An Internet-Based Walking Program for Women

Jessica A. Whiteley

Dissertation submitted to the Faculty of the
Virginia Polytechnic Institute and State University
in partial fulfillment of the requirements for the degree of
Doctor of Philosophy
in
Psychology

Richard A. Winett, Chair
Eileen Anderson
George Clum
Jack Finney
Robert Stephens

December 14, 2001
Blacksburg, Virginia

Keywords: physical activity, Internet, women, fitness

Copyright 2001, Jessica A. Whiteley
An Internet-Based Walking Program for Women

Jessica A. Whiteley

(ABSTRACT)

The primary objective of this project was to determine if a walking program based on social cognitive theory and delivered via the Internet could improve fitness levels in women. Fifty-three women were randomized to either an Educational Only condition or a Social Cognitive theory (SCT) condition. The SCT condition emphasized personalized mastery steps and goals to increase walking pace while the Education Only condition primarily provided general physical activity and walking information. The One-Mile Walk Test (Kline et al., 1987), an objective measure of fitness, was conducted to determine if women in the SCT condition had greater improvements in their fitness levels. The psychosocial measures of knowledge, depression, self-efficacy, outcome expectations, social support, and decisional balance pros and cons were administered to determine if changes were evidenced in these psychosocial measures pre to post treatment. Results indicated that both conditions had significant improvements in their fitness levels as measured by their walk test times and estimated VO₂ max. The SCT condition improved their time on the walk test by 69 seconds at post-test with an increase in estimated VO₂ max of 2.65 ml/kg/min whereas the Education Only condition improved their time on the walk test by 37 seconds with an increase in estimated VO₂ max of 1.1 ml/kg/min. Both groups also evidenced change on the self-report measures of stage of change with the SCT condition advancing 1.25 stages and the Education Only condition advancing .76 stages. Total minutes walked per week in the SCT condition increased by 31 minutes to 94 minutes total per week and by 47 minutes to 82 minutes total per week in the Education Only condition. Few of the psychosocial measures evidenced change pre to post. Of note, however, was the significant decrease in self-efficacy seen in the Education Only condition. In summary, both programs were able to make improvements in participants’ fitness levels and time spent walking per week. However, the SCT condition, with its guided mastery experiences, had greater fitness improvements that are likely to have a larger clinical health impact.
# TABLE OF CONTENTS

Table of Contents ............................................................................................................... iii

Chapter 1: Introduction ....................................................................................................... 1
  1.1 Prevalence of Physical Activity ................................................................. 1
  1.2 Physical Activity and Fitness Defined ....................................................... 1
  1.3 Physical Activity Recommendations ....................................................... 2
  1.4 Epidemiological and Experimental Studies on Benefits of Physical Activity .... 3
  1.5 Walking Studies ....................................................................................... 4
  1.6 Self-help or Minimal Exercise Interventions ............................................. 6
  1.7 Behavior Change and the Internet ............................................................ 7
  1.8 Social Cognitive Theory (SCT) as a Theoretical Framework ..................... 8
  1.9 Summary ............................................................................................... 10

Chapter 2: Methods ........................................................................................................... 11
  2.1 Pilot Study ............................................................................................ 11
  2.2 Study Population .................................................................................. 11
  2.3 Procedures ........................................................................................... 11
  2.4 Measures ............................................................................................ 16
  2.5 Sample Size Calculations ................................................................... 19
  2.6 Hypotheses ......................................................................................... 20

Chapter 3: Results ............................................................................................................. 21
  3.1 Demographics ....................................................................................... 21
  3.2 Randomization ..................................................................................... 21
  3.3 Outcome Results .................................................................................. 22
  3.4 Post-test Between Group Differences .................................................... 22
  3.5 Within-group treatment effects .............................................................. 23
  3.6 Intent to Treat Analyses ...................................................................... 24
  3.7 Repeated Measures ............................................................................. 25
  3.8 Correlations ......................................................................................... 25
  3.9 Participation and Adherence ................................................................. 26
  3.10 Evaluations ....................................................................................... 27
  3.11 Self-Monitoring Forms ..................................................................... 28
  3.12 Time Requirements ......................................................................... 28

Chapter 4: Discussion ........................................................................................................ 29
  4.1 Fitness and Activity ............................................................................. 29
  4.2 Psychosocial Measures ...................................................................... 31
  4.3 Participation and Adherence ................................................................. 33
  4.4 Program Evaluation .......................................................................... 33
  4.5 Limitations ......................................................................................... 34
  4.6 Future Directions .............................................................................. 34
References .................................................................................................................................. 37

List of Tables

Table 1: Comparison of 1990 and 1998 ACSM Position Stands for Physical Activity... 45
Table 2: Measurement Schedule .......................................................................................... 46
Table 3: Demographic Characteristics ............................................................................... 47
Table 4: Means of Outcome Variables by Condition ......................................................... 48
Table 5: Means of Repeated Measures .............................................................................. 49
Table 6: Correlation Matrix ............................................................................................... 50
Table 7: Average paces per week reported on the self-monitoring forms ....................... 51

Curriculum Vitae ................................................................................................................ 52