#### Effects of a 12-week Minimal Contact Walking Program on CVD Risks among Rural Men and Women

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### Presenter Disclosures E. Laurette Taylor, PhD

The following personal financial relationships with commercial interests relevant to this presentation existed during the past 12:

#### NO RELATIONSHIPS TO DISCLOSE

#### Trends in Physical Inactivity and CVD Costs

- Heart disease has been the leading cause of death in the United States for the past 80 years <sup>1</sup>
- Heart disease causes 26% of all deaths per year <sup>2</sup>
- $_{\odot}~$  In 2006, 631,636 people died of heart disease  $^2$
- Coronary heart disease cost an estimated \$151.6 billion in direct and indirect costs in 2007 <sup>3</sup>
- In 2010, just over half (50.6%) of U.S. adults met the CDC/ACSM physical activity recommendation Improved mental health <sup>4</sup>

#### CVD Risk Factors • Risk Factors for Cardiovascular Disease <sup>5</sup> • Health Conditions • Hypercholesterolemia • Hypercholesterolemia • Hypertension • Obesity & overweight • Diabetes mellitus • Lifestyle Behaviors • Diet

- $\circ~$  Tobacco smoke
- Physical inactivity

## Q

#### Benefits of Regular Physical Activity

- Improved physical functioning <sup>6</sup>
- Improved physical fitness <sup>6</sup>
- Improved mental health <sup>6</sup>
- Reduction in CVD risk factors: 7-10
- o Cholesterol
- o Blood Pressure
- o Overweight/obesity

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#### Walking and CVD Risk Reduction

- Walking related reductions in CVD risk
- Decrease BP, CVD risk <sup>7,9</sup>
- Increase functional capacity <sup>7</sup>
- Increase HDL<sup>8</sup>
   Decrease TO = 11
- Decrease TC and triglycerides <sup>8</sup>
- Dose response between PA and CVD risk<sup>11</sup>
  - Inverse linear dose response between PA and all-cause mortality
     Inverse linear dose response between PA and both the incidence
  - and mortality rates for all CVD and coronary heart disease



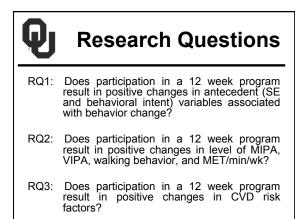
#### Use of Pedometers in Minimal Contact Walking Intervention

- Recommendation of 10,000 steps/day activity goal <sup>12</sup>
- · Goal of increasing steps progressively to
- Use of pedometers and step logs as selfmonitoring tools <sup>7, 13-15</sup>
- Use of minimal contact with efficacy enhancing messages <sup>13-15</sup>

## J

### Purpose

- To study the impact of a 12-week minimal contact walking intervention among insufficiently active rural adults (35-64 years), who are at risk for CVD on:
  - Antecedent variables associated with behavior change
  - o Physical activity level
  - Risk factors for CVD



## Inclusion Criteria

- Men and Women 35-64 years old
- Insufficiently active

   <150 minutes of moderate exercise per week or</li>
   <75 minutes of vigorous exercise per week</li>
- Two or more CVD risk factors
  - ≥55 years old (women) or ≥50 years old (men)
- High cholesterol
- High blood pressure
- BMI ≥ 27
- Family history of CVD
- Current smoker

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### Sample

- n=29 volunteer participants
- Gender
  - Female: 83% (n=24)
  - Male: 17% (n=5)
- 35-65 years of age
- Independent community dwellers in a rural Oklahoma community

## **Q** Dependent Variables

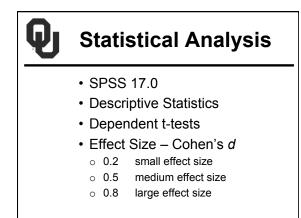
- Research Design One-group pre/post test design
- Antecedent variables Self-efficacy, Intent to walk
- Physical Activity IPAQ Short Form
  - Days of moderate/vigorous activity, hours/day of moderate/vigorous activity
  - Walking days, hours/day
  - Met/min/wk MET level X minutes/day of activity X days/ wk

## Dependent Variables

- Body composition– BMI, Body fat % (BF%), Waist:hip (WHR)
- Clinical variables
  - Resting heart rate (HR), Systolic BP (SBP), Diastolic BP (DBP)
  - $\circ~$  Fasting lipids (TCHOL, LDL, HDL, TRIG)
  - $\circ$  Fasting glucose
  - Framingham risk heart age (Hrtage), 10 yr risk for coronary event (10yrrisk)

## Walking Intervention

- Pedometer (Accusplit Eagle 120) 10,000 step daily target
- · Step-logs for self-monitoring
- Physical activity brochure and review of PA guidelines
- Weekly reminder to submit step-logs + a motivational email/telephone call intended to enhance exercise self-efficacy



Demographics						
n=29		Income	<\$20K	7%		
			\$20-35K	7%		
Age range = 35-63 mean = 51±8			\$35-50K	35%		
			\$50-75K	24%		
White Black	90% 3%		>\$75K	28%		
Hispanic	7%	Marital	Single	3%		
110	200/		Married	90%		
			Widowed	3%		
Degree	55%		Separated	3%		
	n=29 range = 3 mean = 5 White Black Hispanic HS College	n=29 range = $35-63$ mean = $51\pm 8$ White 90% Black 3% Hispanic 7% HS 28% College 17%	n=29 Income range = 35-63 mean = 51±8 White 90% Black 3% Hispanic 7% Marital HS 28% College 17%	n=29 Income <\$20K range = 35-63 mean = 51±8 \$\$20-35K \$20-35K \$35-50K \$50-75K \$50-75K Black 3% Hispanic 7% Marital Single HS 28% College 17% Widowed		

Q	Effects on Psychosocial
U	Variables

Variable	Possible Range	Observed Range	Pre- M (SD)	Post- M (SD)	p-value	ES
Self-Efficacy	0-10	0-10	7.1 (2.1)	7.6 (2.5)	0.121	
Intent days	0-14	3-14	11 (2.4)	11 (2.7)	0.354	

0.

## Effects on Physical Activity Variables

Variable	Possible Range	Pre- M (SD)	Post- M (SD)	p-value	ES
Vigorous days	0-7	0.8 (1.5)	2.6 (3.1)	0.003	0.74
Vigorous min.	0-1440	25.3 (55.7)	58.3 (64.9)	0.008	0.55
Moderate days	0-7	1.1 (1.4)	2.1 (2.0)	0.006	0.58
Moderate min.	0-1440	33.2 (53.7)	72.8 (93.6)	0.009	0.52
Walk days	0-7	3.0 (2.3)	5.5 (1.6)	0.000	1.26
Sitting hours	0-24	6.7 (3.4)	5.8 (2.8)	0.008	0.29
Met/min/wk		2081(3185)	4912(6097)	0.009	0.61

Q	Effects on Clinical Variables						
Variable	Normal Range	Observed Range	Pre- M (SD)	Post- M (SD)	p-value	ES	
HR	60-100	52-104	73.5 (12)	69.4 (7)	0.020	0.43	
DBP	60-80	60-98	80 (8)	78 (7)	0.036	0.28	
BF%	< 25/31%	21.3-55.9	41.6 (8)	40.5 (8)	0.043	0.14	
Glucose	< 100	56-104	96 (16)	78 (13)	0.000	1.23	
Heart age		38-80	63.7 (14.8)	59.2 (13.2)	0.002	0.40	
10 year risk		2.1-30	12.0 (8.3)	9.2 (6.5)	0.000	0.38	

# Conclusions

- Antecedent Variables
  - o No changes in self-efficacy and intent to walk, however both were relatively high at pre-test
  - Suggests that antecedent conditions needed to facilitate 0 behavior change existed at baseline and/or other targeted behavioral antecedents not measured were important (ex. Social support)
- · Physical Activity
- o Significant improvements in all but one PA measure
- Effect sizes ranged from 0.29-1.26 (mostly medium 0 effects)
- Suggests the intervention was effective in motivating 0 and increase in physical activity



#### **Clinical Variables**

- o Significant, yet small effect sizes for HR, DBP, heart age, and 10 year risk for coronary event
- o Significant, yet large effect size for fasting glucose

#### Program efficacy

- Effective in increasing self-reported PA (IPAQ)
- Volume of PA adequate to impact glucose, resting HR, DBP, BF%, and Framingham risk status, but not lipid levels or SRE
- o May require longer duration or greater volume of activity to impact lipids



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