

## The Effects of Computer-Based Technology on the Health and Wellness of Latino Adults with Intellectual Disabilities

By:

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### Introduction

- Over 650 million people across the globe have a disability, which represents 10 percent of the world's population (United Nations, 2008; World Health Organization WHO, 2007).
- One of the biggest challenges people with Autism and Developmental Disabilities face, according to Phillips et al. (2004), is the lack of financial resources to secure effective and sustainable exercise and nutrition programs.
- iPads are increasingly used in education and Day Training (DT) settings for adults with Autism (Neely et al. 2013; O' Malley et al. 2014) and adults with Intellectual Disabilities (Korda & Itani, 2011; Guardino & Fullerton, 2012).
- Although computer-based technology is known to contribute to sedentary leisure-time behaviors (e.g., computer games), technology has been used to promote physical activity and change exercise behavior.
- The objective of the present study was to: a) explore ways in which assistive technology can provide positive and enjoyable leisure experiences, b) increase self-esteem and sense of self-empowerment, and c) change unhealthy lifestyle choices.

### Methods

#### Participants:

- 16 adults with intellectual disabilities (4 w/ Autism; 4 w/ Down Syndrome; 4 w/ Mild ID; 4 w/ Moderate ID)
- 8 = Male; 8 = Female
- Age range: 24 to 64
- All participants had fair to good motor skills, vision, and hearing skills

#### Setting:

- A 40' X 40' Classroom/Learning Lab w/ florescent lighting

#### Apparatus:

- Sixteen 16GB white Apple iPads (4<sup>th</sup> Gen)
- Sixteen work stations w/ sixteen chairs
- Sony 3D Home Theater Projector w/ 300 watt surround sound system (to provide connectivity for the streaming services offered by Apple TV and Microsoft products)
- One 96" X 120" Projection Screen
- Learning Lab Facilitator who is a trained Direct Service Professional (DSP)
- Learning Lab Curriculum (developed by Emory, 2015)
- 11.8" x 11.8" Taylor Glass Digital Scale w/ silver back painted tempered glass platform

#### Experimental Design:

- Multiple Subject Factorial Design
- *Dependent Variable(s)*: Individual & Group weights/behavior
- *Independent Variable*: Course Curriculum Administered on iPads

#### General Procedures:

- *Screening/Eligibility*: participants were ineligible if they were below 18 or above 65 years of age, had a history of myocardial infarction, stroke, or cancer in the past 5 years; diabetes, angina, or orthopedic or joint problems that would prohibit exercise; major psychiatric issues; and current, planned, or previous pregnancy within 6 months
- Participants also had to pass level 5 (or higher) of a Learning Lab Curriculum (Emory, 2015) designed to teach individuals with Intellectual Disabilities how to use an iPad and have current physicals within the past 6 months.
- All participants attended an initial 1 hour introductory group weight loss session on *behavioral weight control* led by a Board Certified Behavior Analyst (BCBA) and Qualified Intellectual Disability Provider (QIDP) where informed consent was obtained and baseline measures were conducted.
- All participants were given a face-to-face group weight loss session and access to iPads with organized links to internet weight loss resources. Internet Behavior Therapy was provided in a sequence of 16 weekly behavioral sessions.
- To ensure that all participants had a sufficient level of computer and Internet knowledge, the basics of navigation and login procedures were demonstrated on an iPad using the Learning Lab Curriculum developed by Emory (2015).
- Apple's default content filtering system was used to restrict content and objectionable material (e.g., adult oriented material, pornography, hate or intolerance oriented sites, etc.) on the internet.
- The importance of self-monitoring was stressed and participants were encouraged to use self-monitoring Web resources to track their daily diet and exercise.

#### Dependent Measures Analysis:

- The primary dependent measure was change in body weight. Individual weight was measured in the lab (in private) at baseline, and then twice weekly, in light street clothing, without shoes, and on a calibrated scale.
- Dietary intake was not measured throughout the duration of this study due to external variables (i.e., researchers could not account for what the participants ate outside of the Learning Lab).

### Results

- There was a total decrease of 73.8 lbs among all 16 participants over the duration of this study, which averages to a 4.6 lb reduction per participant.
- Among the 16 participants, 14 resulted in a reduction in weight, 1 participant remained the same, and 1 participant gained weight from the initial onset to the end.
- The men in the study had an overall weight reduction of 44.9 lbs, an average of 5.6 lbs per man. The women, however, had an overall weight reduction of 28.9 lbs, an average of 3.61 lbs per woman.

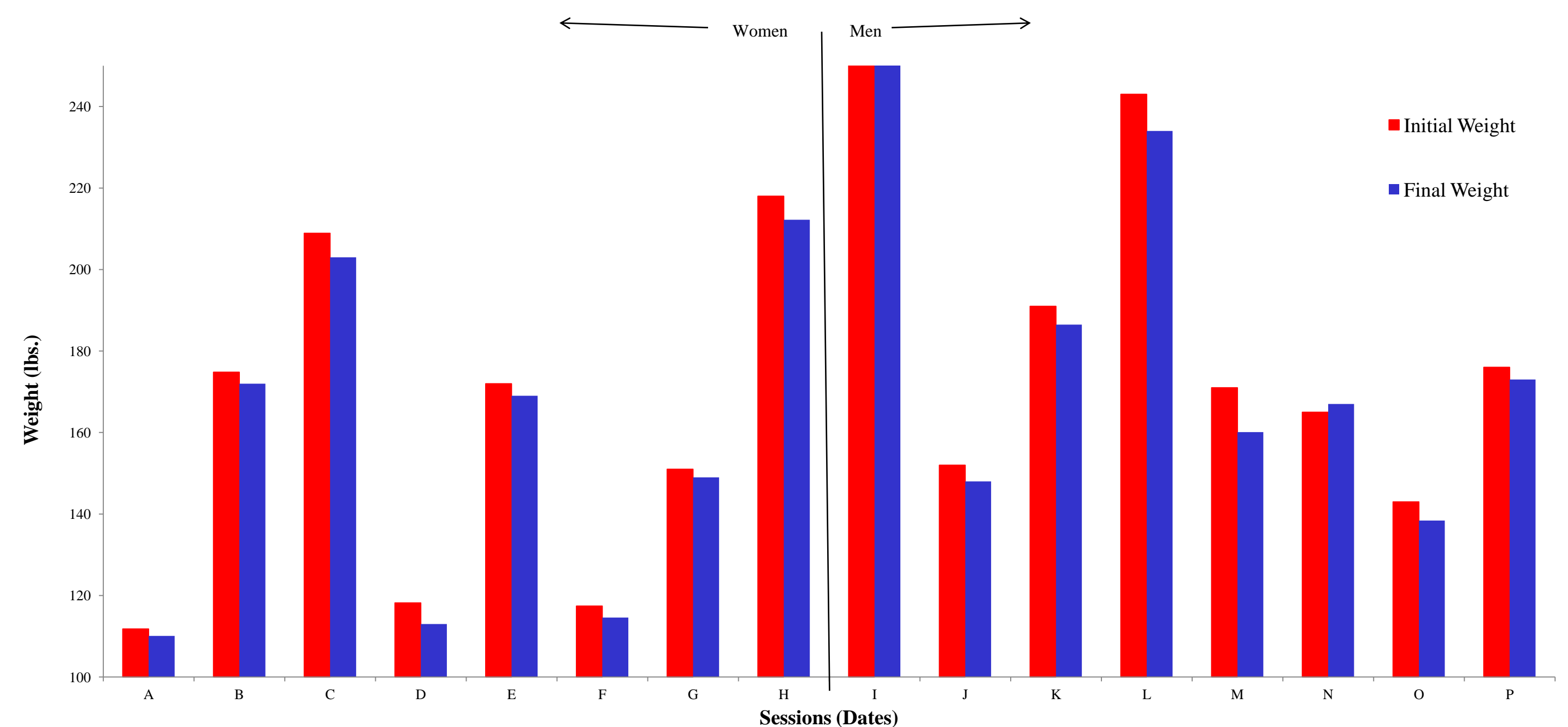


Figure 1: Displays the graphical analysis of each participant at individual & group levels

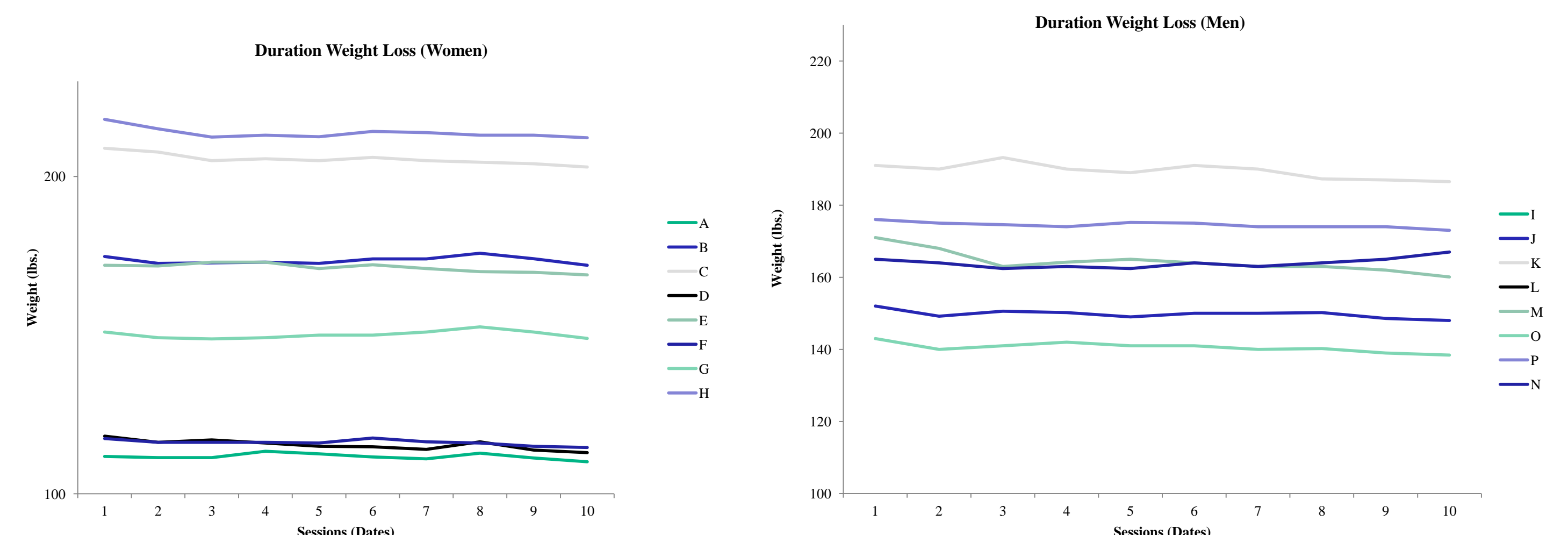


Figure 2: Displays the graphical analysis of each Female participant at individual & group levels.

Figure 3: Displays the graphical analysis of each Male participant at individual and group levels.

### Discussion

- The apps and features used for exercise purposes can function as powerful reinforcers to facilitate and possibly sustain high rates of exercise in adults with Intellectual Disabilities.
- The present study will be extended with the addition of weekly e-mail messages from the facilitator regarding individual behavioral weight loss and session feedback.
- Implications for future studies should replicate these procedures with a control group and statistical analyses for measurement of significant differences in intervention.
- **Contributors:** Mirta Bueno, Research Assistant; Raquel Reyes, Learning Lab Facilitator; Dennis Warren, Director of IT; and Comcast for their generosity in donating the technology used in this study.

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