

CHANGES IN PHYSICAL PERFORMANCES OUTCOMES AND FALLS IN INDIVIDUALS WITH DEMENTIA: FINDINGS FROM THE REDUCING DISABILITY IN ALZHEIMER'S DISEASE INTERVENTION

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Overview

- ◎ Individuals with dementia (IWDs) higher rate of functional mobility problems and falls (McGough et al., 2013; Suttanon et al., 2012)
- ◎ Functional mobility deficits related to gait and motor impairments (McGough et al., 2013; Suttanon et al., 2012)
- ◎ Cognitive impairment increases risk of falls in older adults (Asada et al, 1996; Allan et al., 2009; Eriksson et al., 2008; Rubenstein 1994, 2006; Tinetti et al., 1988)

Overview

- ◎ Falls predicted by gait cadence in patient with Alzheimer's disease (Camicoli & Licit, 2004)
- ◎ Walking speed associated with transfer from ALF to SNF (Kenny et al., 2008)
- ◎ Exercise has positive effects on functional performance, strength, physical fitness, and behavior (Hauer et al., 2012; Heyn et al., 2004)
- ◎ Inconclusive evidence regarding falls prevention intervention for IWDs (Winter et al., 2013)

Reducing Disability in Alzheimer's Disease

- ◎ Home-based exercise program combined with caregiver (CG) training in behavioral management
 - Exercise
 - Education
 - Symptoms, progression, and treatment of AD; community resources; home safety and environmental modifications; legal and financial issues
 - Emotional training
 - Realistic expectations; coping with caregiving and respite; managing negative thoughts; generalizing and maintaining skills
 - Instrumental education
 - ABC's of behavior change; communication techniques in dementia; problem-solving strategies; pleasant events and depression

Reducing Disability in Alzheimer's Disease

- ◎ Physical health and function
 - Walking time, balance, functional reach
 - Short-form Health Survey (SF-36)
 - Physical functioning, physical role functioning
 - Sickness Impact Profile
 - Body care and movement, mobility, home management
 - Falls
 - Number of minutes spent walking
 - Number of restricted activity days

Reducing Disability in Alzheimer's Disease

- ◎ Affective status
 - Cornell Scale for Depression in Dementia
- ◎ Behavioral disturbance
 - Revised Memory and Behavior Problem Checklist

Published Findings

- ◎ Intervention group improved on SF-36 and Cornell Depression Scale
- ◎ Increased exercise minutes per week compared to control group
- ◎ Restricted activity days were reduced by RDAD intervention
- ◎ No other significant differences found
 - No specific report of RDAD intervention on physical performance measures

Teri et al., 2003

Aim of the Current Study

- ◎ Review performance on physical performance tests
 - Falls
 - Walking speed
 - Balance
 - Functional reach
- ◎ Determine if individual components of RDAD differ in impact on results
- ◎ Determine if diagnosis impacts effect of intervention

Sample Demographics

◎ N=411

- 45% female
- 50% Alzheimer's disease
 - 20% "other" dementia; 1% Parkinson's disease; 1% stroke
- 62% married
- Short Blessed (range 0-28) : \bar{X} = 19.1 (8.16)
- Number of restricted days/week: \bar{X} = 0.83 (1.88)
- Number of minutes spent walking/week: \bar{X} = 127.66 (218.75)

Paired t-tests

	Mean	t	Significance
Falls (dichotomous)	.065	3.05	.002
Falls (continuous)	-.087	-0.34	.73
Walking Speed	.068	0.60	.55
Balance	-.071	-0.53	.59
Functional Reach	.012	0.23	.82

Logistic Regression - falls

	B	S.E.	Wald Chi-Square	Sig.	Odds Ratio
T1 falls	-2.96	.29	102.45	.001	.05
Exercise	-.03	.06	.23	.63	.97
Education	-.01	.07	.01	.94	.99
Instrumental	-.01	.07	.03	.86	.99
Emotional	.01	.06	.04	.85	.01
Short Blessed	.03	.02	2.75	.10	.03
Physical Function	.06	.03	4.98	.03	.06
Diagnosis	-.07	.29	.06	.81	.93
Constant	-.85	.80	1.12	.29	.43

Regression analysis

- Each intervention component
- Cognition, physical function, diagnosis

Logistic Regression - falls

	B	S.E.	Wald Chi-Square	Sig.	Odds Ratio
T1 falls	-3.28	.33	99.64	.001	.04
Exercise	-.01	.09	.01	.91	.99
Education	.31	.13	5.78	.02	1.36
Instrumental	.06	.11	.33	.57	1.06
Emotional	-.12	.11	1.14	.29	.89
Short Blessed	.03	.02	2.39	.12	1.03
Physical Function	.07	.03	6.14	.01	1.07
Diagnosis	2.42	.92	6.92	.01	11.30
Exer * diagnosis	-.07	.13	.28	.59	.94
Educ * diagnosis	-.51	.17	9.41	.002	.60
Instr * diagnosis	-.16	.15	1.06	.30	.86
Emot * diagnosis	.27	.14	3.49	.06	1.31
Constant	-2.33	.98	5.66	.02	.10

Alzheimer's disease sample

	B	S.E.	Wald Chi-square	Sig.	Odds Ratio
T1 falls	-3.03	.40	57.13	.001	.05
Exercise	-.08	.09	.96	.33	.92
Education	-.19	.10	3.60	.06	.83
Instrumental	-.08	.10	.63	.43	.92
Emotional	.15	.09	2.92	.09	1.16
Short Blessed	.01	.03	.04	.84	1.01
Physical Function	.07	.03	4.17	.04	1.07
Constant	.32	1.03	.09	.76	1.37

indicating **more** education sessions
leads to **less** risk of fall

Non-AD sample

	B	S.E.	Wald Chi-square	Sig.	Odds Ratio
T1 falls	-3.81	.60	40.60	.001	.02
Exercise	-.01	.10	.01	.91	.99
Education	.35	.15	5.83	.02	1.42
Instrumental	.07	.12	.31	.58	1.07
Emotional	-.15	.12	1.40	.24	.86
Short Blessed	.06	.03	4.37	.04	1.06
Physical Function	.07	.05	2.34	.13	1.08
Constant	-2.90	1.45	4.03	.05	.06

indicating **less** education sessions
leads to **less** risk of fall OR **more** education
sessions leads to **higher** risk of falls

Summary of Findings

- ⊙ Falls reduced significantly from 31% to 18% with RDAD intervention
- ⊙ No change in gait speed, balance, or functional reach
- ⊙ Interaction between diagnosis (AD vs. non-AD) and education component of intervention
 - AD group: negative relationship
 - more education led to reduced risk
 - Non-AD group: positive relationship
- ⊙ Exercise component of RDAD did not contribute to change in falls

Discussion

- ⊙ RDAD may be beneficial as falls intervention for IWDs
- ⊙ Possible that exercise component not intense enough to elicit changes in physical performance measures
- ⊙ RDAD intervention may have differential benefits dependent on type of dementia
- ⊙ Remains unclear why more education could lead to higher risk of falls in non-AD sample

Future Research

- Utilize control group to allow definite conclusions regarding RDAD as falls intervention
- Increase intensity of exercise program to facilitate adaptive response in biological tissue
- Further explore potential for differential effects of RDAD intervention in non-AD sample

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THANK YOU!!
Questions??