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## Protective and Risk Factors for Physical Activity and Falls among Oldest-Old Adults Enrolled in an Evidence-Based Fall Risk Reduction Program

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## Presenter Disclosure

The following personal financial relationships with commercial interests relevant to this presentation existed during the past 12 months: "No relationships to disclose"


A Matter of Balance/Voluntary Lay Leader (AMOB/VLL) is a major program activity in the Aging Texas Well's Evidence-based Program Portfolio. State-wide implementation by the Area Agencies on Aging is supported through the Texas Association of Area Agencies on Aging. These analyses were conducted for the Texas A&M Health Science Center School of Rural Public Health Program on Healthy Aging.

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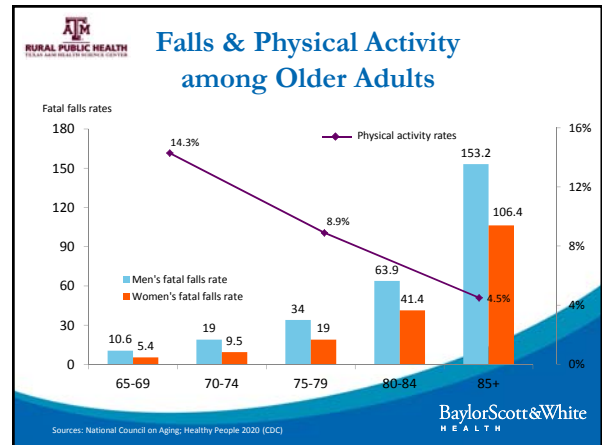
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## Background

- Oldest-old adults: 85 years and older
- Population of oldest-old adults
  - Fastest growing segments of the American population
  - Increase from 5.7 million to 19 million by 2050
- Health status and psychological characteristics
  - More functional limitations, less physical activity, higher fear of falling, lower levels of falls efficacy



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## Purpose of Study


1. To assess the changes in weekly physical activity and numbers of falls from baseline to post-AMOB/VLL intervention
2. To explore protective and risk factors associated with weekly physical activity and number of falls

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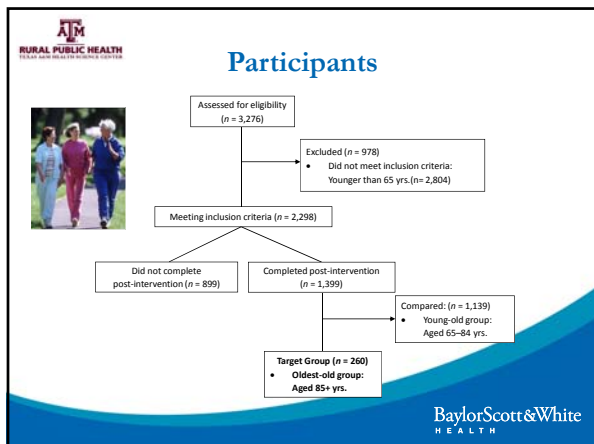
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## A Matter of Balance (AMOB) Falls-Risk Reduction Program

- Evidence-based activity program targeting community-dwelling seniors
  - Incorporates the cognitive-behavioral theories
  - Intended to reduce the fear of falling, increase confidence, & control falls
- 2-hour sessions for 8 weeks
- Lectures, group discussions, problem solving, role-playing, exercise, & individual assignments



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### Oldest-Old vs. Young-Old

	Oldest-Old Group (n = 260)	Young-Old Group (n = 1,139)	F/x <sup>2</sup>
Age <sup>1</sup>	87.84 (±2.84)	76.43 (±5.24)	
Sex			1.59
Male	59 (23.6)	216 (20.0)	
Female	191 (76.4)	863 (80.0)	
Living status			26.53**
Living alone	177 (70.2)	575 (52.4)	
Living with one or more others	75 (29.8)	523 (47.6)	
Ethnicity			21.21**
White not Hispanic	212 (86.5)	775 (72.5)	
African American	21 (8.6)	202 (18.9)	
Hispanic	12 (4.9)	92 (8.6)	
Education levels			.21
Less than High School	45 (17.6)	196 (17.6)	
High School Graduate	69 (27.0)	285 (25.6)	
More than High School	142 (55.5)	632 (56.8)	
Number of sessions attended			
Less than 5 sessions	14 (5.4)	47 (4.1)	.78
5-8 sessions	246 (94.6)	1,087 (95.9)	
Ave. number of chronic conditions <sup>1</sup>	1.64 (±1.14)	1.75 (±1.20)	1.58
Ave. days of physically active <sup>1</sup> (0-7)	3.55 (±2.56)	3.46 (±2.29)	.23
Ave. number of falls <sup>1</sup> (0-30)	.41 (±1.01)	.40 (±.84)	.93

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- ### Measures
- **Two Outcomes**
    - **Physical activity:** the number of days physically active in the previous seven days
    - **Number of falls:** the times of fallen in the previous 30 days
  - **Covariates:** age, sex, race/ethnicity, education, living status, and number of chronic conditions
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- ### Measures
- **Protective factors**
    - **Falls efficacy:** 5 items to manage risk of falls (Tennstedt et al., 1998)
    - **Self-rated health:** general health status
  - **Risk factors**
    - **Fatigue:** degree of tiredness (ranges from 1 to 10)
    - **Health interference:** composite score of extent health interference in activities (e.g., social activities, hobbies, chores, & shopping)
    - **Pain:** degree of pain (ranges from 1 to 10)
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- ### Analyses
- Generalized linear mixed models with a Poisson distribution
  - SAS Proc Glimmix
  - **Three models compared:**
    - Model1: Time
    - Model2: Time, Covariates
    - Model3: Time, Covariates, Protective factors, & Risk factors
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- ### Results
- **Change in Physically Active Days**
    - Significant increases in physically active days between baseline and post-intervention (exp(B) = 1.15, p < .01)
  - **Change in Number of Falls**
    - Significant decreases in number of falls between baseline and post-intervention (exp(B) = 0.70, p < .05)
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### Protective and Risk factors for Physically Active Days

Variables	Model 3			
	Exp(B)	SE	z	95% CI
Time	1.14	.06	2.24*	.02 .24
<b>Covariates</b>				
Sex (Female=1)	.91	.10	-0.97	-.29 .10
Ethnicity (White=1)				
African American	.84	.19	-0.96	-.55 .19
Hispanic	.84	.20	-0.81	-.57 .24
Age	.97	.02	-2.00*	-.06 -.00
Number of Chronic Conditions	.95	.04	-1.50	-.13 .02
Live alone (Living together=1)	1.03	.09	0.31	-.16 .21
Education (HS+ =1)				
HS graduation	.84	.10	-1.96	-.38 .00
Less than HS graduation	.75	.13	-2.52*	-.57 -.05
<b>Protective Factors</b>				
Falls Efficacy	1.03	.01	2.95**	.01 .05
Self-Rated Health	1.17	.05	3.33**	.06 .25
<b>Risk Factors</b>				
Fatigue	.93	.02	-3.76***	-.10 -.03
Health Interference	.95	.01	-4.69***	-.07 -.03
Pain	.97	.02	-2.00*	-.06 -.00

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### Protective and Risk factors for Number of Falls


Variables	Model 3			
	Exp(B)	SE	z	95% CI
Time	.63	.21	-2.28*	-.87 -.06
<b>Covariates</b>				
Sex (Female=1)	1.08	.37	0.23	-.65 .82
Ethnicity (White=1)				
African American	2.16	.65	1.19	-.51 2.04
Hispanic	2.18	.72	1.08	-.64 2.20
Age	.93	.05	-1.26	-.18 .04
Number of Chronic Conditions	.90	.14	-0.78	-.37 .16
Live alone (Living together=1)	1.20	.34	0.53	-.50 .86
Education (HS+ =1)				
HS graduation	1.30	.35	0.74	-.43 .94
Less than HS graduation	.68	.52	-0.74	-1.42 .65
<b>Protective Factors</b>				
Falls Efficacy	.92	.04	-2.25*	-.15 -.01
Self-Rated Health	.58	.18	-3.06**	-.89 -.19
<b>Risk Factors</b>				
Fatigue	1.25	.06	3.46***	.09 .33
Health Interference	1.12	.03	3.17**	.05 .11
Pain	1.14	.06	2.22*	.01 .25

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### Limitations


- Relatively healthy participants
- Frequencies of outcome variables
- Focused on intrapersonal level in protective and risk factors



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### Conclusions



- Effectiveness of evidence-based programs among oldest-old participants
- Importance of protective and risk factors for improvements in weekly physical activity and number of falls for the oldest-old population
- Generalized linear mixed models with a Poisson distribution

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### Implications

- Demonstrate potential benefits in health, healthcare, cost ramifications
- Change age-related stereotypes that very old adults cannot benefit from programs
- Influence organizations/governmental agencies' decisions supporting falls risk reduction programs

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### Questions?



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