

RERC on Recreational Technologies and Exercise Physiology Benefiting Persons with Disabilities

D1- Virtual Exercise Environments (VEE) to Facilitate Exercise Participation and Adherence

Laura Meyer, MSOTR, PhD(c)

Leslie McLachlan, MSPT



Technology for a Healthier Lifestyle



Exercise and Disability

- General benefits of exercise
- Exercise and people with disabilities: prevention of 2° conditions and obesity
- Benefits of exercise for people with cognitive disabilities
- Benefits of exercise for people with physical disabilities

Barriers to Exercise Adherence

- Elimination of health disparities between disabled and nondisabled populations must address barriers to exercise participation for individuals with disabilities (Rimmer, 2005).
- Living conditions: low staffing ratios, fitness parameters, finances
- Physical environment of exercise facilities

Barriers to Adherence, cont'd.

- Exercise equipment and personnel training
- Perception of recreation facilities and personnel
- Self-consciousness and perceived lack of support
- Lack of positive portrayals in media

Virtual Reality

- New technology for increasing adherence to exercise
- Software and hardware for input and output
- Provides realistic, interactive situations
- Various applications: Entertainment, training, rehabilitation

Virtual Reality and Exercise

- Engagement
- Positive self-beliefs and enhanced self-efficacy
- Enjoyable exercise experience
- Realistic effect
- Positive effects of virtual reality on exercise adherence found in nondisabled individuals (Annesi, 2001).

Virtual Reality, Exercise and Disability

- Virtual environments may address issues of social isolation
- Competitive aspect
- Engagement and immersion promote adherence
- “Experience” of outdoor activity
- Participation in formerly unfeasible activities

Virtual Exercise Environments (VEE) to Facilitate Exercise Participation and Adherence

- **Phase 1:** Exercise with no external distractions or entertainment
- **Phase 2:** Exercise with entertainment in the form of television programming
- **Phase 3:** Exercise with video monitor VEE
- **Phase 4:** Exercise with VEE goggles
- **Phase 5:** Exercise with VEE goggles with head position sensors

Phase 1 Participants



Phase 2 Participants



Positive Outcomes from Participating in a Group Exercise Setting

- Participants enjoyed the routine/regular setting
- Individualized attention
- Social outlet
- Equipment was easy to use independently
- Enjoyed having entertainment
- Liked losing weight

Challenges to Creating an Optimal Exercise Environment

- Would prefer to listen to music
- Found television too distracting while exercising
- Did not like the television program options
- Safety issues with self selection of speed
- Weather and transportation issues
- Would prefer to exercise outside