

The Effect of Equine Related Therapy on Physical and Psychological Well-Being of Older Adults

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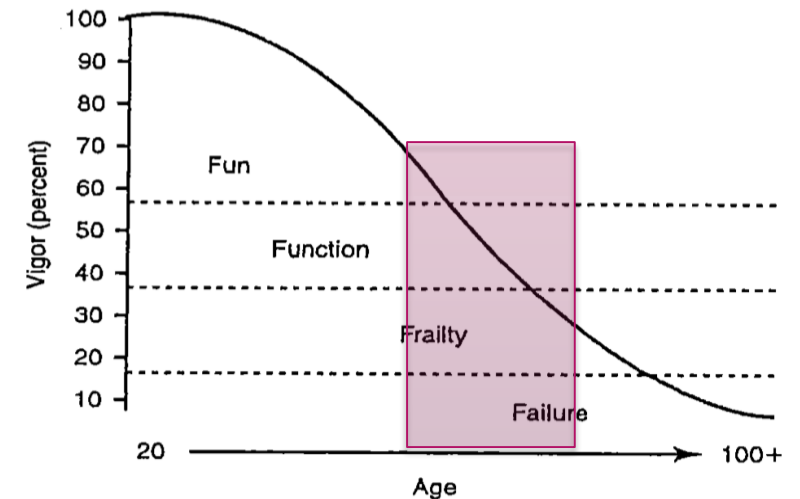
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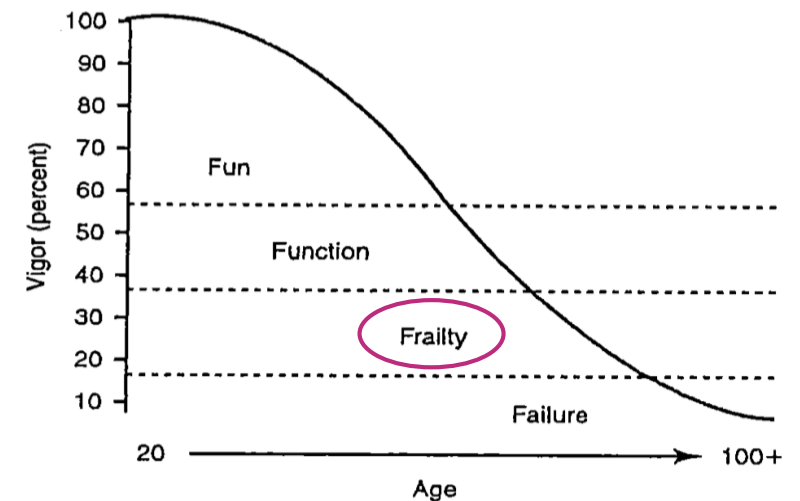
Older Adults and Aging

- Optimal Aging: the capacity to function across many domains – physical, functional, cognitive, emotional, social & spiritual – to one's satisfaction and in spite of one's medical conditions
- Slippery Slope of Aging: represents the general decline in overall ability that is observed with increasing age
 - The location on the slope can be modified (positive or negative) based on lifestyle factors and illness¹



Older Adults and Aging, cont.

- Frailty is a common characteristic noted in older adults as a vulnerability to adverse side effects as a result of a decline of psychological and functional outcome measures²
- It is important to optimize functional capacity in older adults regardless of the presence or absence of a chronic health condition with the goal being to stop or reverse the downward functional cycle¹
- **Exercise, specifically resistance, endurance, and coordination training, is the most successful intervention to delay onset of frailty^{3,4}**



Older Adults and Aging

- Sarcopenia
 - Prevalent in 1-29% of community-dwelling individuals⁵
 - Related to falls, fractures, impaired balance, and movement disorders⁶
 - **“Fun physical activity” has been shown to reduce sarcopenia progression⁶**



Older Adults and Aging, cont.

- Depression in older adults may be linked to a variety of adverse physical health problems⁷
- Approximately 5-15% of community-dwelling older adults have clinically significant depressive symptoms, leading to reduced social and leisure activities⁷
- **Exercise can be used to treat and prevent depression in older adults and increase social interaction and improve mental health⁸**



Exercise Recommendations for Older Adults

- WHO recommends people 65 years and older to exercise:
 - At least 150 minutes of moderate-intensity aerobic activity
 - Balance exercises at least 3 days
 - Muscle strengthening at least 2 days
- More than 60% of American adults older than 50 years do not achieve this activity level, although exercise in older adults has been shown to have **positive effects on mortality, functional independence, self-efficacy, and cognition**?



Definitions of Equine Related Therapies

- Equine-Assisted Therapy: therapy or treatment that incorporates equine activities and/or the equine environment¹⁰



Definitions of Equine Related Therapies

- **Hippotherapy (HPOT): physical, occupational, or speech therapy treatment strategy that utilizes equine movement, usually as part of an integrated treatment program to achieve functional outcomes**
- Therapeutic Riding: utilizes mounted activities including traditional riding disciplines or adaptive riding activities conducted by a PATH International (Professional Association of Therapeutic Horsemanship) certified instructor¹¹



Definitions of Equine Related Therapies

- Horse-Simulated Riding: equipment used in order to imitate a horse's movements that can be utilized indoors
 - Ball exercise vs. Horse riding simulator¹²



"Hippotherapy uses principles of **motor learning**, **dynamic systems theory**, and **sensory integration**.

It is intricately related to **3-dimensional pelvic motion** transferred from the highly organized neurological system of the horse to the patient. The horse is the only animal that can provide the same pelvic motion that we use when we move."¹³

- Lori Garone

American Hippotherapy Association's First Vice President



Purpose

- The purpose of this systematic review was to determine the effect of equine-related therapy on the physical and psychological well-being of older adults (≥ 60 years)



Methods

Search Terms:

("Horse Therapy" **OR** "Equine therapy" **OR** hippotherapy **OR** "equine assisted therapy" **OR** "therapeutic riding" **OR** "simulated* riding") **AND** ("Older adults" **OR** adults **OR** elderly **OR** geriatric*)



Methods

Databases:

- PubMed
- CINAHL
- Cochrane Library
- ProQuest



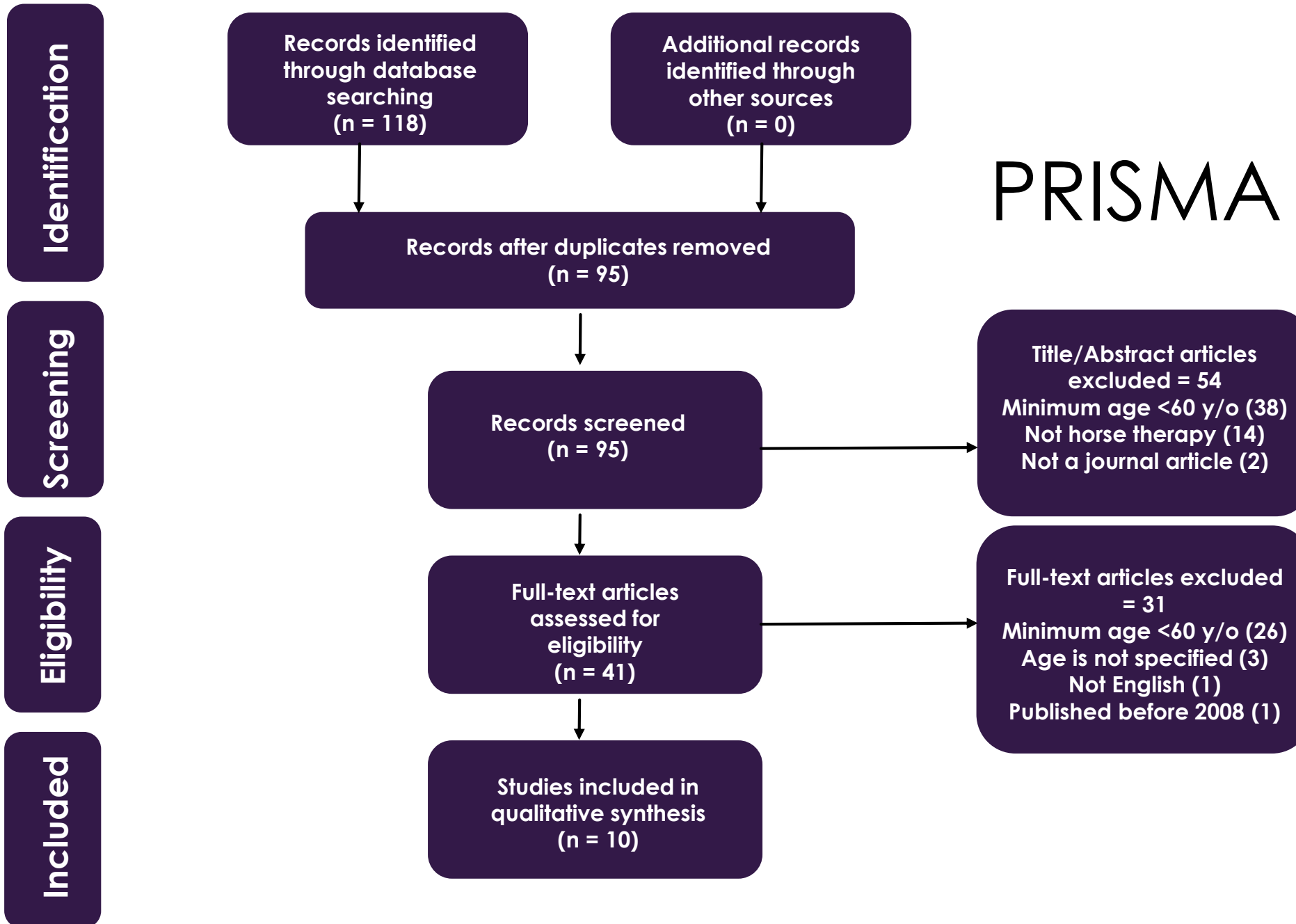
Methods

Inclusion Criteria:

- Older adults ≥ 60 years
- Males & Females
- All study designs
- Published in English language
- Scholarly Journal Articles
- Published between 2008-2018



PRISMA



Sackett Levels

<u>Authors</u>	<u>Study</u>	<u>Sackett Level</u>
de Araújo T, de Oliveira RJ, Martins WR, de Moura Pereira M, Copetti F, Safons MP ¹⁴ (2013)	Effects of hippotherapy on mobility, strength and balance in elderly	1B
Cho S ¹⁵ (2017)	Effects of horseback riding exercise on the relative alpha power spectrum in the elderly	1B
SeongGil K, Goon-Chang Y, Hwangbo G ¹² (2013)	Effects of the horse riding simulator and ball exercises on balance of the elderly	2 (low quality RCT)
Kim SG, Lee C-W ¹⁶ (2014)	The effects of hippotherapy on elderly persons' static balance and gait	2 (low quality RCT)
Kim S, Lee J ¹⁷ (2015)	The effects of horse riding simulation exercise on muscle activation and limits of stability in the elderly	2 (low quality RCT)

Sackett Levels

<u>Authors</u>	<u>Study</u>	<u>Sackett Level</u>
Kim S-K, Kim S-G, Hwangbo G ¹⁸ (2017)	The effect of horse-riding simulator exercise on the gait, muscle strength and muscle activation in elderly people with knee osteoarthritis	2 (prospective controlled trial)
Araujo TB, Silva NA, Costa JN, Pereira MM, Safons MP ¹⁹ (2011)	Effect of equine-assisted therapy on the postural balance of the elderly	2 (prospective controlled trial)
Homnick TD, Henning KM, Swain CV, Homnick DN ²⁰ (2015)	The effect of therapeutic horseback riding on balance in community-dwelling older adults: a pilot study	2 (non-randomized control trial)
Homnick DN, Henning KM, Swain CV, Homnick TD ¹¹ (2013)	Effect of therapeutic horseback riding on balance community-dwelling older adults with balance deficits	4 (Pre-Post Test)
Kim S-K, Hwangbo G ²¹ (2017)	The effects of horse-riding simulator exercise on balance in elderly with knee osteoarthritis	4 (Pre-Post test)

Results

- Sample size ranged from 9-30 subjects (n=227) with age range 60-84 years
- Interventions included equine-assisted therapy, hippotherapy, therapeutic riding, and horse-simulated riding
- Intervention varied in frequency and duration (20-60 minutes, 1-5 days/week, 8-12 weeks)
- Intervention facilitators included:
 - Physical therapist (3 studies)^{12, 14, 17}
 - Certified therapeutic riding instructor (2 studies)^{11, 20}
 - Unspecified (5 studies)^{15, 16, 18, 19, 21}



Mobility Outcomes

Statistically significant improvements in balance outcomes included:

- Timed Up and Go (2 studies)^{12, 19}
- Berg Balance Scale (2 studies)^{14, 21}
- Functional Reach (2 studies)^{12, 21}
- Romberg (1 study)¹²
- Fullerton Advanced Balance Scale (1 study)¹¹



Mobility Outcomes, Cont.

Statistically significant improvements in gait and muscle activity outcomes included:

- Gait Speed
 - 10 Meter Walk (2 studies)^{12, 18}
- Gait parameters (step length, step time, and sway path length)
 - GaitRite (1 study)¹⁶
- Motor Function
 - EMG (muscle activation) (2 studies)^{17,18}



Psychological Outcomes

Statistically significant improvements included:

- Increased attention and concentration, cognitive judgment, learning ability, creative thinking and mental rotation tasks (Fast alpha wave power during EEG)¹⁵
- Overall perception of health (Rand SF-36)¹¹

Additional improvements included:

- Physical functioning, role limitations due to emotional problems, energy/fatigue, emotional well-being, social functioning, pain, general health, and health change (Rand SF-36)¹¹



Conclusions

- Moderate to strong evidence exists supporting the use of equine-related interventions to improve physical well-being in older adults
- Strong, but limited evidence exists related to psychological well-being (improved restfulness and concentration)
- PTs were identified as key members of the therapeutic team



Clinical Relevance

- Evidence supports the use of equine (live or simulated) interventions as safe and effective options for improving balance, mobility, strength, and well-being in community-dwelling older adults
- Clinicians should consider integrating such interventions to combat the negative effects of aging, including frailty, sarcopenia, and depression, when such resources are available



Limitations

- Articles assessed excluded participants with known balance deficits
- Limited assessment of psychological state
- Diversity of study design, interventions and outcome measures



Future Research

- Include patients with balance deficits to accurately assess improvements in physical outcomes
- Incorporate additional psychological outcome measures



An Exploration of Equine-Assisted Therapy to Improve Balance, Functional Capacity, and Cognition in Older Adults with Alzheimer Disease

- Population studied was individuals with Alzheimer's Disease (AD)
- Outcome Measures:
 - Balance (force plate)
 - Functional Capacity (TUG, 30-second Chair Stand Test)
 - Cognition (Verbal fluency and Mini-Mental State Examination)
- Statistically significant improvements in TUG scores and balance
- Conclusions²²:
 - Improvements in balance and functional capacity in older adults with AD
 - No decline in cognition



Benefits of Hippotherapy and Horse Riding Simulation Exercise on Healthy Older Adults: A Systematic Review

- Databases: PEDro, Web of Science
- Eligibility Criteria: published in English, French, or Spanish, original clinical study, randomized controlled trial
- Search Terms: assistance horse(s), equine facilitated
- Additional Outcome Measures:
 - Hormonal effects tested via serotonin and cortisol concentrations
- Conclusions²³:
 - Both therapies may be effective at improving balance, mobility, gait speed and muscle strength
 - HPOT may improve hormonal levels and cerebral activity



More Information

- American Hippotherapy Association, Inc.
 - Educational courses
 - Indications
 - Contraindications
 - Precautions
 - Statements of Best Practice
 - <http://www.americanhippotherapyassociation.org/wp-content/uploads/2015/02/Final-2017-Best-Practice.pdf>



Local Resources

Hippotherapy

- Equi-librium
Nazareth, PA (610) 365 – 2266
Addresses functional limitations and disabilities with neuromusculoskeletal dysfunctions of all ages
- Mane Stream
Oldwick, NJ (908) 439 – 9636
Children and adults with special needs
- Special Strides
Monroe, NJ (732) 446 – 0945
Children and adults with special needs

Therapeutic Riding

- Oak Leaf Therapeutic Horsemanship Center
Nicholson, PA (570) 945-3922
Children and Adults
*Working towards inclusion of hippotherapy
- Serendipity Therapeutic Riding Center
Harveys Lake, PA (570) 561-6743
Individuals with special needs



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Thank you!
Questions?

