Evaluation of Dog Walking Programs to Promote Student Nurse Health

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ABSTRACT

Aim: To provide a brief review of health concerns associated with a sedentary lifestyle and summarize some of the benefits of walking, with specific focus on the value of dog-walking programs as a means to improve health and wellness for the student nurse.
Methods: A professor within the School of Nursing and Doctor of Veterinary Medicine collaborated to review research on the benefits of dog walking and interventions utilizing dogs to increase and sustain physical activity in their owners and those that enjoy the companionship a dog can provide.
Results: Dog walking is an intervention to increase activity among student nurses due to companionship and the sense of obligation dogs provide. Research suggests that dog owners are more physically active with subsequent health benefits for both owners and dogs. Animal assisted therapy programs within the university setting can link students with dogs to improve physical activity.
Conclusion: Dog walking has benefits to both people and dogs. Nursing faculty can develop physical activity programs within their institution that incorporate walking a dog to enhance physical activity among student nurses. Further research is needed to empirically evaluate effectiveness of dog walking in the student nurse population.

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Unhealthy lifestyles and obesity are common problems among Americans and combined with a sedentary lifestyle have a negative impact on morbidity and mortality (Ignatavicious & Workman, 2016; Ogden, Carroll, Kit, & Flegal, 2014). However, this problem is not unique to the general population, and is reflected in the nursing profession. In a survey of over 2,100 female nurses conducted by the University of Maryland's School of Nursing, over 55% were overweight or obese, citing stress as a factor (Han, Trinkoff, Storr, & Geiger-Brown, 2011). Student nurses are also subject to the negative impact of inadequate physical activity. While nursing students are exposed to the benefits of health promotion in their curriculum, many do not apply health promoting activities to their own life (Bryer, Cherkis, & Raman, 2013). The modern nurse is a critical member of the healthcare team; however, current curricular demands put nursing students at risk for an unhealthy lifestyle (Bryer et al., 2013; Griffin, 2017) that may follow them throughout their career. There is a critical need to carefully evaluate and develop new means to increase and sustain lifestyle changes that promote adequate physical activity for nursing students in hopes that these lifestyle changes will continue after graduation. This paper provides a brief review of the literature regarding

current health concerns associated with a sedentary lifestyle and summarizes some of the benefits of walking, with specific focus on the value of dog-walking programs integrated into a university as a means to improve health and wellness for nursing students. An additional goal is to outline a role for faculty to develop programs aimed at increasing dog walking on campus and thus improving health.

HEALTH RISKS ASSOCIATED WITH A SEDENTARY LIFESTYLE

According to the Centers for Disease Control and Prevention (2015), adults ranging from 18 years of age to those over 65, need a minimum of 150 minutes of moderate-intense aerobic activity every week. However, in the United States, there are low numbers of adults that actually meet these recommendations and, therefore, are at risk for health disparities that lead to increased morbidity and mortality (Centers for Disease Control and Prevention, 2015; Richards, 2016). Specifically, inactivity or a sedentary lifestyle has been correlated to increased obesity, cardiovascular disease, cancer, and mental illness (Hiles, Lamers, Milaneschi, & Penninx, 2017; Knight, 2012). In contrast, low to moderate physical activity is recommended for the management and or treatment of numerous diseases including non-alcoholic fatty liver disease (Van der Windt, Sud, Zhang, Tsung, & Huang, 2017), diabetes mellitus (Hamasaki, 2016), renal disease (Zelle et al., 2017), Alzheimer's disease (Buchman et al., 2012; Cass, 2017), chronic obstructive pulmonary disease (COPD) (Lahham, McDonald, & Holland, 2016), and a variety of autoimmune disorders such as rheumatoid arthritis, systemic lupus erythematosus, multiple sclerosis, and inflammatory bowel disease (Sharif et al., 2018). Taken together, these studies support the notion that increased physical activity is crucial in the prevention, and management of many diseases.

SPECIFIC CONCERNS FOR NURSES AND NURSING STUDENTS

Nursing is the largest group of healthcare workers, with 3.6 million nurses in the United States (Yoder, 2017). Unfortunately, beginning early in their careers, some nurses do not meet the suggested weekly activity guidelines. The 2016 National College Health Assessment II found only 20% of nursing students were meeting the recommended physical activity guidelines (American College Health Association, 2018). A survey conducted by Gillen (2014) reported significant numbers of nursing students are overweight, with many not engaging in any form of physical activity. It is clear that these findings are more than just a recent trend, as over 50% of nurses are estimated to be overweight or obese (Speroni, Williams, Seibert, Gibbons, & Earley, 2013). While there are only a handful of studies that have been conducted there is evidence to suggest that the habits and lifestyles nurses develop as students are being carried over into their careers (Wills & Kelly, 2017; McSharry & Timmins, 2016). Thus, obesity is one of the most common health concerns among nurses along with, arthritis, chronic pain, irritable bowel syndrome, and mental health problems such as anxiety and depression (Letvak, 2012). Nursing students are susceptible to high levels of stress, citing long clinical hours, demanding curriculum, altered routines from undergraduate students in other programs of study, heightened liability, and feelings of failure (Bryer et al., 2013; Chunta, 2017; Griffin, 2017). When students transition into the workplace, work related stress can exacerbate other health issues, including obesity, hypertension and burn-out. Approximately 62% of nurses report they had considered leaving the profession, citing stress as a factor (Wright, 2014; Yoder, 2017). As a result, nurses may have increased risk for a subset of diseases associated with stress and decreased physical activity. Physical inactivity and unhealthy lifestyles are linked to decreased health, dependence on medications and caffeine to function, injuries

relating to overexertion, burn-out, and public distrust of health teaching (Chunta, 2017; Crane & Ward, 2016; Hicks et al., 2008; Ruff & Hoffman, 2016; Speroni et al., 2013; Wills & Kelly, 2017) . Self-care, that includes increased physical activity, is a health priority for the nurse and, therefore, a health priority for nursing students. It is important to develop programs to promote self-care while in nursing school so the healthy-lifestyle and physical activity can translate to the workplace after graduation.

BENEFITS OF WALKING

Physical inactivity is a modifiable risk factor (Bopp, Child, & Campbell, 2014; Eijsvogels & Thompson, 2015; Vitztum, 2013) and walking, as a form of aerobic exercise to improve fitness and maintain a healthy weight, can be used to counter act a sedentary lifestyle and promote self-care (Garcia et al., 2015; Hanson & Jones, 2015). There is abundant evidence that individuals who achieve the recommended amount of exercise in the form of brisk walking had positive health outcomes. For patients with nonalcoholic fatty liver disease, 150 min/week of brisk walking significantly reduce intrahepatic triglyceride content (Van der Windt et al., 2017). In a study that evaluated newly diagnosed breast cancer patients, increased physical activity defined as brisk walking, reduced mortality up to 44% compared to non-participants (Ammitzboll et al., 2016). Walking also improves mental health owing to the release of serotonin, a neurotransmitter which has been shown to enhance the feeling of well-being (Abbasi, 2016).

Walking is a low-impact form of physical exercise (Vitztum, 2013) that is accessible and inexpensive (Schneider et al., 2015). These are important factors for students who often have limited time and resources. Increasing steps can reduce mortality rates (Tufts University, 2016) and even short bouts of exercise due to time constraints have beneficial health effects (Eijsvogels & Thompson, 2015). In addition, walking with a companion provides a positive relationship and a sense of accountability that helps reinforce and sustain the lifestyle. Incorporating exercise into a weekly routine and developing positive relationships are useful mechanisms for alleviating stress and improving health (Wright, 2014). Ideal companions for walking are close friends and family members who can provide accountability and support. They do not necessarily need to be human.

IMPACT OF DOGS AND DOG OWNERSHIP ON WALKING

Almost half of the US population owns a dog (Burns, 2013), and several studies provide data supporting dog walking as a method to increase activity (Richards, McDonough, Edwards, Lyle, & Troped, 2013a; Richards, McDonough, Edwards, Lyle, & Troped, 2013b; Schneider et al., 2015), with dog ownership cited as a primary reason for increased activity in study participants. An important explanation for these findings is when an individual walks a dog, they have a positive interaction that provides a sense of responsibility and companionship. Participants are more apt to walk when they are not alone. A dog walking survey, DAWGS (the Dogs And WalkinG Survey) was completed by 429 individuals and findings from this study demonstrated that dog companionship, self-efficacy, and social support correlate with dog walking (Richardset al., 2013a).

Walking is not only beneficial to people, but has health benefits for dogs as well (Chandler et al., 2017). Like people, dogs suffer from disease processes, such as obesity, irritable bowel disease, and osteoarthritis that are ameliorated by regular low impact exercise, such as walking (Frye, Shmalberg, & Wakshlag, 2016; Huang & Lien, 2017; Vitger et al., 2017; Vitger, Stallknecht, Nielsen, & Bjornvad, 2016; Warren et al., 2011). In addition, dog walking provides social stimulation and interaction with people and other dogs that may improve the dog's

psychological health and reduce undesired behavioral problems such as aggression to people (Shin & Shin, 2017; Westgarth, Christian, & Christley, 2015). Given the health and social benefits of dog walking for dogs and people, there is clear evidence that dog walking is a mutually beneficial experience and because of these factors, dog walking may be an ideal activity to focus and develop programs aimed at increasing physical activity and wellness.

SUMMARY OF CURRENT DOG WALKING PROGRAMS

A study conducted by Rhodes, Murray, Temple, Tuokko, and Higgins (2012) focused on the health benefits to the dogs as an incentive to dog walking. Fifty-eight participants self-reported dog walking times and pedometer readings when walking. The intervention group had an increase in dog walking due to the sense of obligation to the dog. However, the study was limited as an overall increase in walking was associated with participation in the study (Rhodes et al., 2012). While this information makes interpretation of the study results difficult, it does support the notion that walking increases with a positive sense of obligation and responsibility, particularly when the owner observes health benefits in their dog.

Richards, Ogata, and Ting (2015) piloted a randomized controlled trial relating dogs, physical activity, and walking (Dogs PAW) to a person's behavior and the social and physical environment. Communication is important in creating and sustaining successful dog walking programs. Richards et al concluded motivating factors such as easy to access and readable guidelines in the form of email communication that provide credible data on dog walking and health benefits is a crucial factor to increase dog walking (Richards et al., 2015).

Dog walking elicits feelings of affection and enjoyment. A walk-along study was conducted on participants who self-reported walking their dog three times a week. The walk-along interview occurred during the participant's time for walking their dog. The interview concluded walking dogs elicits memories and captured emotions from the human-animal interaction (Cameron, Smith, Tumitily, & Treharne, 2014). A survey of 391 participants using the DAWGS self-report instrument conducted by Richards et al. (2013a) uncovered self-efficacy and social support from friend and dog were motivation factors to increase walking. These findings are consistent with the results of Richards et al. (2013b) that demonstrate when dog owners who do not currently walk their dogs on a regular basis are emailed motivational factors to increase walking, walking increased.

Dog ownership is related to walking frequency. In a large Women's Health Initiative observational study of post-menopausal women (Garcia et al., 2015), dog owners and non-dog owners completed a self-reported questionnaire. Dog owners were more likely to walk and less likely to be sedentary if the participant owned a dog. In addition, if the participant lived alone, those owning a dog increased walking frequency (Garcia et al., 2015). Young adult dog owners spent more time walking at a moderate to vigorous level, with longer time frames (Richards, 2016). Including a dog in a walking program has shown to increase commitment and adherence to a walking program (Schneider et al., 2015; Vitztum, 2013). Dog walking, as part of dog ownership, is an important intervention to increase physical activity for adults (Cameron et al., 2014; Christian et al., 2013; Schneider et al., 2015).

PROPOSED INTERVENTION PROGRAMS AND THE ROLE OF THE FACULTY

Faculty are instrumental in developing health initiatives for their students that are engaging and sustainable. Importance lies in not only the specific health issues afflicting the current nursing population, but those modifiable

conditions nursing students can focus on during their program of study to promote and sustain health. One critical aspect to any initiative program for students is the role of the faculty. Faculty need to be a positive role model for the student nurse (Wills & Kelly, 2017) and encourage students to dedicate themselves to self-care (Crane & Ward, 2016). The Health Promotion Model developed by Nola Pender (2011) focuses on the eight beliefs to health promotion. Recognizing the important variables associated with health promotion, the nursing faculty can guide student programs to build on current health knowledge to promote and sustain health behaviors.

Giving people advice such as "walk or increase physical activity" does not seem to work, or if it does work, only for a short period of time (Hanson & Jones, 2015). A recent survey noted that while students are less likely than professionals to adopt healthy lifestyles, it is an important time to establish physical activity so that is was more likely to become a habit in their professional role (Wills & Kelly, 2017). The goal is to incorporate motivational factors to increase long-term commitment to increased physical activity. Providing social support to encourage walking behaviors is linked to positive outcomes (Bopp et al., 2014; Crane & Ward, 2016; Richards et al., 2013a). Motivation also increases activity. Walking has shown to be very beneficial to the dog and individuals are motivated when cues to promote dog walking are utilized (Richards, 2016; Richards et al., 2013a; Richards et al., 2013b; Schneider et al., 2015).

The mentorship role of faculty is critically important as students can confide in faculty (Reeve, Shumaker, Yearwood, Crowell, & Riley, 2013). Students can use physical activity as a coping method and faculty should recognize mental health needs of students and encourage coping methods (Chernomas & Shapiro, 2013). Therapy dogs in an academic setting provide support (Young, 2012) and contact with dogs has been shown to reduce the negative effects of stress (Delgado, Toukonen, & Wheeler, 2018). Dog walking is a proven intervention to increase physical activity and in turn, promote health (see Table 1).

Table 1
Review of Dog Walking Programs

Author, Title, Journal and Year	Purpose	Design/Sample	Discussion, Recommendations and Limitations
Garcia *et al* **Relationships between dog ownership and physical activity in postmenopausal women.** *Preventative Medicine, 2015*	Examine a cross-sectional association between dog ownership and postmenopausal women	Logistic regression models to evaluate dog ownership and physical activity. 36,984 - dog owners 115, 645 - non-dog owners	Discussion: Dog owners were less sedentary, more likely to reach recommended walking guidelines, and more likely to stroll rather than walk fast as compared to non-dog-walkers. Recommendations: Health promotion initiatives should focus on the benefits of regular dog walking for dog-owners and non-dog owners. Limitations: ▪ Dog ownership does equate to dog walking ▪ Did not account for effects of duration of dog ownership, or breed related difference (size of dog) on dog walking ▪ Limited generalization of sample; only postmenopausal women
Rhodes *et al* **Pilot study of a dog walking randomized intervention: Effects of a focus on canine exercise.** *Preventative Medicine, 2012*	Viability of dog walking for physical activity targeting canine exercise	Randomized control trial Questionnaire and pedometer readings at Baseline, 6 weeks, and 12 weeks post intervention 58 participants- 30 allocated to the intervention and 28 to the control group	Discussion: Increased walking was noted in both participant groups. Recommendation: Provide dog owners a sense of responsibility to the dog in order to increase dog walking Limitations: ▪ Potential bias associated with recruitment of volunteer participants ▪ Small sample size ▪ Information on health was not collected or evaluated ▪ Did not collect data on dog breed related effects

Richards **Does Dog walking predict physical activity participation: Results from a national survey** *American Journal of Health Promotion, 2016*	Identify common characteristics of dog owners who walk their dogs, including frequency, duration and overall physical activity	Cross-sectional study 4,010 participants who participated in the 2005 ConsumerStyles mail-panel survey Chi-square tests and analysis of variance to examine characteristics and frequency/duration. Analysis of covariance used to determine physical activity	Discussion: While dog walking increases activity among dog owners, many study participants failed to meet recommended guidelines. The age and sex of the owner effect frequency and duration of walks. There was no link between minutes of walking and obligation to the dog. Recommendations: Physical activity interventions should target dog owners and promoting this activity is a good strategy to increase physical activity. Limitations: ▪ Longitudinal studies are needed to determine effects/correlations of BMI on walking. ▪ Wording of the questionnaire could be confusing and limited; no multi-select option ▪ Reliant on recall from self-reports
Richards *et al* **Psychosocial and environmental factors associated with dog-walking** *International Journal of Health Promotion and Education, 2013*	Determine if overall physical activity affected is by psychosocial and environmental factors with dog-walking	Multiple logistic regression and structural equation modeling used to exam data from a survey (DAWGS) 391 dog-owners	Discussion: Dog health is a motivating factor for walking. In addition, walking trails or grassy areas and dog companionship are factors associated with increased dog walking minutes. Recommendations: Develop programs aimed at self-efficacy; social support, companionship, environment to increase weekly dog walking minutes. Limitations: ▪ Sample lacking generalization; primarily white, female, and well-educated ▪ Reliant on recall from self-reports

Richards *et al* **Dogs, Physical Activity, and Walking (Dogs PAW): Acceptability and feasibility of a pilot physical activity intervention.** *Health Promotion Practice, 2015*	Describe a social cognitive theory intervention to increase dog walking among dog owners and evaluate the feasibility and acceptability of the intervention	Randomized control trial Descriptive statistics 49 participants divided into the intervention or control group	Discussion: Motivating cues placed in easy to read and access e-mails as well as the credibility of the information were motivating factors to increase walking in the intervention group. Recommendations: Using emails focusing on obligation to the dog, social support, and self-efficacy to encourage dog walking. Limitations: ▪ Small sample size ▪ Reliant on recall from self-reports ▪ Data limited to immediate post-intervention—long-term follow-up needed
Schneider *et al* **An online social network to increase walking in dog owners: A randomized trial.** *Medicine & Science in Sports & Exercise, 2014*	Determine if encouraging dog walking increases physical activity in dog owners	Cluster-randomized control trial 102 sedentary dog-owners	Discussion: Smaller social platforms used to increase physical activity are feasible and promote positive outcomes of dog walking Recommendations: Social networking or other platforms can be used to develop dog-walking groups Limitations: ▪ Limited generalization; mostly white, female, and well educated ▪ Reliant on recall from self-reports

Faculty driven health promotion interventions include setting up exercise programs targeting dog walking, providing motivational cues, using creative methods to retain participants, and working with communities to implement change. A large population of dog owners lives within the United States, therefore a logical first intervention is to target students who are already dog owners to "get walking." In a survey of 4,010 participants, 44% were dog owners and of those, less than half reported walking their dog on a regular basis (Richards, 2016). Studies have shown the benefits to dog walking include commitment and adherence to walking programs (Vitztum, 2013), increased physical activity (Schneider et al., 2015) and the feelings of enjoyment (Cameron et al., 2014). A goal for faculty to target nursing students who own dogs to encourage walking for their health and the health of their dog.

The next intervention to increase activity is the development of dog walking groups among nursing students within the institution. Walking groups tend to engage participants and provide a sense of companionship (Hanson & Jones, 2015). Social networking sites, such as Meetup, utilized by Schneider et al. are an excellent mechanism to form and develop dog walking groups with the intent to increase activity. While managing schedules was a challenge, overall the study participants increased their steps, and their perceived positive outcomes of dog walking (Schneider et al., 2015). Nursing faculty could work with the organizations' intranet, email, and other social media sites to arrange walking groups inside the organization. In addition, set up times within the school of nursing that faculty and students could walk dogs together, thus forming a mentorship.

Finally, it is critical to target students who may not have ready access to their dogs as walking partners. A recent survey that evaluated the effects of animal assisted therapy (AAT) programs on nursing students and the older patients discovered that there is a large percentage of students who own dogs, but do not have access to regular interaction with their dogs, as ~56% of students said they left their dog in their hometown with their parents (Yordy, Pope, & Wang, 2018). This means there is likely an unrecognized loss of emotional support for these students who are separated from canine companions while at school, which in turn may be affecting their mental and emotional health. The same University where the survey was conducted has an AAT program within the school of nursing for outreach and service, which incorporates three dogs that are in need of enrichment and could benefit greatly from walking programs. By merging student health initiatives with AAT programs, faculty could promote walking initiatives for students and therapy dogs with mutual benefits. There is also potential to expand programs through collaboration between nursing and veterinary colleges. There are over 900 canine visitation programs at colleges and universities across America (Herzog, 2015). These programs assist in stress and anxiety reduction in students. Faculty could work with handlers to incorporate walking as a form of therapy that is mutually beneficial for both student and dogs. Further research is needed to investigate the role of dog walking for students who love dogs but cannot have one on campus as well as therapy dog use for exercise not just emotional support. It also would be interesting to investigate the impact on health benefits with the idea that AAT programs are not just for emotional therapy, but for exercise as well.

CONCLUSION

There are many negative implications to a sedentary lifestyle that can be counteracted through low impact exercise, such as walking. Walking regularly has valuable health benefits and dog walking in particular, has cumulative benefits to nurses, nursing students, and their canine companions. While there are many opportunities to improve

health, dog walking taps into a subgroup of individuals and allows them to develop a program that is sustainable for their lifestyle and is understudied. Nursing faculty play an important role in student health and the adoption of healthier lifestyles. In order to promote health, one role for faculty could be to influence health promotion by developing evidence-based health initiatives such as dog walking programs that are sustainable and attainable within the school of nursing. This includes incorporating student dog walking initiatives with AAT programs. Further research is needed to empirically evaluate effectiveness of dog walking on student and canine health, with a goal to improve and better develop programs for the future.

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