="list-style-type: none"> <li>Bring both arms up over head, put hands together, release hands, then put both arms back down.</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Seated Crunches	55 seconds
<ul style="list-style-type: none"> <li>While seated, slowly raise one knee towards your chest. While simultaneously curling your upper body to meet your knee. Hold for one second, then return to the seated position. Repeat with the opposite leg.</li> </ul>	
Hi, Neighbor! Seated	55 seconds
<ul style="list-style-type: none"> <li>With straight posture, slowly and gently turn your head toward the left. Hold for a few seconds. Repeat with the right side. Do not hyperextend your head!</li> </ul>	
<b>REVIEW QUESTIONS AND CORRECT RESPONSES WITH PARTICIPANTS</b>	
<b>BINGO ROLLS (CONTINUE UNTIL FINAL WINNER)</b>	

**\*\*Remember to give your participants their Bingocize® Take-Home Cards today and explain that they should work on completing the task(s) and exercises this week and return next week for a prize\*\***

## SESSION 18

### BINGO ROLLS (3)

#### **Read aloud to the participants:**

In a previous session, we discussed some of the benefits of exercise for brain health. Remember, exercise goes beyond just physical well-being. It can help support emotional and mental health as well. Physical activity can:

- Improve sleep quality and quantity
- Increase your energy level
- Reduce feelings of depression and stress
- Improve your mood and overall emotional well-being

Before we get started, though, here are some important things to keep in mind as you exercise:

- Maintain correct posture during the exercise
- Stop if you encounter pain (a little discomfort is okay, but pain is NOT)
- Modifications are available for most of the exercises if you have special circumstances, such as you can't raise your arm over shoulder height, etc.

National Institutes of Health, 2019

### BINGO ROLLS (3)

Alternate Foot Touch	60 seconds
<ul style="list-style-type: none"> <li>From a standing position, alternate placing your right and left foot in front of you.</li> </ul>	
Chair Stand	60 seconds
<ul style="list-style-type: none"> <li>Begin in a seated position, good posture, and eyes facing forward, feet hip-width apart.</li> </ul> <p>To decrease difficulty:</p> <ul style="list-style-type: none"> <li>Push up with hands on seat/arms of wheelchair</li> <li>Use cane or walker</li> </ul> <p>To increase difficulty:</p> <ul style="list-style-type: none"> <li>Cross arms across chest when standing</li> <li>Hold weight between hands</li> </ul> <p>As you move upward, maintain a neutral spine by moving head, neck, and spine together. Move only the hip, knee, and ankle joints as you stand. Keep shoulders down throughout the exercise, and keep knees from moving beyond toes. Stay under control as you return to the seated position.</p>	
<b>BINGO ROLLS (3)</b>	
Heel Raises Standing	60 seconds
<ul style="list-style-type: none"> <li>While standing behind a chair for support, raise your heels off the floor while keeping your knees straight. Slowly lower heels to the ground. To make this exercise more difficult, stand on a balance pad or soft pillow.</li> </ul>	
Top Shelf Reach Standing	60 seconds

<ul style="list-style-type: none"> <li>Breathe in and sweep the opposite arm out to the side and up overhead. Breathe out as you continue the motion, moving through full range and finally into a side bend. Pause, breathe in, and return back to the starting position. Repeat on the opposite side.</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Modified Skier	60 seconds
<ul style="list-style-type: none"> <li>From a standing position, side step in one direction and bring the opposite foot behind the stepped leg. Repeat this movement in the opposite direction. Let the arms swing naturally side-to-side in the movement of the stepped direction.</li> </ul>	
Cueing Drill	60 seconds
<ul style="list-style-type: none"> <li>Begin in the standing position. Take one step forward. Take one step backward. Turn around and face the opposite direction. Turn around to the starting position. Crouch down with your knees bent. Place your hands on your knees. Stand up tall and clap your hands ten times. Stand with your right foot up, and hold. Stand with your left foot up, and hold. Step your right foot forward, and reach up with your left arm. Step with your left foot forward, and reach with your right arm. Bring your feet back together, and your arms to your sides. Raise up on your toes. And lower. Turn your head to the right. Return to the center. Turn your head to the left. And return to the center.</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Chest Press Standing	60 seconds
<ul style="list-style-type: none"> <li>Hold the resistance band behind your upper back. For more resistance, grab the resistance band itself. Position your arms out to your side and parallel to the ground, with a slight bend. Slowly bring your hands together, while also maintaining the same slight bend in the arms. Once both of your hands come in contact, slowly return to the starting position.</li> </ul>	
Lateral Raises Standing	60 seconds
<ul style="list-style-type: none"> <li>While standing, place the resistance band beneath both feet. With hands gripping handles, slowly raise both arms to the side until parallel with the floor. Hold for a few seconds, then slowly release to starting position. To make this exercise easier, alternate raising each arm.</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Morning Walk Standing	60 seconds
<ul style="list-style-type: none"> <li>While standing begin walking in place. The pace will be a little quicker than walking. If you can, on every step raise the knee so that the hip and knee both reach near 90 degrees.</li> <li>To increase difficulty, pump arms back and forth</li> </ul>	
Toes to the Sky Seated	60 seconds
<ul style="list-style-type: none"> <li>Begin in a seated position with good posture, eyes facing forward, palms on your thighs, and feet hip-width apart. Extend your right foot. Slowly return to starting position and repeat with your left foot.</li> </ul>	
<b>BINGO ROLLS (3)</b>	



Thumb to Fingers	60 seconds
<ul style="list-style-type: none"> <li>Start with your hand in a neutral, relaxed position with your fingers and thumbs straightened. Bend your thumb across your palm, touching the tip of your thumb to the bottom of your small finger. If you can't make your thumb touch, just stretch as far as you can. Return your thumb to the starting position. Repeat multiple times with each hand.</li> </ul>	
C Grip	60 seconds
<ul style="list-style-type: none"> <li>Start by holding your hand and fingers straight and close together. Gently curve your fingers into a "C" shape, as if your hand is wrapped around a can. Moving slowly and smoothly, return your hand to the starting position. Then repeat the exercise multiple times on each hand.</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Single arm crossover standing	60 seconds
<ul style="list-style-type: none"> <li>Gently pull one arm across your chest, below the chin. Hold, and repeat with the opposite arm.</li> </ul>	
Ballerina	60 seconds
<ul style="list-style-type: none"> <li>Bring both arms up over head, put hands together, release hands, then put both arms back down.</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Good morning	60 seconds
<ul style="list-style-type: none"> <li>Begin in the seated position, with your legs wider than shoulder-width apart. Keep your spine erect and extended. Slowly bend forward at the hips. Then slowly bend back up, again keeping your spine erect and extended, into the seated position.</li> </ul>	
Hi, Neighbor! Seated	60 seconds
<ul style="list-style-type: none"> <li>With straight posture, slowly and gently turn your head toward the left. Hold for a few seconds. Repeat with the right side. Do not hyperextend your head!</li> </ul>	
<b>REVIEW QUESTIONS AND CORRECT RESPONSES WITH PARTICIPANTS</b>	
<b>BINGO ROLLS (CONTINUE UNTIL FINAL WINNER)</b>	

**\*\*Remind your participants to keep working on their Bingocize® Take-Home Cards to bring back next week\*\***

## SESSION 19

### BINGO ROLLS (3)

**\*\*Remember to print Exercise Only Take-Home Card (week 10) to give to each participant after the session today!!\*\***

**Read aloud to the participants:** It's the final week of Bingocize®! Over the past 9 weeks, we've had fun playing bingo, completed lots of exercise, and learned about some of the great things exercise can do for us! Remember you can always find a time and place to stay physically active. Working physical activity into our daily activities is key. Try.....

- Mixing exercising with something you already do; for example, try doing some heel raises during commercial breaks.
- Exercise with a friend so you can keep each other on track!
- Take the stairs instead of the elevator

Before we get started, though, here are some important things to keep in mind as you exercise:

- Maintain correct posture during the exercise
- Stop if you encounter pain (a little discomfort is okay, but pain is NOT)
- Modifications are available for most of the exercises if you have special circumstances, such as you can't raise your arm over shoulder height, etc.

Source: National Institutes of Health, 2019

### BINGO ROLLS (3)

Alternate Foot Touch	60 seconds
<ul style="list-style-type: none"> <li>• From a standing position, alternate placing your right and left foot in front of you.</li> </ul>	
Chair Stand	60 seconds
<ul style="list-style-type: none"> <li>• Begin in a seated position, good posture, and eyes facing forward, feet hip-width apart.</li> </ul> <p>To decrease difficulty:</p> <ul style="list-style-type: none"> <li>○ Push up with hands on seat/arms of wheelchair</li> <li>○ Use cane or walker</li> </ul> <p>To increase difficulty:</p> <ul style="list-style-type: none"> <li>○ Cross arms across chest when standing</li> <li>○ Hold weight between hands</li> </ul> <p>As you move upward, maintain a neutral spine by moving head, neck, and spine together. Move only the hip, knee, and ankle joints as you stand. Keep shoulders down throughout the exercise, and keep knees from moving beyond toes. Stay under control as you return to the seated position.</p>	
<b>BINGO ROLLS (3)</b>	
Heel Raises Standing	60 seconds
<ul style="list-style-type: none"> <li>• While standing behind a chair for support, raise your heels off the floor while keeping your knees straight. Slowly lower heels to the ground. To make this exercise more difficult, stand on a balance pad or soft pillow.</li> </ul>	
Top Shelf Reach Standing	60 seconds

<ul style="list-style-type: none"> <li>Breathe in and sweep the opposite arm out to the side and up overhead. Breathe out as you continue the motion, moving through full range and finally into a side bend. Pause, breathe in, and return back to the starting position. Repeat on the opposite side.</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Modified Skier	60 seconds
<ul style="list-style-type: none"> <li>From a standing position, side step in one direction and bring the opposite foot behind the stepped leg. Repeat this movement in the opposite direction. Let the arms swing naturally side-to-side in the movement of the stepped direction.</li> </ul>	
Cueing Drill	60 seconds
<ul style="list-style-type: none"> <li>Begin in the standing position. Take one step forward. Take one step backward. Turn around and face the opposite direction. Turn around to the starting position. Crouch down with your knees bent. Place your hands on your knees. Stand up tall and clap your hands ten times. Stand with your right foot up, and hold. Stand with your left foot up, and hold. Step your right foot forward, and reach up with your left arm. Step with your left foot forward, and reach with your right arm. Bring your feet back together, and your arms to your sides. Raise up on your toes. And lower. Turn your head to the right. Return to the center. Turn your head to the left. And return to the center.</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Chest Press Standing	60 seconds
<ul style="list-style-type: none"> <li>Hold the resistance band behind your upper back. For more resistance, grab the resistance band itself. Position your arms out to your side and parallel to the ground, with a slight bend. Slowly bring your hands together, while also maintaining the same slight bend in the arms. Once both of your hands come in contact, slowly return to the starting position.</li> </ul>	
Lateral Raises Standing	60 seconds
<ul style="list-style-type: none"> <li>While standing, place the resistance band beneath both feet. With hands gripping handles, slowly raise both arms to the side until parallel with the floor. Hold for a few seconds, then slowly release to starting position. To make this exercise easier, alternate raising each arm.</li> </ul>	
<b>BINGO ROLLS (3)</b>	
Morning Walk Standing	60 seconds
<ul style="list-style-type: none"> <li>While standing begin walking in place. The pace will be a little quicker than walking. If you can, on every step raise the knee so that the hip and knee both reach near 90 degrees.</li> <li>To increase difficulty, pump arms back and forth.</li> </ul>	
Toes to the Sky	60 seconds
<ul style="list-style-type: none"> <li>Begin in a seated position with good posture, eyes facing forward, palms on your thighs, and feet hip- width apart. Extend your right foot. Slowly return to starting position and repeat with your left foot.</li> </ul>	

BINGO ROLLS (3)	
Thumb to Fingers	60 seconds
<ul style="list-style-type: none"> <li>Start with your hand in a neutral, relaxed position with your fingers and thumbs straightened. Bend your thumb across your palm, touching the tip of your thumb to the bottom of your small finger. If you can't make your thumb touch, just stretch as far as you can. Return your thumb to the starting position. Repeat multiple times with each hand.</li> </ul>	
C Grip	60 seconds
<ul style="list-style-type: none"> <li>Start by holding your hand and fingers straight and close together. Gently curve your fingers into a "C" shape, as if your hand is wrapped around a can. Moving slowly and smoothly, return your hand to the starting position. Then repeat the exercise multiple times on each hand.</li> </ul>	
BINGO ROLLS (3)	
Single arm crossover standing	60 seconds
<ul style="list-style-type: none"> <li>Gently pull one arm across your chest, below the chin. Hold, and repeat with the opposite arm.</li> </ul>	
Ballerina	60 seconds
<ul style="list-style-type: none"> <li>Bring both arms up over head, put hands together, release hands, then put both arms back down.</li> </ul>	
BINGO ROLLS (3)	
Good morning	60 seconds
<ul style="list-style-type: none"> <li>Begin in the seated position, with your legs wider than shoulder-width apart. Keep your spine erect and extended. Slowly bend forward at the hips. Then slowly bend back up, again keeping your spine erect and extended, into the seated position.</li> </ul>	
Hi, Neighbor! Seated	60 seconds
<ul style="list-style-type: none"> <li>With straight posture, slowly and gently turn your head toward the left. Hold for a few seconds. Repeat with the right side. Do not hyperextend your head!</li> </ul>	
REVIEW QUESTIONS AND CORRECT RESPONSES WITH PARTICIPANTS	
BINGO ROLLS (CONTINUE UNTIL FINAL WINNER)	

**\*\*Remember to give your participants their Bingocize® Take-Home Cards today and explain that they should work on completing the task(s) and exercises this week and return next week for a prize\*\***

SESSION 20	
BINGO ROLLS (5)	
<p><b><u>Read aloud to the participants:</u></b></p> <p>I hope you had lots of fun and are feeling all of the benefits of Bingocizing! This is our last session, but I hope all of you stay physically active and use the information we've talked about over the past 10 weeks. Please keep up the good work...I know you can do it! I hope to see you again soon for another round of Bingocize®!</p> <p>Before we get started, though, here are some important things to keep in mind as you exercise:</p> <ul style="list-style-type: none"> <li>• Maintain correct posture during the exercise</li> <li>• Stop if you encounter pain (a little discomfort is okay, but pain is NOT)</li> <li>• Modifications are available for most of the exercises if you have special circumstances, such as you can't raise your arm over shoulder height, etc.</li> </ul> <p>Source: National Council on Aging, National Institute on Aging, 2018</p>	
BINGO ROLLS (5)	
Three Dot Step	60 seconds
<ul style="list-style-type: none"> <li>• Begin by standing with your feet together and arms down to the sides. During this exercise, the opposite foot should never leave the ground. Take a step lunge forward about two to three feet. During this step lunge reach the arms out in front, away from the body. Now return to the starting position. With the same foot, step out to the side about two to three feet. During the step, reach your arms out in the same direction as the step to the side. Return to the starting position. Now step backwards about two to three feet, while allowing the arms to open backwards into a horizontal reach. During the backwards step, the front knee will bend and the back leg will remain straight. Return to the starting position.</li> </ul>	
Static Balance	60 seconds
<ul style="list-style-type: none"> <li>• Stand with eyes focused forward and one leg elevated to about ankle level without touching the support leg. Hold, now repeat with the opposing leg.</li> </ul>	
BINGO ROLLS (5)	
Staggered Stance	60 seconds
<ul style="list-style-type: none"> <li>• Begin with feet together and hands at sides. Step forward with your right foot. Maintain this position for 10 seconds. Alternate putting the other foot in front.</li> </ul>	
Side Flexion Seated	60 seconds
<ul style="list-style-type: none"> <li>• In a seated position, bend your trunk to the right to bring your right elbow to the outside of your right hip. Now repeat on the left.</li> </ul>	
BINGO ROLLS (5)	
Grapevine (make sure participants spread out)	60 seconds

<ul style="list-style-type: none"> <li>● Begin by standing with your arms at your sides with feet together. Step across, in front of your left foot with your right leg. Continue to step sideways, un-crossing the right leg. Now reverse, and cross your right leg behind your left leg. Continue to step sideways, un-crossing the left leg.</li> </ul>	
Swimming Dance	60 seconds
<ul style="list-style-type: none"> <li>● While standing, move arms in a swimming motion, then plug nose, and shimmy with one arm raised above the head.</li> </ul>	
<b>BINGO ROLLS (5)</b>	
Chest Press Standing	60 seconds
<ul style="list-style-type: none"> <li>● Hold the resistance band handles, with the resistance band behind your upper back. For more resistance, grab the resistance band itself. Position your arms out to your side and parallel to the ground, with a slight bend. Slowly bring your hands together, while also maintaining the same slight bend in the arms. Once both of your hands come in contact, slowly return to the starting position.</li> </ul>	
Arm Curl Standing	60 seconds
<ul style="list-style-type: none"> <li>● From a standing position, place the resistance band beneath both feet. Hands should be gripping band handles with palms facing outward. While holding the upper arm stationary, curl the band forward. Only the forearm should move. Curl the band as far as possible, and slowly bring your hands back to the starting position.</li> </ul>	
<b>BINGO ROLLS (5)</b>	
The Twist standing (play “The Twist” song)	60 seconds
<ul style="list-style-type: none"> <li>● Stand with your feet shoulder-width apart. Put equal weight on both feet. Keep your knees flexible and your torso squared evenly with your hips.</li> <li>● Move one foot forward. Gently budge one foot ahead of the other. The front foot should not be a full length ahead of the back foot, and there should be some overlap between them.</li> <li>● Hold your arms away from the body. Extend both arms outward and away from the body. Don’t extend them straight out. You should keep them bent slightly at the elbow.</li> <li>● As you twist, your arms will follow the movement of your hips. As your weight shifts to one side and your waist twists back, the arm of that same side will naturally move downward and back. To keep balance, the other arm should move upward and forward.</li> <li>● Twist your hips. Swing your hips dramatically from side to side. As you twist your hips, your waist and legs should also twist or rotate from side to side in a similar manner</li> <li>● Shift your body weight. As you rock from side to side, shift your center of gravity or body weight so that it is supported by the ball of your foot. You should alternate from foot to foot, placing your weight over one foot as you twist to that side and over to the other foot as you twist back.</li> </ul>	
Heel Raises Standing	60 seconds

<ul style="list-style-type: none"> <li>While standing behind a chair for support, raise your heels off the floor while keeping your knees straight. Slowly lower heels to the ground. To make this exercise more difficult, stand on a balance pad or soft pillow.</li> </ul>	
<b>BINGO ROLLS (5)</b>	
Thumb to Fingers	60 seconds
<ul style="list-style-type: none"> <li>Start with your hand in a neutral, relaxed position with your fingers and thumbs straightened. Bend your thumb across your palm, touching the tip of your thumb to the bottom of your small finger. If you can't make your thumb touch, just stretch as far as you can. Return your thumb to the starting position. Repeat multiple times with each hand.</li> </ul>	
Power Grip	60 seconds
<ul style="list-style-type: none"> <li>Using a hand therapy ball, squeeze the ball with fingers and thumb. Then repeat the exercise multiple times on each hand.</li> </ul>	
<b>BINGO ROLLS (5)</b>	
Seated Balance Exercise	60 seconds
<ul style="list-style-type: none"> <li>Sit with eyes closed for 30 seconds. Sit with eyes closed while turning head side to side. Sit with eyes closed while moving head up and down.</li> </ul>	
Ballerina	60 seconds
<ul style="list-style-type: none"> <li>Bring both arms up over head, put hands together, release hands, then put both arms back down.</li> </ul>	
<b>BINGO ROLLS (5)</b>	
YMCA (play the song "YMCA")	60 seconds
<ul style="list-style-type: none"> <li>Create a Y by standing straight and extending your arms over your head. Your arms should be outstretched at angles away from each other so that your hands are about three to four feet apart.</li> <li>Make an M by bringing your hands together on top of your head so that the backs of your fingers are touching. Your fingertips should be in contact with your scalp. Bend your wrists as much as you can to make the corners of the top of the M as sharp as possible.</li> <li>Produce a C by bringing your left arm down by your side. Extend your left arm out and bend it slightly, keeping your palm open. Your left hand should be parallel with your waist. Curl your right arm over your head and bend your waist to the left.</li> <li>Form an A by bringing your arms back up over your head. Bend your elbows at the level of your ears and bring your hands together so that your fingertips touch. Your hand should create a triangle.</li> </ul>	
Goodbye, neighbor! Standing	60 seconds
<ul style="list-style-type: none"> <li>Turn to the person on either side of you, and shake their hand or give them a big hug.</li> </ul>	
I hope you had fun today! Please continue your healthy lifestyle changes, and look for another round of Bingocize® soon!	
<b>BINGO ROLLS (CONTINUE UNTIL FINAL WINNER)</b>	

**\*\*Remind your participants to keep working on their Bingocize® Take-Home Cards to bring back next week\*\***