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Emma Heldt
A. T. Still University

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The Development of an Exercise-Based Fall Prevention Program Tailored to Incorporate Caregivers Caring for Older Adults at Risk for Falls

Emma Heldt, OTS

Advisors: Tania Shearon MOT, OTR/L and Brandi L. Buchanan OTD, OTR/L

Literature Review

- Falls are the leading cause of injury or death for older adults in the United States
- In 2019, 3 million emergency department visits were recorded due to older adult falls and over 34 thousand deaths were due to falls
- In 2015, medical costs for falls totaled over \$50 billion
- Exercise-based fall prevention programs that include strength and balance activities are effective ways to decrease falls in older adults
- Eccentric exercise may be ideal for older adults, as it is producing high muscle force with low energetic cost, producing muscle growth and strength with moderate effort
- Eccentric exercises exhibit significant improvements in balance, mobility, and endurance in healthy older adults
- OTs are suitable healthcare professionals who can address falls/fall prevention with a unique perspective
- There is an essential need for caregiver involvement during fall prevention programs, as caregivers are proven to be encouraging toward their loved ones and serve as a trusted source and confidant in health behavior changes

Project Goals

- Develop and implement an exercise-based fall prevention module designed for caregivers who care for older adults at risk for falls
- Determine whether the fall prevention exercise module was effective in providing satisfactory training and education for caregivers who care for an older adult at risk for falls
- Provide CarePLaCe with an evidence-based fall prevention module to be used in future sessions with caregivers seeking fall prevention resources

Methods

- Development of an exercise based educational training module on fall prevention with focuses on caregiver involvement, eccentric exercise, and program maintenance
- Implement the module to three caregiver dyads in their home environment
- Gather feedback from caregiver through semi-formal interview
- Adjust module based on caregiver feedback

Participants

Caregiver dyad #1:
 • Caregiver: 70-year-old female
 • Care recipient: 77-year-old male

Caregiver dyad #2:
 • Caregiver: 68-year-old female
 • Care recipient: 84-year-old male

Caregiver dyad #3:
 • Caregiver: 80-year-old female
 • Care recipient: 81-year-old male

Session Overview

- ★ Learn why fall prevention is beneficial for older adults and carepartners
- ★ Learn why the carepartner role is important in fall prevention
- ★ Demonstrate exercises used to improve strength and balance to prevent falls
- ★ Discuss techniques to maintain a fall prevention exercise program at home


Exercise #1: Bicep Curl

Targeted muscle: Biceps

Proper technique: Slow motion (lowering of weight) to extended elbow position, back straight, shoulders back

Cues: Imagine slowly lowering a full glass of water from your mouth down to the table

How the muscle relates to fall prevention: Upper body strength is needed for balance and stability. This exercise is strengthening not only your arms but your back and shoulders as well




Exercise #3: Squat

Targeted muscle: Quadriceps

Proper technique: Slow motion (lowering of weight) by bending knees, back straight, slight lean forward, feet shoulder width apart

Cues: Think about sitting down, but just tapping the chair and standing back up

How the muscle relates to fall prevention: Your lower body strength greatly helps with balance and stability when walking along any surface



Exercise #5: Sit to Stand

Targeted muscle: Triceps and quadriceps

Proper technique: Slow motion (lowering of weight) into chair with bending elbows and knees

Cues: Feel the chair on the back of your knees, reach back with your hands to feel the armrest or seat of chair

How this exercise relates to fall prevention: This full body exercise challenges your balance and stability by using various muscles simultaneously. It helps to improve your body mechanics, increase functional mobility, and can decrease your risk for falls

Your Role as a Carepartner

Home exercise programs are **not** easily maintained without the encouragement of another individual, such as a carepartner

Carepartners are able to negotiate, engage, and encourage loved ones to participate in fall prevention programs





Exercise #2: Wall Push-Up

Targeted muscle: Triceps and chest muscles

Proper technique: Slow motion (lowering of weight) into wall with flexed elbows, back straight, lean weight into toes if standing

How the muscle relates to fall prevention: Upper body strength is needed for balance and stability. Additionally, this exercise strengthens your shoulders, back and core




Exercise #4: Heel Raise

Targeted muscle: Gastrocnemius and soleus (calf muscle)

Proper technique: Slow motion (lowering of weight) by lowering heel to ground, straight legs

How the muscle relates to fall prevention: The calf muscles support the body to maintain good posture and balancing abilities.



Program Maintenance / Time Management

How can I remember to perform the exercises daily?

- Daily check off list / calendar reminder
- Alarm reminder
- Establish a routine
- Exercise partner/ group
- Reward!!



Feedback Results

- Caregiver #1:**
- Material she already knew, but a good reminder
 - Learned the two ways to scoot to the edge of a seat in preparation to stand
 - “Falls Prevention 101” – good resource for caregivers new to fall prevention
 - Recommended diagnosis specific fall prevention information
 - 10/10 satisfaction rating
- Caregiver #2:**
- All new information
 - Valued instruction of eccentric exercises
 - Learned the proper body mechanics of sit to stands
 - Care recipient's physical abilities were limited - eliminated squat exercise
 - 9 or 10/10 satisfaction rating
- Caregiver #3:**
- Highly valued the personal instruction of module and adaptations of exercises
 - Appreciated the pictures in the presentation and handout because she is a visual learner
 - Recommended training video to increase accessibility of module
 - 10/10 satisfaction rating

Conclusion

- The fall prevention module was successful in providing satisfactory education and training to three caregivers
- Each caregiver participant valued different aspects of the module
- Further research is needed to determine the effectiveness of the module
- Additional research on caregiver participation in fall prevention is needed as this project had a small number of participants

Implications for Practice

- Educate on importance of the caregiver role in positive health behavior change of care recipients
- Improve caregiver education and training
- Increase family/ caregiver involvement with home programs for increased patient outcomes

Recommendations

- Utilize more referral sites to elicit more participants
- Conduct research after pandemic has ended to improve accessibility of vulnerable population

References

references available upon request