



Published in final edited form as:

Health Psychol. 2012 January ; 31(1): 126–129. doi:10.1037/a0025567.

The CHOICE Study: A “taste-test” of utilitarian vs. leisure walking among older adults

Eric B. Hekler, PhD¹, Cynthia M. Castro, PhD¹, Matthew P. Buman, PhD¹, and Abby C. King, PhD²

¹Stanford Prevention Research Center, Department of Medicine, Stanford University School of Medicine, Stanford, CA, USA

²Department of Health Research & Policy, and Stanford Prevention Research Center, Department of Medicine, Stanford University School of Medicine, Stanford, CA, USA

Abstract

BACKGROUND—Utilitarian walking (e.g., walking for transport) and leisure walking (e.g., walking for health/recreation) are encouraged to promote health, yet few studies have explored specific preferences for these two forms of physical activity or factors that impact such preferences.

OBJECTIVE—A quasi-experimental crossover design was used to evaluate how training underactive midlife and older adults in each type of walking impacted total steps taken and how it was linked to their subsequent choice of walking types.

METHODS—Participants (N=16) were midlife and older adults (M age=64±8 yrs) who were mostly women (81%) and white (75%). To control for order effects, participants were randomized to instruction in either utilitarian or leisure walking for 2 weeks and then the other type for 2 weeks. Participants then entered a 2-week “free choice” phase in which they chose any mixture of the walking types. Outcome variables included walking via OMRON pedometer and the ratio of utilitarian vs. leisure walking during the free-choice phase. Participants completed surveys about their neighborhood (NEWS) and daily travel to multiple locations.

RESULTS—Instruction in leisure -only, utilitarian-only, and a freely chosen mixture of the two each resulted in significant increases in steps taken relative to baseline ($p < 0.05$). Having to go to multiple locations daily and traveling greater distances to locations were associated with engagement in more utilitarian walking. In contrast, good walking paths, neighborhood aesthetics, easy access to exercise facilities, and perceiving easier access to neighborhood services were associated with more leisure walking.

DISCUSSION—Results from this pilot study suggest that midlife and older adults may most easily meet guidelines through either leisure only or a mixture of leisure and utilitarian walking, and tailored suggestions based on the person’s neighborhood may be useful.

Corresponding Author: Eric Hekler, Ph.D., Assistant Professor, Nutrition Program, College of Health Outcomes @ASU, Arizona State University, 500 North 3rd St., Phoenix, AZ 85004, Office # (602) 827-2271, ehekler@asu.edu.

Publisher's Disclaimer: The following manuscript is the final accepted manuscript. It has not been subjected to the final copyediting, fact-checking, and proofreading required for formal publication. It is not the definitive, publisher-authenticated version. The American Psychological Association and its Council of Editors disclaim any responsibility or liabilities for errors or omissions of this manuscript version, any version derived from this manuscript by NIH, or other third parties. The published version is available at www.apa.org/pubs/journals/hea.

Keywords

Physical Activity; Preferences; Perceived Built Environment; Walking Intervention; Utilitarian Physical Activity

Regular physical activity has been linked with a reduced risk of chronic diseases (e.g., heart disease) and improved mental health and quality of life (Physical Activity Guidelines Advisory Committee, 2008). Promoting brisk walking is a common intervention strategy for older adults and may confer a number of health effects (Slentz, Houmard, & Kraus, 2007), though some research suggests that improvements in cardiorespiratory fitness may confer particularly salient effects (Lee et al., 2010). Despite this, the benefits of an active lifestyle for mid-life and older adults remain substantial and are strongly recommended by a number of national organizations (Nelson et al., 2007).

Scientists have noted how promoting utilitarian walking (i.e., walking for transport or other utilitarian purposes) may be particularly useful in achieving national physical activity recommendations. Despite increased interest in this type of activity, few studies have explored whether utilitarian walking alone can significantly increase total walking. Understanding if utilitarian-only walking is useful in significantly increasing physical activity and how instructions to do so should be given may be valuable for healthcare professionals. Utilitarian walking may require several circumstances (e.g., access to places to walk, a schedule that permits this type of travel) that would need to be overcome to confer useful health benefits. As such, personalized training based on a person's context may be vitally important for effectively promoting utilitarian walking. In addition, little research has systematically examined midlife and older adults' preferences related to utilitarian vs. leisure walking. Finally, relatively few if any intervention studies have explored factors that might impact individuals' walking type choices. In particular, an individual's neighborhood environment (e.g., good walking paths, neighborhood safety) or psychosocial characteristics (e.g., planning preferences) may play an important role in influencing the choice between these two forms of activity. An understanding of built environment factors that may impact individuals' walking type preferences could be used by community and healthcare professionals to give more tailored advice for being more physically active.

This pilot study had four aims: a) examine if pure utilitarian, pure leisure, and a mixture of both walking types could significantly increase walking among underactive midlife and older adults; b) explore if there were any differences in walking amounts achieved through utilitarian only, leisure only, or a mixture of the two; c) explore midlife and older adults' preferences for the two walking types following initial training in both utilitarian and leisure walking; and, d) examine if baseline factors, including neighborhood characteristics, predicted walking choices.

Methods

Participants

Participants were healthy adults who were eligible if they were: a) 50 years or older, b) inactive (i.e., <60 min/week of self-reported moderate or more intensive physical activity), and c) able to start a walking program based on the Revised Physical Activity Readiness Questionnaire (Cardinal & Cardinal, 1995).

Procedures

Participants were recruited via local advertisements. Participants who expressed interest were screened and eligible participants were invited to an information session. Eligible

participants completed an Institution-approved informed consent and underwent baseline assessment.

Participants participated in a 7-week intervention study with four phases: baseline (1 week), phase one (2 weeks), phase two (2 weeks), and free choice (2 weeks). Participants visited Stanford for five instructional sessions corresponding with the start of the four phases and a final debriefing visit at the end of the study. Following an initial study orientation, participants were given a pedometer that they were asked to wear for the duration of the study. Following the 1 week baseline phase, participants completed questionnaires and were randomized to either utilitarian or leisure walking first for two weeks (phase one). Randomization was accomplished to control for any impacts of time or training order on study outcomes. To further ensure that all participants were engaging in the assigned walking type, all participants were contacted three times by phone during each phase. During these contacts, health educators asked participants about all bouts of walking and classified all activities into leisure or utilitarian walking. If participants were not engaging in the appropriate activity, which was rare, the health educators coached them on the importance of engaging in only the walking type being specifically targeted during that time period. An action plan was developed with participants to aid them in meeting their walking goals. After two weeks of exposure to and practice in one walking type, participants received instruction and practice in the other walking type for the next two weeks (phase 2). After exposure to both walking types, participants entered a two-week “free choice” phase whereby they were allowed to choose any ratio of the two walking types (i.e., utilitarian walking, leisure walking, or some combination of the two walking types). After the free choice phase, participants returned to provide final study data, return the pedometer, and be debriefed.

Interventions

The intervention was based on the evidence-based protocols derived from the Stanford Active Choices intervention (Castro & King, 2002). Well-established behavioral strategies were used in each intervention phase, such as individualized goal setting, self-monitoring, tailored behavioral feedback, and problem solving around barriers to walking. Participants received identical behavioral training for each walking type, (i.e., leisure and utilitarian). All participants were given information about the national recommendations to engage in 150 minutes per week of moderate intensity physical activity via at least 10 minute bouts (Physical Activity Guidelines Advisory Committee, 2008). Participants were specifically instructed to engage in “brisk” walking, which was defined as walking that increased respiration and/or heart rate and was approximately 3-4mph.

Walking type was defined based on the primary purpose of the walk. Utilitarian walking was defined as walking for the primary purpose of accomplishing errands or getting somewhere. Examples included walking to work or another venue, parking farther away from a destination, and walking while at work rather than emailing, telephoning, or faxing coworkers or peers. Dog walking was defined as utilitarian walking if the person would not have otherwise gone walking without the dog and the primary purpose was walking the dog, not health. Leisure walking was defined as walking specifically for fitness, health, or physical recreation. Examples included walking for exercise only or walking on a treadmill. Long walks for health that included a dog were defined as leisure activity because the primary purpose of the walk was for the individual’s health, with the dog serving as a companion.

Measures

Demographic information (e.g., age, gender, race/ethnicity) was gathered at baseline. Total steps taken was measured continuously via the Omron Pedometer (Model # HJ-7210ITC, Omron, Inc. Schaumburg, IL). The OMRON pedometer has been used in previous intervention research and has been shown to be a reliable and valid measure of walking (Holbrook, Barreira, & Kang, 2009).¹ Participants completed the Neighborhood Environment Walkability Scale (NEWS) (Saelens, Sallis, Black, & Chen, 2003). The NEWS is a reliable and valid measure of perceptions of the neighborhood environment (Saelens, et al., 2003). Four items were developed concerning traveling to multiple locations during the day (e.g., “I am often traveling to multiple locations throughout the day”) with 0 (not at all true) to 4 (completely true) response options (Cronbach’s $\alpha=0.78$).

The ratio of utilitarian vs. leisure walking reported during the free choice phase (hence referred to as the free choice ratio) was the outcome measure for aims c and d. Participants were asked to complete the following question: “How did you divide your walking time during the final 2-week period?” (NOTE: total utilitarian and leisure walking percentages should add up to 100%). To ensure the accuracy of this measure, participants’ activities were monitored via 3 telephone contacts at which time the health educator helped the individual in classifying all bouts of walking as either utilitarian or leisure walking.

Statistical Analyses

Paired sample t-tests were used to examine whether: a) each walking type resulted in significantly more walking steps relative to baseline, and b) there were significant differences between utilitarian-only and leisure-only walking steps occurring during the two, two-week training periods. To control for time effects, the order of training was randomized. Mid-life and older adults’ choices for utilitarian vs. leisure walking was examined via descriptive statistics. Pearson product moment correlations were used to examine the relations between neighborhood characteristics and the free-choice ratio.

Results

Descriptive Statistics

Thirty-two people were screened, of whom 11 were ineligible and 1 was not interested following screening. Most individuals were ineligible because they engaged in more than 60 minutes of physical activity per week. Of the 20 individuals that attended the study orientation session, 4 declined study participation, resulting in a final sample of 16 enrolled participants. All 16 participants completed the study (0% dropout), with an even distribution of participants in the utilitarian first group (n=8) and leisure first group (n=8). The mean age was 64.3 ± 7.5 years, with 81.3% women (n=13); 75% white (n=12); 56.3% with bachelor’s degree or higher (n=9); and 56.3% employed full or part time (n=9). No differences on these variables were observed between the utilitarian-first or leisure-first conditions.

Walking Amounts by Study Phase

Participants walked, on average, $M=4077\pm 1900$ steps/day. Results indicated significant mean improvements in pedometer steps per day relative to baseline for all three 2-week study phases (i.e., leisure-only $M=+2534$ steps/day, utilitarian-only $M=+1474$ steps/day, free-choice period $M=+1974$ steps/day) ($ps<0.05$). Further, more mean steps/day were

¹Although the OMRON calculates, “aerobic” steps and minutes, one of the criteria for classification as “aerobic” includes a stipulation of 10 minutes of continuous activity. This stipulation creates a potential bias for under-classification of utilitarian walking as utilitarian activity was reported to include more stop-and-go moments. As such, we did not include these measures in our analyses.

observed during the leisure-only phase relative to the utilitarian-only phase (*leisure-only* $M=6611\pm3102$ vs. utilitarian-only $M=5550\pm2402$, $p<0.05$).

Walking Type Preferences and Choices

At baseline, participants were asked to anticipate their preference for utilitarian versus leisure walking (with a forced choice response of utilitarian, leisure, or a 50/50 mixture). Results indicated an even distribution, with 37.5% ($n=6$) preferring utilitarian, 31.5% ($n=5$) preferring leisure, and 31.5% ($n=5$) preferring a 50/50 mixture. No differences were observed between utilitarian-first or leisure-first walking conditions on baseline preferences for one form of walking over the other or on the perceived difficulty of each type of activity ($ps >0.90$). During the final free choice phase, one participant engaged in pure utilitarian walking, one engaged in pure leisure walking, and the rest engaged in a mixture of the two, with 4 participants engaging in a 50/50 balance, 4 preferring a mixture but with more leisure walking, and 6 preferring a mixture but with more utilitarian walking.

Table 1 reports results exploring if perceived neighborhood factors predicted the free choice ratio. Results indicated that, during the free-choice phase, more leisure walking, relative to utilitarian walking, occurred in participants who reported access to walking paths, better neighborhood aesthetics, access to exercise facilities, and easier access to services ($ps <0.05$). More utilitarian walking, relative to leisure walking, occurred in participants who reported traveling to multiple locations during the day ($p<0.05$), and a trend occurred for those that reported a longer distance to locations within their neighborhood ($p=0.06$).

Discussion

This pilot study had four primary findings. First, not unexpectedly, pure utilitarian, pure leisure, and a mixture of utilitarian and leisure walking all resulted in significant increases in walking relative to baseline during the two-week periods in which each was targeted. Second, daily pedometer readings indicated that pure leisure walking resulted in more steps/day during that two-week phase relative to pure utilitarian walking. Third, midlife and older adults overall tended to utilize a mixture of utilitarian and leisure walking when attempting to meet the current national guidelines. Fourth, neighborhood characteristics were associated with walking types.

To the best of the authors' knowledge, no previous research has explored specific instruction in pure utilitarian-only walking to determine if it could be utilized to increase physical activity levels as effectively as leisure-only or a mixture of the two activities. Further, no previous studies have explored mid-life and older adults' choices for engaging in leisure vs. utilitarian walking following instruction. Of note, the pedometer data revealed that leisure-only walking instruction resulted in more mean steps per day than utilitarian-only walking instruction. These results suggest that although utilitarian walking may be valuable for increasing walking, leisure walking instruction may result in greater increases in daily steps taken among the type of mid-life and older adults enrolled in this initial investigation. *Post hoc* data analyses (not shown) revealed that the difference between utilitarian and leisure walking was more pronounced among participants who were instructed in leisure walking first, suggesting that the order of walking instruction may influence intervention effectiveness. Specifically, training first in leisure walking (the more familiar form of walking for most participants) may have the unintended consequence of reducing the impact of utilitarian walking training. With such a small sample and no *a priori* hypotheses about this, no firm conclusions should be drawn, although it would be worthwhile to explore this observation further as this may have important implications for intervention design.

The results also indicated that the neighborhood environment may influence walking type. Several perceived neighborhood characteristics (including access to walking paths and favorable environmental aesthetics) appeared to enable leisure walking. Although counter to expectations, the results suggesting that easier access to neighborhood services predicted more leisure walking, as opposed to utilitarian walking, are consistent with anecdotal evidence from the participants. Specifically, all participants were informed of the physical activity guidelines, which include a stipulation for 10-minute bouts of walking. Several participants reported not walking to a store or other neighborhood destination to meet their utilitarian walking goals because it would take less than 10 minutes and would not “count.” On the other hand, certain external factors made utilitarian walking easier or preferable, including traveling to multiple locations throughout the day and having a sizeable distance between neighborhood locations to meet the 10-minute bout minimum. While the Guidelines suggest a limited scientific evidence base for exploring if bouts shorter than 10 minutes could still have health benefits (Physical Activity Guidelines Advisory Committee, 2008), recent research has highlighted the potential positive health benefits of even shorter bouts of activity (Lutes, Winett, Barger, Wojcik, & Herbert, 2008). Our results suggest that the 10-minute recommendation may have the unintended effect of dissuading individuals from engaging in utilitarian walking because it would not “count.”

Limitations

The small sample size limits statistical power for finding associations. A larger sample is needed to replicate the results and ensure their stability. Extending the study time periods to include longer instruction and a longer free-choice period would also strengthen the conclusions related to neighborhood characteristics predicting walking type. These limitations notwithstanding, the general patterns and associations found were fairly robust and increase confidence in the results.

Conclusion

This pilot study suggested that leisure-only, utilitarian-only, and a mixture of the two resulted in more walking steps relative to baseline. Further, leisure-walking instruction resulted in greater daily steps relative to utilitarian-walking instruction. With regard to preferences, midlife and older adults chose to be physically active through both utilitarian and leisure walking. Finally, the perceived built environment may impact individuals' preferences for walking type. It may be worthwhile to explore further the behavioral impacts of the 10-minute bout recommendation in the guidelines, as it may have an unintended consequence of reducing utilitarian walking. Overall, our results suggest that community and healthcare professionals should continue to suggest both utilitarian and leisure activity but also consider that leisure forms of activity may result in more walking in at least some populations of midlife and older adults, and neighborhood environmental features may impact which walking types may be optimal for an individual.

Acknowledgments

Funding Source: Drs. Hekler and Buman were supported by Public Health Service Training Grant 5 T32 HL 007034 from the National Heart, Lung, and Blood Institute. Dr. King was funded in part by Public Health Service grants R-01HL077141 from the National Heart, Lung, and Blood Institute and R-21CA127511 from the National Cancer Institute. No funding agency was involved in the design or conduct of the research. The authors would like to thank Natara Garovoy, PhD and Sarah French for preliminary work on intervention materials, and Carolyn Prosak for her expert administration of the intervention to study participants.

References

- Cardinal BJ, Cardinal MK. Screening efficiency of the revised physical activity readiness questionnaire in older adults. *Journal of Aging & Physical Activity*. 1995; 3(3):299–308.
- Castro CM, King AC. Telephone-assisted counseling for physical activity. *Exerc Sport Sci Rev*. 2002; 30(2):64–68. PMID: 11991539. [PubMed: 11991539]
- Holbrook EA, Barreira TV, Kang M. Validity and reliability of Omron pedometers for prescribed self-paced walking. *Medicine & Science in Sports & Exercise*. 2009; 41(3):670–674. PMID: 19204582. [PubMed: 19204582]
- Lee DC, Sui X, Ortega FB, Kim Y, Church TS, Winett RA, Blair SN. Comparisons of leisure-time physical activity and cardiovascular fitness as predictors of all-cause mortality in men and Women. *British Journal of Sports Medicine*. 2010 doi: 10.1136/bjism.2009.066209.
- Lutes LD, Winett RA, Barger SD, Wojcik JR, Herbert WG. Small changes in nutrition and physical activity promote weight loss and maintenance: Three month evidence from the ASPIRE randomized trial. *Annals of Behavioral Medicine*. 2008; 35:351–357. [PubMed: 18568379]
- Nelson ME, Rejeski WJ, Blair SN. Physical activity and public health in older adults: Recommendation from the American College of Sports Medicine and the American Heart Association. *Circulation*. 2007; 116:1094–1105. doi: 17671236. [PubMed: 17671236]
- Physical Activity Guidelines Advisory Committee. *Physical Activity Guidelines Advisory Committee Report*, 2008. U.S. Department of Health and Human Services; Washington, DC: 2008.
- Saelens BE, Sallis JF, Black JB, Chen D. Neighborhood-based differences in physical activity: an environment scale evaluation. *American Journal of Public Health*. 2003; 93:1552–1558. PMID: 12948979. [PubMed: 12948979]
- Slentz C, Houmard JA, Kraus WE. Modest exercise prevents the progressive disease associated with physical inactivity. *Exercise and Sport Sciences Reviews*. 2007; 35:18–23. doi: 10.1249/01. [PubMed: 17211189]

Table 1

Correlations Matrix between baseline predictors and Free-Choice Ratio

Baseline Predictor Variables	Free-Choice Ratio
Number of locations traveled to during the day	0.61 *
NEWS-Land use mix-Diversity (distance to locations)	0.47 [†]
NEWS-Access to walking paths	-0.52 *
NEWS-Aesthetics	-0.59 *
NEWS-Exercise facilities nearby	-0.55 *
NEWS-Perceptions of access to services	-0.63 **
Age	-0.04
Female	-0.07
White	0.01
Income	-0.14
Hours worked per week	-0.14
Education	-0.40
NEWS-Perceived Safety	0.11
NEWS-Perceived Crime	-0.28

NOTE: positive associations indicate engagement in more utilitarian activity whereas inverse associations indicate engagement in more leisure activity during the free-choice phase of the study.

NEWS=Neighborhood Environment Walkability Scale.

[†] $p < 0.10$

* $p < 0.05$

** $p < 0.01$