The ecological receptivity of fitness environments for adults with mobility impairments in an urban community

Melissa T. Chang, OTDS
Washington University in St. Louis School of Medicine
Program in Occupational Therapy
APHA 5160.0 Environment, Health and Health Promotion
Wednesday November 7, 2007

Acknowledgements

"Exercise Programs and Health Promotion for the Unserved and Underserved People with Mobility Impairments"

MFH Project

- Goals
  - Decrease number and severity of secondary medical conditions
  - Increase health knowledge and behaviors
- Education
- Exercise program

Introduction

- Health is a state that encompasses physical, mental, and social well-being
- Health promotion and disease prevention must be used as primary healthcare approaches

Introduction

- Benefits
  - Reduces risk of developing secondary conditions
  - Increases strength & endurance
  - Improves functional abilities
  - Prevents social isolation
  - Enhances feelings of personal control
  - Accepts disability
  - Increase community integration

  (Hanson, Nabavi, & Yuen, 2000; Levins, Redenbach, & Dyck, 2004; Maher, Kinne, & Patrick, 1999; United States Department of Health and Human Services [USDHHS], 1996, 2000)

- 56% of people with disabilities report no leisure-time physical activity vs. 36% of individuals without disabilities (USDHHS, 2000)

Indoor environmental barriers

- Tight space
- Lack of accessible exercise equipment
- Lack of accessible parking, bathrooms, & locker rooms
- High membership cost
- Unwelcoming attitudes of staff
- Lack of staff knowledge & training
- Lack of relevant policies
- Lack of information

(Cardinal & Spaziani, 2003; Figoni et al., 1998; Nary, Froehlich, & White, 2000; Rimmer, Riley, Wang, Rauworth, & Jurkowski, 2004)

Theories

- International Classification of Functioning, Disability and Health (WHO, 2001)
- Ecological (Press) Model

  (Lawton & Nahemov, 1973)

Design

- Two-year quasi-experimental, cross-sectional, descriptive study

- Research Question
  - How does the indoor fitness environment support physical activity participation for adults with mobility impairments?

Hypotheses

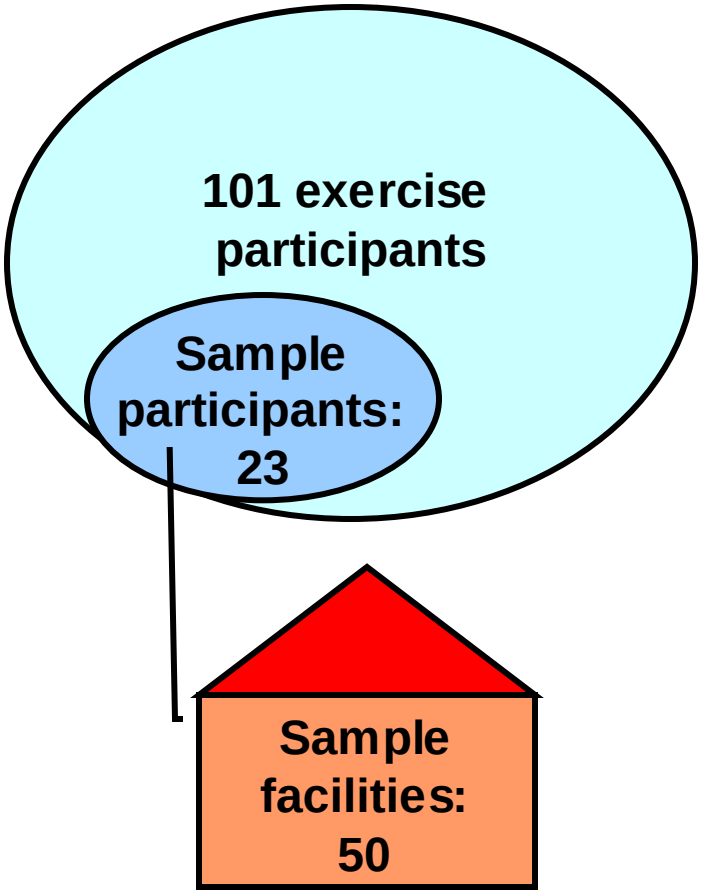
- Fitness facilities would have general accessible features
  - ex. wide doorways
- Fitness facilities would have less accessible fitness center-specific features
  - ex. inaccessible fitness equipment

Eligibility criteria

- 18 or older years of age
- Lived in the St. Louis, Missouri area
- Had a mobility limitation & uses a mobility device
- MD permission
- Completed the initial survey
- Expressed interest

Sample recruitment

- Convenience sample of 23 people out of 101 exercise participants
- Participants identified up to 3 fitness facilities
- Sample of 50 fitness facilities assessed



Sociocultural characteristics

Variables	Mean (SD) or % Sub-sample (N=23)	Overall sample (N=101)
Age (years)	43.14 (12.08)	46.27 (14.93)
Gender (female)	61.9%	51.5%
Race (Caucasian/African-American)	61.9 / 33.3%	53.5 / 38.6%
Current Living Situation (live alone/live with others)	23.8 / 66.7%	29.7 / 66.3%
Personal Income ($0-$14,999/$15,000-$34,999)	66.7 / 27.8%	62.3 / 26.0%
Highest Grade of Education Completed (1 or more year of college)	60.4%	62%

Note: t-test was used to compare groups, $p<.05$

Disability-related characteristics

Variables	Mean (SD) or % Sub-sample	Overall sample
Rated Health Status (good, very good, or excellent)	76%	74.2%
Diagnosis for Mobility Impairment		
Multiple Sclerosis	23.8%	10%
Spinal Cord Injury	19.0%	31%
Cerebral Palsy	9.5%	15.0%
Head Injury	4.8%	1%
Stroke	4.8%	9%
Other	38.1%	20%
Primary Mobility Device		
Manual Wheelchair	38.1%	37%
Cane, Crutches, or Walker	33.3%	27%
Power wheelchair	23.8%	28%
Scooter	4.8%	8%

Note: t-test was used to compare groups, $p<.05$

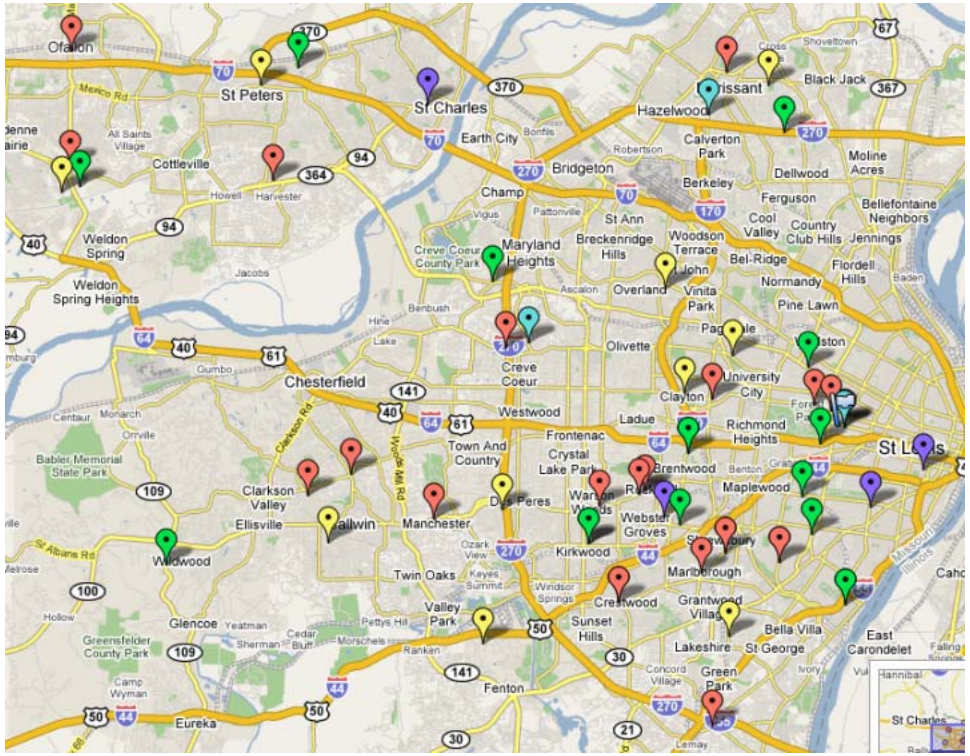
Exercise-related characteristics

Variables	Mean (SD) or % Sub-sample	 Overall sample
Exercised 3+ times a week prior to study	73.3%	48.6%
Exercise Intensity prior to study		
Light (don't sweat or breathe heavily)	33.3%	45.8%
Moderate (breathe a little hard & may sweat)	66.7%	43.1%
Not exercising as much as want to	73.3%	79.2%
Reasons for not exercising as much as want to		
Can't afford special equipment	45.5%	36.8%
Can't get assistance	36.4%	45.6%
Facility does not have accessible equipment	36.4%	29.8%
Can't afford membership	27.3%	38.6%
Other (ex. lack discipline)	27.3%	26.3%
Can't afford transportation	18.2%	19.3%
Don't have time	18.2%	17.5%
Inaccessible facility	18.2%	21.1%
Medical condition limits me	9.1%	10.5%
No transportation to facility	9.1%	12.3%

Note: t-test was used to compare groups, $p<.05$

Fitness facilities (N=50)

- Types
  - **19 privately owned**
  - **14 non-profit**
  - **10 park district/ community recreation centers**
  - **4 yoga centers**
  - **3 rehab facilities**
  - **25 swimming pools**
- Area
  - 11 urban
  - 39 suburban
- Services provided
  - Cardiovascular training
  - Strength training



Measures: Environmental Influences on Exercise Questionnaire (EIEQ)

- Purpose
  - Identifies the environmental factors that influence exercise in an indoor fitness facility
- 32 environmental features
- Rank top 5 most important features
- Administration time: 15 minutes

Accessibility Instruments Measuring Fitness and Recreation Environments (AIMFREE)

- Objectively evaluates the accessibility of specific areas in an indoor fitness or recreation facility
- 15 general & fitness center-specific domains
- 0-100 scoring scale
- Internal consistency
  - r = 0.70-0.90
- Test-retest reliability
  - ICC = 0.70-0.97
- Generalizable to urban & suburban fitness and recreational environments
- Administration time: 1.5-2 hours

(Rimmer, Riley, Wang, & Rauworth, 2004)

Measures: Community Health Environmental Checklist (CHEC)

- Objectively measures the ecological receptivity of the physical environment
- 22 environmental features
- 0-100 scoring scale
- Internal consistency: 0.95
- Strong content validity
- Administration time: 10-90 minutes

(Stark, Hollingsworth, Morgan, & Gray, 2006)

Pre-data collection

- Piloted the EIEQ with 6 peer participants
  - Content validity & general readability established
- Established INTRA-rater reliability
  - 6 facilities assessed twice
  - ICC = .97 (AIMFREE) & .92 (CHEC)
- Established INTER-rater reliability
  - 2 facilities assessed with a peer rater
  - ICC = .96 (AIMFREE) & .86 (CHEC)

Procedures

- Participants completed the EIEQ & identified up to 3 fitness facilities
- Facilities assessed with the CHEC & AIMFREE
- Results shared with participants

Procedures

- Frequency analysis
  - Identify the environmental features most important to the sample's physical activity participation
- Simple descriptive analysis
  - Characterize the central tendency and variability of the AIMFREE & CHEC scores

Findings: What are the most important features for physical activity participation?

1. Affordable membership cost
2. Specialized exercise equipment, Location close to home or work
3. Friendly staff behavior
4. Staff training, Crowds
5. Accessible parking, Curb cuts, Short distance to entrance, Automatic doors, Inside temperature, Accessible bathrooms
6. Ramps
7. Wide entrance door, Elevators, Wide spaces, Level & smooth floors, Ample lighting
8. Accessible showers, Accessible features in good working order, Group exercise classes
9. Accessible locker rooms, Location on public transportation route, Relevant policies, Friendly customer behavior

Findings: What is the level of general ecological receptivity?

- Mean total CHEC score = 75.74
  - SD = 13.41
  - Range = 48.25 - 99.04
- Mean total CHEC scores per facility type
  - Rehabilitation centers = 90.60
  - Park district/community recreation centers = 87.15
  - Non-profit = 73.69
  - Privately owned = 73.06
  - Yoga centers = 55.97

Findings: What is the level of accessibility across domains?

AIMFREE Domains (12)	Mean (SD)
Elevators (N=19)	78.42 (11.84)
Parking (N=46)	77.85 (19.39)
Access Routes & Entrance Area (N=50)	63.74 (10.48)
Programs (N=44)	59.23 (14.74)
Swimming Pools (N=25)	48.52 (11.47)
Equipment (N=50)	47.55 (9.14)
Locker Rooms & Showers (N=50)	46.70 (12.31)
Policies (N=48)	46.19 (11.12)
Information (N=49)	44.00 (11.56)
Professional Support & Training (N=47)	43.23 (13.34)
Bathrooms (N=50)	38.16 (9.01)
Hot Tubs, Whirlpools, Saunas, & Steam Rooms (N=20)	33.50 (14.18)

Findings: How does the indoor fitness environment support physical activity participation?

AIMFREE domain scores with EIEQ rankings of important features

AIMFREE domains (12)	Mean (SD)	Ranking of importance
Elevators (N=19)	78.42 (11.84)	7
Parking (N=46)	77.85 (19.39)	5
Access Routes & Entrance Area (N=50)	63.74 (10.48)	5, 6, 7
Programs (N=44)	59.23 (14.74)	8
Swimming Pools (N=25)	48.52 (11.47)	N/A
Equipment (N=50)	**47.55 (9.14)**	**2**
Locker Rooms & Showers (N=50)	46.70 (12.31)	9
Policies (N=48)	**46.19 (11.12)**	**1**
Information (N=49)	44.00 (11.56)	0
Professional Support & Training (N=47)	**43.23 (13.34)**	**3, 4**
Bathrooms (N=50)	38.16 (9.01)	5
Hot Tubs, Whirlpools, Saunas, & Steam Rooms (N=20)	33.50 (14.18)	0

Conclusions

- Fitness center-specific features are crucial
- Fitness center-specific areas were among the least accessible
- Indoor fitness centers do not support what think they people need
- Lack of environmental supports negatively influence participation in physical activity

Recommendations

- Evaluate the fitness center's mission
- Go beyond the ADA
- Make space
- Purchase universally-designed exercise equipment
- Provide staff support & training
- Get the word out!

Study limitations

- Strong selection bias
  - Participants were currently exercising
  - The EMC was highly accessible

Directions for future research

- Intervention study with a fitness facility to improve accessibility and receptivity
- Longitudinal study of the participants' current exercise participation