



Faculty of Education - Exercise Science, Physical & Health Education

Faculty Publications

Pilot study of a dog walking randomized intervention: effects of a focus on canine exercise.

Rhodes, R. E., Murray, H., Temple, V. A., Tuokko, H., & Higgins, J. W.

2012

© 2012 Ryan Rhodes et al. This article is distributed under the terms of the Creative Commons Attribution License [CC BY-NC-ND](https://creativecommons.org/licenses/by-nc-nd/4.0/).

This article was originally published at:

<https://doi.org/10.1016/j.ypmed.2012.02.014>

Citation for this paper:

Rhodes, R. E., Murray, H., Temple, V. A., Tuokko, H., & Higgins, J. W. (2012). Pilot study of a dog walking randomized intervention: effects of a focus on canine exercise. *Preventive medicine*, 54(5), 309–312. <https://doi.org/10.1016/j.ypmed.2012.02.014>

Running Head: Dog Walking Intervention

Pilot Study of a Dog Walking Randomised Intervention: Effects of a Focus on Canine Exercise

Ryan E. Rhodes, Holly Murray, Vivienne A. Temple, Holly Tuokko, and Joan Wharf Higgins

University of Victoria, Victoria, BC

Abstract = 199 words

Main text = 1472 words

The authors report no conflict of interest for this research.

Abstract

Objective: The promotion of dog walking among owners who do not walk their dogs regularly may be a viable physical activity intervention aperture, yet research is very limited and no intervention studies have employed control groups. Therefore, the purpose of this pilot study was to examine the viability of dog walking for physical activity intervention using messages targeting canine exercise. *Method:* Inactive dog owners ($n = 58$) were randomized to either a standard control condition or the intervention (*persuasive material about canine health from walking and a calendar to mark walks*) after completing a baseline questionnaire package and wearing a pedometer for one week. Participants (standard condition $n = 28$; intervention condition $n = 30$) completed the six and 12 week follow-up questionnaire packages. *Results:* Intention to treat analyses showed that both groups increased physical activity significantly across the 12 weeks ($\eta^2 = .21$ to $.09$). The intervention group resulted in significantly higher step-counts compared to the control group ($\Delta 1823$ steps) and showed significantly higher trajectories from baseline to 12 weeks in the self-reported physical activity measures ($\eta^2 = .11$ to $.27$). *Conclusion:* The results are promising for the viability of increasing dog walking as a means for physical activity promotion and suggest that theoretical fidelity targeting canine exercise may be a helpful approach.

Walking has established health benefits (Manson et al., 2002) and dog ownership and its relationship to regular walking has recently been studied (Coleman et al., 2008; Cutt et al., 2008; Hoerster et al., 2011). Specifically, dog owners report more walking during leisure-time than non-owners. Still, half of all owners do not walk with their dogs regularly (Bauman et al., 2001; Cutt et al., 2008). Promoting regular dog walking among owners who do not currently walk with their dog offers a viable intervention target. Published dog walking intervention studies are rare: two have focused specifically on dog owners (Kushner et al., 2006; Serpell, 1991) and another on “loaner” dogs (Johnson and Meadows, 2010), demonstrating that self-reported walking increased across time. These results are promising, but none included a randomized control group nor used an objective physical activity assessment.

Therefore, the purpose of this study was to examine the viability of dog walking for physical activity intervention using messages targeting canine exercise. It was hypothesized that dog walking could be a viable platform for increasing physical activity, and that information about canine exercise benefits from walking would be more effective than none.

Methods

Study Design and Participants

A randomized control trial was conducted with measurements at baseline, 6 weeks and 12 weeks post-intervention. Primary outcome measures were step count via pedometry (avg. steps per day over one week), total minutes of weekly walking, and total minutes of weekly dog walking.

Recruitment, randomization and mailing/contact were performed by an independent research assistant; with the researchers blind to the assigned study condition. IRB approval was

obtained and all participants provided initial and ongoing informed consent. See Figure 1 for participant flow.

Procedure

Recruitment posters and advertisements were placed in Capital Regional District of British Columbia coffee shops, pet stores, and veterinary clinics between January 2008 and February 2011 for dog owners who do not walk their dog regularly. Regular walking with their dog was defined as the minimum of the Canadian Guidelines for physical activity (i.e., more than 4 times per week for a minimum of 30 minutes at a brisk pace) at the time of the study (Health Canada, 2002). Interested participants contacted a research assistant via phone or email in which the study purpose, inclusion criteria and randomization procedure were explained. Participants were then mailed a baseline questionnaire package. Upon receipt of the completed baseline measurement, participants were randomized to either (1) the control condition or (2) the canine exercise message group using an online research randomizer (Research Randomizer, n.d.). Six weeks and 12 weeks later, follow-up packages were sent to participants. A \$25 gift card was provided to participants who returned both packages. Participants who did not return their follow-up questionnaire within two weeks received a reminder email, followed by another reminder email or phone call two weeks later (Dillman, 1983).

Intervention

Control group participants were instructed to continue with their current dog walking pattern for the study's duration. Participants in the canine exercise message group were instructed to read and use the materials provided, and add more dog walking to their lifestyle. The materials detailed the benefits of exercise for dogs; dogs' exercise needs; the proper types and amounts of exercise for dogs of different breeds, age, and health; tips for regular dog

walking; a variety of exercises for dogs and their owners; offered safety and health tips for starting a walking routine; and motivational quotes from dog owners^A.

Measurement

The baseline and subsequent follow-up packages included a consent form, questionnaire, pedometer and pedometer log. Participants were instructed to wear a pedometer (Lifestyles Digi-walker SW-200) for seven consecutive days from morning until night and record the daily step count. Participants then completed and returned (via pre-paid postage) the questionnaire.

Walking behavior was measured via the Lifestyles Digi-Walker SW series pedometer (Schneider et al. 2004; Swartz et al. 2003) and the Godin Leisure Time Exercise Questionnaire (Godin et al., 1986) adapted to measure self-reported leisure-time walking in moderate and strenuous minutes (Brown and Rhodes, 2006; Tremblay et al., 2011).

Analysis

Descriptive statistics were used to describe the sample. Point-biserial correlations, t-tests, and chi-square tests of proportions were conducted to test for selective drop-out (coded 0/1) and equality of study groups at baseline. Repeated measures analyses of variance were used to test the primary outcome variables. Probability alpha was $p < .10$; the study was powered to detect a small effect size ($f = .11$) considering this alpha, a power of .80, and a correlation between measures of $r = .75$. Intention to treat (ITT) analysis was conducted using a baseline carried forward procedure to substitute missing values at posttest.

Results

Participant Flow

The 58 participants who met the inclusion criteria and completed the baseline questionnaire package were randomly assigned to control ($n = 28$) and canine exercise message

groups ($n = 30$) (Figure 1). Loss to follow-up (Figure 1) was not associated with any demographic variable or behavioral outcome.

Baseline Characteristics of Respondents

There were no significant differences between the control group and the intervention group in demographic or baseline physical activity profiles, supporting the randomization procedure^A. Mostly participants were middle-aged ($M = 48.69$, $SD = 13.18$), female ($n = 52$), earning the median income for the Capital Regional District (i.e., \$75000); half had completed a college degree, and half were no longer working. Participants reported a mean BMI in the overweight category (i.e., 25-29.99) (Health Canada, 2002).

Effects on Outcomes

Table 1 provides the intervention results on the primary outcomes. The intervention resulted in significant time effects for total walking, pedometry, and dog walking, but not walking without a dog; the significant results favored increases in physical activity from baseline to six weeks and subsequently to 12 weeks post-test ($\eta^2 = .09$ to $.21$). Follow-up analyses of each time period identified that total walking, pedometry, and dog walking measures showed significant increases for the canine exercise message ($\eta^2 = .11$ to $.27$), but pedometry (T2 to T3) and total walking (T1 to T2) did not significantly increase within the control group. The results for pedometry assessment also suggested a significant effect in the group x time condition ($\eta^2 = .04$), but this was not identified in the self-report measures. For pedometry, the intervention group had a significantly higher step-count than the control group at 12 weeks ($\eta^2 = .06$), but no differences were identified at baseline and six weeks.

Discussion

This study examined the viability of using messages targeting canine exercise as a physical activity intervention. Our hypothesis that dog walking could be a viable platform for increasing physical activity was well-supported. Participants in both conditions demonstrated increases in walking that can be considered large effect sizes (e.g. > 60 min per week). The finding was not present when walking without dogs was evaluated, supporting the fidelity of dog walking as the intervention target and showing that increases in dog walking did not come at the expense of losing minutes walking without a dog. Indeed, the changes to dog walking were robust enough to produce increases in total pedometry step-count and total self-reported walking. These pilot results support a sustained intervention research program targeting dog walking in order to increase physical activity and complement the currently limited intervention literature on this topic (Johnson and Meadows, 2010; Kushner et al., 2006; Serpell, 1991).

Based on prior findings that a sense of responsibility/obligation to walk one's dog is a strong correlate of dog walking (Brown and Rhodes, 2006), our main hypothesis was that messaging the canine exercise benefits from walking would be more effective than a standard control. This hypothesis had only partial support. Pedometry results favored the canine exercise message group compared to the control group at 12 weeks. Post-hoc assessments of the trajectories in the dog walking and total walking outcomes also favored a significant increase in the intervention group with no increase in the control group, but the result was not robust enough to show a significant interaction effect between the groups and the effect sizes were in the small range. Thus, the focus on canine exercise may have had a small impact on walking over a standard control condition, but simply volunteering to be part of the study and complete our measures may have been the minimal amount of intervention needed for these participants to change their dog walking behavior.

This pilot study had a relatively small sample, so replication is warranted in a larger trial and with more diverse populations, with a qualitative process evaluation, and applied to other contexts (e.g., veterinary clinics). Because the study relied on self-report for an intensity assessment of physical activity, future research with accelerometry may also be prudent. Assessment of the health literacy of participants, the built environment, breed of the dog, the message frame (e.g., veterinary expert vs. non expert), and fitness and health indicators would also be helpful to expand this program of research.

References

- Bauman AE, Schroeder JR, Furber SE, Dobson AJ, 2001. The epidemiology of dog walking: An unmet need for human and canine health. *Med J Aust* 175:632-634.
- Brown SG, Rhodes RE, 2006. Relationships among dog ownership and leisure time walking amid Western Canadian adults. *Am J Prev Med* 30:131-136.
- Coleman KJ, Rosenberg DE, Conway TL, Sallis JF, Saelens BE, Frank LD, Cain K, 2008. Physical activity, weight status, and neighborhood characteristics of dog walkers. *Prev Med* 47:309-312.
- Cutt H, Giles-Corti B, Knuiman M, 2008. Encouraging physical activity through dog walking: Why don't some dog owners walk with their dog? *Prev Med* 46:120-126.
- Dillman DA, 1983. Mail and other self-administered questionnaires, in: Rossi PH, Wright JD, Anderson AB (Eds.), *Handbook of Survey Research*. Academic Press, Toronto, ON: 359-378.
- Godin G, Jobin J, Bouillon J, 1986. Assessment of leisure time exercise behavior by self-report: A concurrent validity study. *Can J Public Health* 77:359-361.
- Health Canada, 2002. *Health Canada's Physical Activity Guide*.

- Hoerster KD, Mayer JA, Sallis JF, Pizzi N, Talley S, Pichon LC, Butler DA, 2011. Dog walking: Its association with physical activity guideline adherence and its correlates. *Prev Med* 52:33-38.
- Johnson RA, Meadows RL, 2010. Dog-walking: Motivation for adherence to a walking program. *Clin Nurs Res* 19:387-402.
- Kushner RF, Jackson Blatner D, Jewell DE, Rudloff K, 2006. The PPET study: People and pets exercising together. *Obes* 14:1762-1770.
- Manson JE, Greenland P, LaCroix AZ, Stefanick ML, Mouton CP, Oberman A, Perri MG, Sheps DS, Pettinger MB, Siscovick DS, 2002. Walking compared with vigorous exercise for the prevention of cardiovascular events in women. *N Engl J Med* 347:716-724.
- Schneider PL, Crouter SE, Bassett DR, 2004. Pedometer measures of free-living physical activity: Comparison of 13 models, *Med Sci Sports Exerc* 36:331–335.
- Serpell J, 1991. Beneficial effects of pet ownership on some aspects of human health and behavior. *J R Soc Med* 84:717-720.
- Swartz AM, Bassett DR, Moore JB, Thompson DL, Strath SJ, 2003. Effects of body mass index on the accuracy of an electronic pedometer, *Int J Sports Med* 24:588-592.
- Tremblay MS, Warburton DER., Janssen I, Paterson DH, Latimer AE, Rhodes RE, 2011. New physical activity guidelines for Canadians. *App Physiol Nutr Metabolism* 36:36-46.

Figure Caption

Figure 1. Participant and Procedures Flow Diagram. Data collected in Capital Regional District of British Columbia between January 2008 and February 2011.

Footnotes A: The full demographics of the sample and a comparison table between the control group and the experimental group and the intervention materials can be obtained by emailing the first author.

Flow Diagram

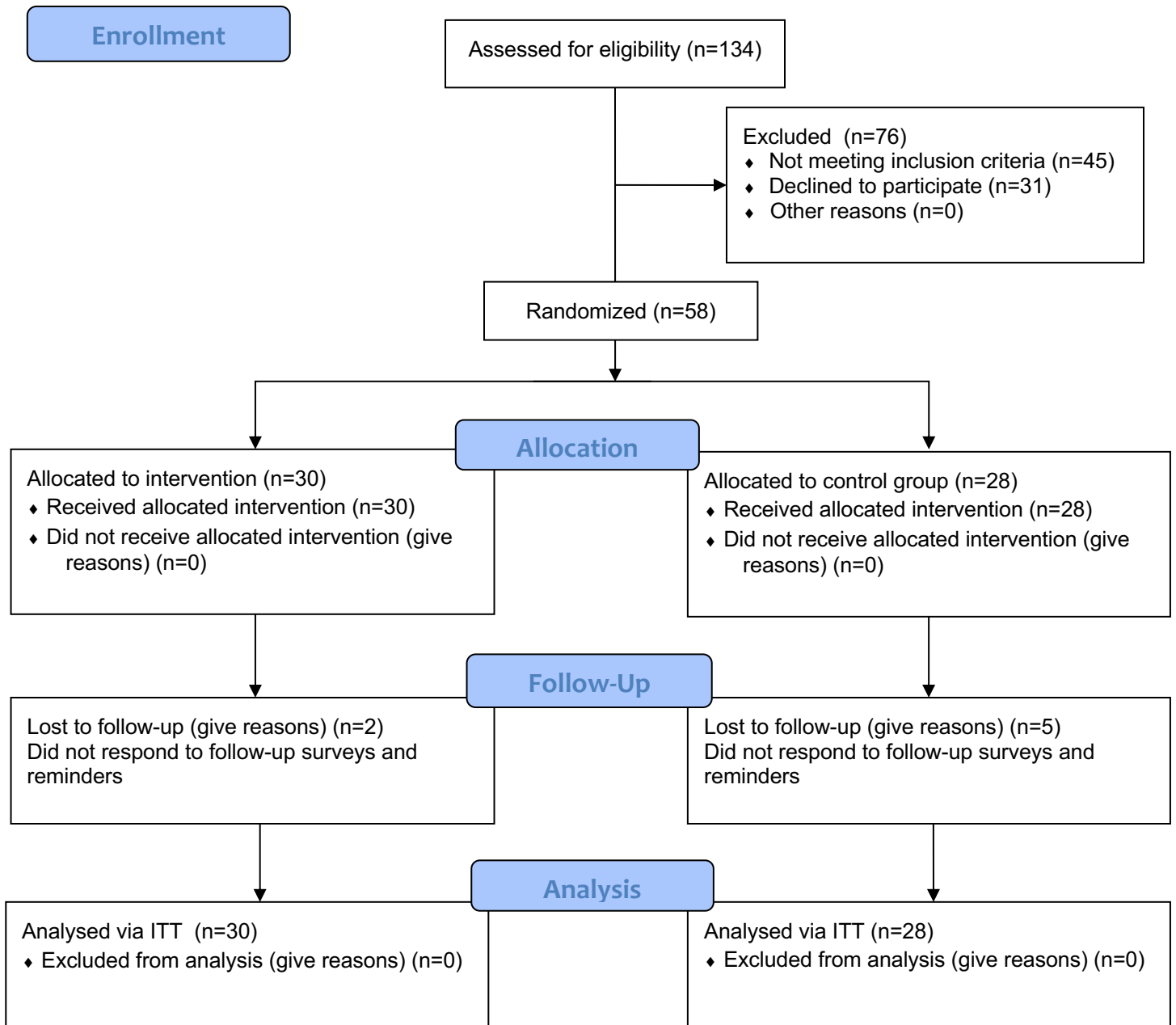


Table 1 Means and Standard Deviations of the Behavioural Outcome Variables at Baseline, Six-Weeks, and 12-Weeks. Data collected in Capital Regional District of British Columbia between January 2008 and February 2011.

Time x Group		Control (n = 28)			Intervention (n = 30)			Main Effect	
		Baseline	6 week	12 week	Baseline	6 week	12 week		
		Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	p	η^2
Pedometry (steps/day)	6387.90 (2687.46)	7305.46 (2421.10)	6895.71 (2950.72)	7176.84 (2854.82)	8247.93 (3286.05)	9507.79 (5884.98)	.01	.09	.09 .04
Total Walking (min/week)	82.57 (97.02)	107.68 (84.49)	132.68 (117.68)	56.55 (52.37)	100.45 (96.22)	149.72 (174.30)	.00	.14	.43 .02
Dog walking (min/week)	37.14 (41.20)	88.93 (102.73)	103.23 (113.80)	41.90 (40.94)	88.79 (71.21)	111.55 (86.15)	.00	.21	.95 .00
Non-Dog Walking (min/week)	45.43 (103.61)	18.75 (80.04)	29.45 (103.26)	14.66 (48.25)	11.66 (63.50)	38.17 (169.09)	.56	.01	.54 .01