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Using Research on Self-Regulation to Understand and Tackle the Challenges that Owners Face Helping their (Overweight) Dogs Lose Weight

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Abstract

The present research sought to (i) understand the challenges that dog owners encounter in helping their pet lose weight, and (ii) develop and test an intervention designed to help dog owners to deal with these challenges. A series of focus groups (N = 79 dog owners, veterinarians, and industry experts) informed the content of an intervention designed to prompt owners to form if-then plans (or "implementation intentions") identifying challenges (e.g., inclement weather) and specifying how to respond (e.g., play with the dog indoors). This intervention was evaluated in a single-blind, randomized controlled trial (N = 106 owners of overweight dogs) against a control condition who were simply asked to set relevant goals. Changes in the owners' beliefs, behaviour, and the dog's weight and body condition were measured around 2 months later. The primary finding was that dogs in the intervention condition lost the same percentage of their body weight on average each week (M = -0.065, SD = 0.65) as dogs in the control condition (M = -0.24, SD = 0.55), $F(1, 36) = 0.70$, $p = .41$, $\text{eta}^2 = .019$, although it should be noted that follow-up data was only available for around half of the sample. Analysis of the factors that were associated with changes in weight among the dogs in the trial suggested that owners' lack of knowledge about appropriate feeding and exercise was associated with poorer outcomes, suggesting that future interventions may need to provide information and help owners to set appropriate goals before encouraging them to make if-then plans to support the implementation of those goals.

Word count: 261 words (max. 400)

Keywords: Obesity; overweight; self-regulation; dog; prevention; weight management

Introduction

Over half of the domestic dogs in the U.S. are obese (i.e., grossly overweight), increasing their risk of a number of health conditions including osteoarthritis, diabetes, high blood pressure, heart and respiratory disease, ligament injuries, kidney disease, and many forms of cancer (Association for Pet Obesity Prevention, 2016). Furthermore, there is evidence that this is a growing problem, leading some to talk about a "pet obesity epidemic" (Lee, 2016). Given that feeding and levels of exercise among domestic pets are typically decided by their owners, it is crucial to understand why owners often fail to balance the energy needs and demands of their dogs and to find ways to change these behaviours. Webb (2015) proposed that balancing the energy needs and demands of companion animals is essentially a self-regulatory problem and used Control Theory (Carver & Scheier, 1982) as a conceptual framework to identify three self-regulatory processes that owners might find challenging when managing the weight of their dog: (1) setting goals (e.g., to help an overweight dog lose weight), (2) monitoring relevant behaviours and outcomes (e.g., amount of food consumed, activity levels and the dog's weight), and (3) taking action as needed (e.g., reducing the amount of food provided or increasing energy expenditure).

In addition to helping to understand the challenges that dog owners are likely to experience managing their dog's weight, adopting a self-regulatory perspective also suggests potential strategies for helping owners to overcome these challenges. Evidence suggests, for example, that the gap between intentions and behaviour can be bridged by forming 'if-then' plans (Gollwitzer, 1999). That is, an owner who struggles to act on their intention to feed their dog appropriately because they give into begging could be prompted to form the plan: 'If my dog is begging for a treat, then I will give him/her a cuddle instead!' Forming if-then plans has been shown to be an effective way of achieving goals including increasing physical activity, changing dietary behaviours, and promoting weight loss among humans (for a review, see Gollwitzer & Sheeran, 2006). However, the ideas have yet to be applied to the problem of obesity among companion animals. The present research developed a "volitional help sheet" (Armitage, 2008) that can be used

by owners to form if-then plans by choosing the situation(s) and response(s) that are most relevant to them. We then evaluated the effect of this intervention on the weight and body condition of the dogs by comparing outcomes between owners that received vs. did not receive the help sheet.

Materials and Methods

The content of the volitional help sheets were informed by ten focus groups with owners (six groups), vets and veterinary nurses (two groups), and employees of Nestlé Purina (two groups). Participants were asked questions about how they (or those that they work with as part of their professional practice) feed and exercise their dogs. For example, participants were asked (i) how they decide how much, and what type of food to feed their dog, (ii) to identify situations in which they might be tempted to feed their dog when perhaps they shouldn't, (iii) how they exercise their dog, (iv) reasons why dogs don't get enough exercise, and (v) potential strategies for dealing with challenges in each of these areas. The transcripts of each focus group were analysed using thematic analysis and NVivo software version 10 to identify situations that result in inappropriate feeding (e.g., a dog begging for food) and lack of exercise (e.g., inclement weather) along with potential solutions to these situations (e.g., play with the dog indoors). These were organised into the three key self-regulatory processes as identified by Control Theory (Carver & Scheier, 1982) – namely, goal setting, goal monitoring, and goal operating – with respect to each of the two focal behaviours (i.e., feeding and exercise) and are summarized in Table 1. This information was then used to inform the content of two help sheets; one designed to help owners to feed their dog appropriately and one designed to help owners to increase their dog's level of physical activity (see Supplementary Materials A).

A randomized controlled trial was then conducted to evaluate the impact of providing the volitional help sheets on outcomes. We approached 20 veterinary practices in and around the Sheffield region on an ad hoc basis; of whom 6 (30%) agreed to help us with the research. Staff at these practices looked at their lists of appointments and identified owners who would be attending with overweight or obese dogs. Owners were eligible for inclusion in the trial if their dog had a

Body Condition Score [or BCS, Laflamme, 1997] of 6 or more and did not have a serious health condition which would not make it appropriate for them to take part (e.g., they were unable to walk, or had to be fed a special diet). Suitable owners were then approached by a researcher when they visited the practice, given an information sheet, and asked if they would be interested in taking part. If so, then they were asked to sign a consent form and to complete a questionnaire that measured their beliefs about exercising and feeding their dog, along with various demographic characteristics using items from the Dogs and Physical Activity tool (Cutt et al., 2008), the Dog Obesity Risk and Appetite questionnaire (Raffan et al., 2015), a questionnaire informed by the Theory of Planned Behaviour (Rohlf et al., 2010), and the Dogs and WalkinG Survey (Richards et al., 2013). The questionnaire that participants received is reproduced in Supplementary Material B and Supplementary Materials D and E list the measures that were derived from these responses. The intervention was presented at the end of the questionnaire; and the owners were randomly assigned to receive a volitional help sheet or simply to set goals with respect to feeding and / or exercising their dogs.[1] The practice provided information on the weight of the dog on the day of the visit (as assessed by the practices' weighing scales) and BCS (the latter was assessed by a qualified vet or veterinary nurse and rated on a 9-point scale).

All participants were contacted 2 months later (by phone, email, or post, depending on their preference) and asked to complete a follow-up questionnaire.[2] We also contacted the veterinary practices to ask for the dog's weight and BCS at their most recent visit to the practice. Note that we

[1] Randomization was achieved using an online random number generator (https://andrew.hedges.name/experiments/random/) to generate a list of 150 numbers (ranging from 0 to 1). The questionnaires were then printed and arranged the questionnaire in that order. As the first few pages of the questionnaires for the intervention and control conditions were identical, the researcher was essentially (although not strictly) blind to condition at the point of recruitment and follow-up. Participants were not aware that there were different conditions and so we describe the trial as 'single-blind'.

[2] The follow-up questionnaire contained similar measures of owners' beliefs and behavior with respect to feeding and exercising their dogs as the baseline questionnaire (see Supplementary Material C). Descriptive statistics for these variables at baseline and follow-up are reported by condition in Table E of the supplementary materials. Owners who did not respond to the original request within two weeks were asked a second time if they would be willing to complete a follow-up questionnaire.

did not explicitly instruct clients to return to the practices so that we could obtain follow-up measures – rather, we obtained measures when owners returned to the veterinary practice as part of the usual care of their animal. As at baseline, weight was assessed and BCS was rated on a 9-point scale by a qualified vet or veterinary nurse. The data on the dogs from owners who had returned to the practice less than 4 weeks (28 days) following recruitment was not included. We did not place a limit on how long following recruitment the dogs' weight and BCS could be taken, but computed the percentage change in weight per week for each dog to permit comparison. The study received ethical approval from the Research Ethics Committee in the Department of Psychology at the University of Sheffield.

Participants and design

Power analysis (based on a medium-to-large effect, $d = 0.66$, of volitional help sheets on weight loss in humans, Armitage et al., 2014), and ANCOVA analysis, comparing changes in weight and BCS between baseline and follow-up between intervention and control conditions, with two covariates (likely baseline weight and BCS) suggested that a sample of 38 participants in each condition would provide 80% power to detect a similar effect size (at $p < .05$). Figure 1 shows the flow of participants through the study. $N = 124$ owners were approached, of whom $N = 106$ (85%) agreed to take part and were randomly allocated to conditions ($N = 57$ intervention, $N = 49$ control). The baseline characteristics of the sample are described in Supplementary Materials D and E. We obtained information on the weight of 50 of these dogs (47%) at least one month following recruitment and 30 of the owners (28%) completed a follow-up questionnaire.

Results

Sixty one of the 96 dogs remaining in the trial at follow-up (64%) were weighed at the veterinary practices following the intervention. Eleven of these dogs (11%) were weighed less than one month following the baseline assessment and so were not included in the analyses. In order to ensure that participants that dropped out of the trial and / or did not provide follow-up data did not differ (e.g., were older, less motivated to exercise their dog appropriately, or have dogs that

144 weighed more on average), we compared the baseline characteristics between the $N = 50$
145 participants for whom we had data on the dogs' weight at follow-up and the 56 participants for
146 whom we did not using a series of t-tests. The probability value for determining statistical
147 significance was corrected to reduce for the increased risk of a Type 1 error associated with running
148 multiple tests (new p = old p / 65 = .0008). None of the variables differed significantly according to
149 this criterion. On average, the remaining 50 dogs were weighed 13 weeks ($SD = 6$, range = 4 to 32
150 weeks) following the baseline assessment and allocation to condition. This time did not differ
151 between the conditions ($M_{EXP} = 14$, $M_{CONT} = 12$, SDs = 6), $t(48) = 1.3$, $p = .21$.

152 **What factors predict the extent to which dogs lose weight during the trial?**

153 Before evaluating the effect of condition on the primary outcomes (i.e., changes in weight
154 and BCS), we ran Pearson's correlations to see whether any of the variables measured at baseline
155 (for a full list see Supplementary Material D and E) were associated with these primary outcomes.
156 Nine variables were significantly correlated with the average percentage change in weight per week
157 (lack of knowledge with respect to feeding, $r = -0.44$, BCS at baseline, $r = -0.41$, perceived
158 behavioural control with respect to feeding, $r = 0.40$, strength of normative beliefs from others with
159 respect to feeding, $r = -0.39$, lack of knowledge with respect to exercising, $r = -0.38$, owner's
160 perception of their dog's weight, $r = -0.37$, strength of beliefs about feeding to please the dog, $r = -$
161 0.35, and the strength of normative beliefs from the vet, $r = -0.37$, and others, $r = -0.32$, with
162 respect to feeding) and six variables were significantly correlated with BCS scores at follow-up
163 (number of adults in the household, $r = -0.54$, owners' perceptions of the importance of the positive
164 outcomes of dog walking, $r = -0.52$, BCS at baseline, $r = 0.51$, the proportion of table scraps /
165 leftovers that the dog is fed, $r = 0.50$, the average number of days that the dog is walked in a typical
166 week, $r = 0.48$, and weight at baseline, $r = 0.36$). It was not possible to control for all of these
167 variables in the subsequent analyses as only around half of the sample completed the baseline
168 questionnaire; however, we controlled for the dogs' weight and BCS at baseline as we had
169 reasonable complete data on these variables, by entering them as covariates.

Effect of the intervention on dogs' weight and body condition

27 dogs (54% of the sample) lost weight between the baseline and follow-up assessments and 23 dogs (46% of the sample) did not. A 2-between (condition: Intervention vs. control) ANCOVA with the average percentage change in weight per week as the DV and weight and BCS at baseline as covariates, revealed that the average percentage change in weight did not differ as a function of condition, $F(1, 36) = 0.70$, $p = .41$, $eta^2 = .19$, and dogs owned by participants in the intervention condition lost the same percentage of their body weight per week on average ($M = -0.065$, $SD = 0.65$) as dogs owned by participants in the control condition ($M = -0.24$, $SD = 0.55$).[3] A similar 2-between (condition: Intervention vs. control) ANCOVA with body condition score (BCS, rated by the vet or veterinary nurse) as the dependent variable, revealed that BCS at follow-up did not differ as a function of condition, $F(1, 22) = 0.045$, $p = .83$, $eta^2 = .002$, and dogs owned by participants in the intervention condition had the same BCS on average ($M = 6.4$, $SD = 1.1$) as dogs owned by participants in the control condition ($M = 6.3$, $SD = 0.87$) at follow-up.

Discussion

The present research drew on our understanding of the challenges that people face when regulating their thoughts, feelings, and behaviour to develop an intervention intended to help the owners of overweight or obese dogs to help their dogs lose weight. We then investigated the effect of providing these volitional help sheets to owners when they attended a veterinary clinic with their dog. The trial suffered from relatively few participants completing baseline questionnaires and a substantial loss to follow-up, with the consequence that it did not achieved the desired statistical power (80%) to detect the anticipated medium-to-large effect of the intervention on outcomes. However, we proceeded with the planned analyses, which suggested that, in contrast to existing research which attests to the benefits of if-then planning, dogs owned by participants in the

[3] In addition to this 'intention-to -treat' analysis, we also compared outcomes between participants in the intervention condition who completed ($N = 10$) versus did not complete ($N = 16$) the planning exercise. However, the findings did not differ between these two groups ($M_{PLAN} = -0.23$, $SD = 0.74$, $M_{NOPLAN} = 0.069$, $SD = 0.57$), $F(1, 16) = 0.93$, $p = .35$, $eta^2 = 0.055$.

intervention condition lost the same percentage of their body weight per week on average as did dogs owned by participants in the control condition. Furthermore, the body condition scores of dogs owned by participants in the intervention condition did not improve more than that of participants in the control condition.

There are a number of possible reasons why the intervention may not have influenced the weight and/or body condition of the dogs. First, it is possible that the intervention influenced owners' behaviour (e.g., the amount that they walk the dog or the way in which they feed them) but did not influence outcomes; either because there was insufficient time for changes in behaviour to translate into changes in outcomes or perhaps because owners compensated for improvements in, for example, exercise, by providing more food (termed 'compensatory behaviour', Radtke et al., 2012). However, the intervention did not seem to influence the way that owners fed and / or exercised their dogs either, suggesting that this explanation is unlikely. A second hypothesis is that owners allocated to the intervention condition and provided with the volitional help sheets did not form plans as instructed. This was often the case – only 10 of the 26 participants in the intervention condition who returned the baseline questionnaire completed the planning exercise, perhaps because it was embedded at the end of a relatively long questionnaire. However, additional analyses suggested that the outcomes for participants who completed the if-then planning exercise were comparable to those who did not, suggesting that this difference did not account for the lack of effects on behaviour and/or outcomes.

We suspect that if-then planning may not have been effective because a key problem that owners faced was a lack of knowledge about appropriate feeding and exercise. This hypothesis is based on two observations. First, the analysis of the factors that were associated with changes in weight among the dogs in the trial suggested that lack of knowledge about appropriate feeding and exercise were associated with changes (or lack thereof) in weight. That is, when owners felt that they knew when, what, and how much to feed and exercise their dog, the dog tended to lose weight. In contrast, when owners did not feel that they knew when, what, and how much to feed and

exercise their dog, the dog tended to gain weight. Second, examination of participants' responses to the questions on exercising suggested that participants were already exercising their dog relatively frequently (on average, participants walked their dog every day; typically, 2 or 3 times) and perceived relatively few barriers to so doing, suggesting that the issue may have been the *nature* of the exercise provided (e.g., a short walk on a lead that did not provide sufficiently intense activity to promote weight loss) rather than enacting the intended exercise. In short, the primary challenges that owners face may be motivational (i.e., to do with setting appropriate goals), rather than volitional (i.e., to do with translating those goals into action). The implication of this explanation is that future interventions might provide guidance to owners (e.g., on how to feed and exercise their dog).

Limitations

The above conclusion should be taken in the context of a number of limitations to the described research. First and perhaps foremost, the primary follow-up measures (i.e., weight and BCS of the dog) were available for only around half of the sample. Although our sample was still larger than most studies in this area (for a review, see Krasuska & Webb, under review) and there was no evidence to suggest that participants for whom follow-up measures were available differed from those who we could not follow-up, the substantial rate of attrition does mean that the study did not achieved the desired 80% power to detect a medium-to-large change in outcomes – in fact, post-hoc analyses suggested that our sample provided 63% power to detect a change of this magnitude. The difficulty that we experienced recruiting and retaining a sample of community-dwelling dog owners is not uncommon, but it does point to the need for researchers to find creative ways to manage this problem in order to accurately estimate the impact of interventions targeting owners' behaviour.

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285 **Table 1**

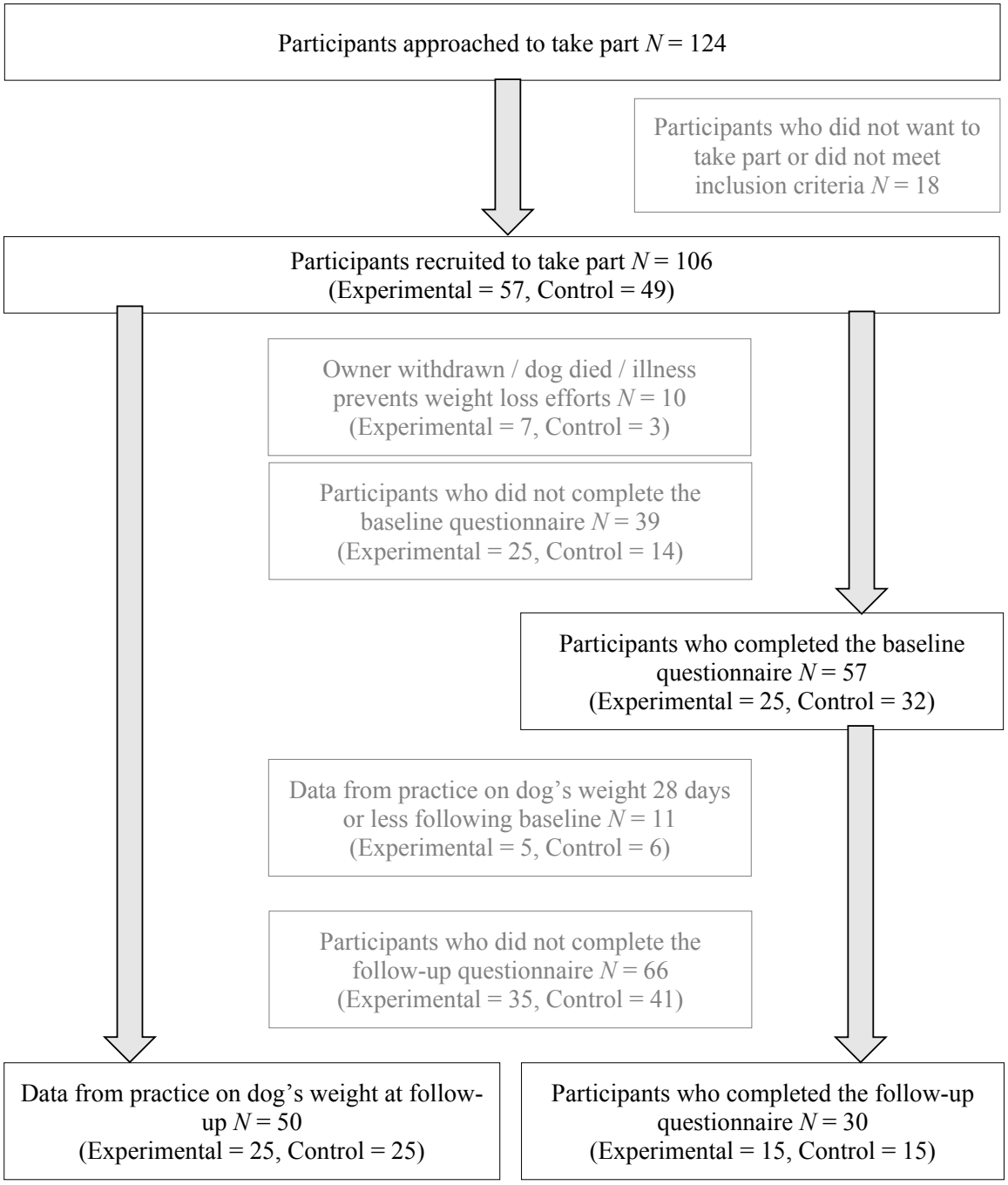
286 *Themes Identified Following the Focus Groups, Organized by Self-Regulatory Process*

		Focal behaviour	
Self-regulatory process	Theme	Feeding	Exercising
Goal setting	Challenges	Knowing what, or how much to feed	Knowing how much to exercise
	Potential solutions	Ask vet or veterinary nurse for advice	Ask vet or veterinary nurse for advice
		Remember it is the owner's responsibility to feed an appropriate diet	Look on the internet
			Think about the financial consequences of not taking action
			Think 'an overweight dog is an unhappy dog'
Goal monitoring	Challenges	Not monitoring intake	
		Lack of information on packaging	
	Potential solutions	Use a measuring cup	
Goal operating	Challenges	Using food to communicate / show love	Lack of time
		Giving leftovers to the dog	Feeling lazy
		Celebrating special occasions	Changes in circumstances
		Others feeding the dog	Other people or dogs' (negative) reactions
			Lack of appropriate space
			Dog not able to exercise
	Potential solutions	Cuddle or play with the dog	Walk dog immediately after work
		Include treats in daily food allowance	Walk for an extra 10 minutes
		Remember that a small treat is a lot of calories	Ask friends, family, or a dog walker to help
		Use a clicker, rather than treats, to train	Keep dog on the lead
		Record when dog is fed	Walk when there are few other people / dogs around

287

Figure 1

Flow of Participants Through the Trial



Supplementary Materials A

Volitional Help Sheets for Dog Owners

Helping your dog to lose weight

We would like you to make a plan to help your dog to lose weight in the next three months. Like people, dogs generally become overweight because they get more energy from their food than they expend (e.g., through exercise). Therefore, you can help your dog to lose weight by making sure either that they get enough exercise or that they get the right amount of food, or both.

We have prepared two help sheets – Sheet A is designed to help you to provide enough exercise for your dog and Sheet B is designed to help you to provide the right amount of food for your dog. We would like you to decide which of these things you find most difficult or would like some help with and then look at either Sheet A or Sheet B. Alternatively, you might decide that you want some help with both exercise and feeding, in which case you can look at both sheets. Below, please indicate which sheet(s) you will look at:

☐ I would like some help making sure my dog gets enough exercise, so I'll look at Sheet A

☐ I would like some help making sure my dog gets the right amount of food, so I'll look at Sheet B

☐ I would like some help making sure my dog gets enough exercise and the right amount of food, so I'll look at Sheets A and B

SHEET A: Helping your dog to lose weight: Exercise

We appreciate that making sure that your dog gets enough exercise can be difficult. For example, it can be difficult to know how much exercise your dog needs and to find the time to take them for a walk. Therefore, we would like you to make a plan specifying how you will deal with these situations.

The left side of the table below provides a list of common situations that can lead to dogs not getting enough exercise. The right side of the table provides a list of possible solutions or strategies that you might employ in these situations.

We would first like you to identify **up to three** of the situations that you think are most likely to lead to your dog not getting enough exercise. Please number the situations that you have chosen (1, 2, or 3).

Next, we would like you to look at the list of solutions and choose one for each of the situations that you have chosen. **Put a number (1, 2, or 3) in the box next to the solution** to indicate which of your chosen situations you think it would help with. In this way you link the solution to that situation. You may need to do this 1, 2, or 3 times, depending on how many situations you have identified.

Situations (please tick up to three)	**Solutions** (please choose one for each situation that you have identified)
☒ If I am tempted not to walk my dog because it is dark outside …	☒ ...then I will wear a head torch to light the road!
☒ If I am tempted not to walk my dog when the weather is bad…	☒ ...then I will play games with my dog indoors!
☒ If I don't know how much exercise my dog should get...	☒ ...then I will ask my vet how much exercise my dog needs!
☒ If I am tempted not to walk my dog because there aren't any good places in my area…	☒ ...then I will look on the Internet to find out how much exercise my dog needs!
☒ If I am tempted not to walk my dog because my dog does not seem to want to go for a walk...	☒ ...then I will remind myself that walking and playing with my dog strengthens our bond!
☒ If I am tempted not to walk my dog because I think that my dog gets enough exercise by playing in the garden...	☒ ... …then I will remind myself that walking and playing with my dog is a way expressing my love and affection for them!
☒ If I am tempted not to walk my dog because I am worried that my dog is not good around other people or dogs...	☒ ...then I will remind myself that it is my responsibility as an owner to provide enough exercise for my dog!
☒ If am tempted not to walk my dog because I am worried other people might react negatively to my dog...	☒ ...then I will try to walk my dog for an extra 10 minutes a day!
☒ If I am tempted not to walk my dog because I am worried that my dog will run off and not come back when I call it...	☒ ...then I will ensure that my dog is always on their lead!
☒ If I am not physically able to walk my dog...	☒ ...then I will hire a professional dog walker to walk my dog!

☒ If I am tempted not to walk my dog because it is difficult to find somewhere where I can walk my dog or let it off the lead...

☒ If am tempted not to exercise my dog because I am afraid that my dog will damage its joints or health if it does more exercise...

☒ If I am tempted not to play with my dog indoors because I am afraid that my dog will damage my furniture...

☒ If I am tempted not to play with my dog because I am afraid that my dog will make a mess if I play with them in the garden...

☒ If I am tempted to put off walking my dog until tomorrow...

☒ If I am tempted not to walk my dog because I feel too tired to take my dog for a walk…

☒ If I am tempted not to walk my dog because I get back late and do not feel like taking my dog for a walk...

☒ If I am tempted not to walk my dog because I am too busy to take my dog for a walk...

☒ ...then I will take my dog for a walk when there are few other people and dogs around!

☒ …then I will take my dog to agility or obedience training or look for dog's swimming classes!

☒ ...then I will ask someone else in my family to walk and play with my dog!

☒ ...then I will organise weekend trips where my dog can go for long walks and run around freely!

☒ ...then I will increase the amount of exercise that my dog gets in small steps!

☒ ...then I will think about the financial consequences of my dog becoming overweight!

☒ ...then I will remember that exercise makes my dog happy!

☒ ...then I will remind myself that walking my dog is a good way for me to exercise too!

☒ …then I will remind myself that walking the dog is a good possibility for socialising and meeting new people!

☒ ...then I will take my dog for a short walk!

☒ ...then I will take my dog for a walk as soon as I get back from work!

☒ …then I will remind myself that by not exercising my dog I am putting its health at risk!

- - - - ✂ -

Finally, please **write out each of your plans** below using the format *If [situation], then I will [response]* and commit yourself to carrying them out. Don't forget that you can make up to three plans. You can take this part of the sheet away with you as a reminder of your plans.

1. If I ______________________________ then I will ______________________________!

2. If I ______________________________ then I will ______________________________!

3. If I ______________________________ then I will ______________________________!

SHEET B: Helping your dog to lose weight: Feeding

We appreciate that making sure that you feed your dog the right amount of food can be difficult. For example, it can be difficult to know how much food to give your dog and to resist the temptation to give them lots of treats or leftover food from your plate. Therefore, we would like you to make a plan specifying how you will deal with these situations.

The left side of the table below provides a list of common situations that can lead people to feed their dog too much or the wrong types of food. The right side of the table provides a list of possible solutions or strategies that you might employ in these situations.

We would first like you to identify **up to three** of the situations that you think are most likely to lead you to feed your dog the wrong amount or type of food. Please number the situations that you have chosen (1, 2, or 3).

Next, we would like you to look at the list of solutions and choose one for each of the situations that you have chosen. **Put a number (1, 2, or 3) in the box next to the solution** to indicate which of your chosen situations you think it would help with. In this way you link the solution to that situation. You may need to do this 1, 2, or 3 times, depending on how many situations you have identified.

Situations (please tick up to three)	**Solutions** (please choose one for each situation that you have identified)
☒ If I am tempted to share what I am eating with my dog...	☒ ...then I will not let my dog sit next to the table when I am having a meal!
☒ If I am tempted to give my dog some of our food because I want them to feel part of the family...	☒ then I will give my dog their meal before I eat mine so that I am sure that they are not hungry!
☒ If I am tempted to put leftovers in my dog's bowl...	☒ ... then I will choose a high-quality dog food to be sure that my dog has everything they needs!
☒ If I don't know how much food to give to my dog…	☒ ...then I will ask my vet or the food's manufacturer how much I should be feeding my dog!
	☒ ...then I will weigh or use a cup to measure my dog's food according to its needs and activity levels!
	☒...then I will include treats in my dog's daily calorie allowance!
☒ If I am tempted to give my dog treats or leftovers because I worry that my dog finds dog food boring…	☒ … then I will add vegetables such as carrot or cabbage rather than treats or leftovers to make my dog's meal more appealing!
	☒ …then I will remind myself that high quality dog food is designed to be appealing for dogs!
	☒ …then I will remind myself that dogs are happy to eat anything that is food!
☒ If I am tempted not to measure how much food goes into my dog's bowl…	☒ …then I will think how much it will cost me if they get ill because they are overweight!
☒ If I am tempted to give my dog treats or leftovers when my dog begs for food...	☒ ...then I will take my dog for a walk or play with them!

☒ If my dog steals food (e.g., from another pet, or the kitchen side)…	☒ ...then I will remind myself that what my dog wants may not be what they need or is good for them in the long term!
	☒ ... then I will remind myself that my dog might be asking for attention!
☒ If I am tempted not to buy good quality food for my dog because it is expensive…	☒ ...then I will not leave food lying around the house!
☒ If my dog always seems to be hungry…	☒ ...then I will remind myself that it is normal for a dog to look for food and that it does not mean that they are hungry!
☒ If I am tempted to give treats to my dog to distract them	☒...then I will remind myself that it is my responsibility as a dog owner to feed my dog an appropriate diet!
☒ If I am tempted to leave extra food or treats to keep my dog occupied…	☒ ...then I will remind myself that I am damaging the health of my dog by not feeding them properly!
☒ If I am tempted to use treats to train my dog…	☒ ...then I will use clicker to reward my dog!
☒ If more than one person is responsible for feeding my dog...	☒ ...then I will use a board to mark when my dog has received their meal!
	☒ ...then I will designate one person to be responsible for feeding my dog!
☒ If children or guests give a lot of treats to my dog...	☒ ... then I will tell them that if they give my dog treats then they are “treating them to lots of problems”!
	☒ ...then I will tell people to play with my dog or give them hugs and kisses rather than food!
☒ If I feel cruel or guilty restricting how much my dog eats...	☒ …then I will remind myself that my dog is happier when it is not overweight!
☒ If I am tempted to give my dog a treat so that they love me more...	☒ …then I will cut the treats into smaller portions!
☒ If I am tempted to buy treats for my dog when I go to the supermarket...	☒ ...then I will buy my dog toys rather than treats!
☒ If I am tempted to show love and affection to my dog by giving them a treat...	☒ ...then I will show my dog love and affection through play and hugs rather than food!
☒ If I am tempted to give my dog a treat to make them happy...	☒ ...then I will remind myself that treats have lots of calories and are like a person eating a big mac!

- - - - ✂ -

Finally, please **write out each of your plans** below using the format *If [situation], then I will [response]* and commit yourself to carrying them out. Don’t forget that you can make up to three plans. You can take this part of the sheet away with you as a reminder of your plans.

4. If I ____ then I will ________________________________!

5. If I _____ then I will _____!

6. If I _____ then I will _____!

Supplementary Material B

Baseline Questionnaire

SECTION 1: YOU AND YOUR DOG

How old are you?

18-25 years / 26-35 years / 36-45 years / 46-60 years / 60+

What is your gender?

Male / female / prefer not to say

Please select the highest qualification that you have:

- Postgraduate qualification (e.g., Masters or PhD)
- Degree level qualification (e.g., BA, BSc, or equivalent)
- Higher educational qualification below degree level (e.g., HND or equivalent)
- A level (or equivalent)
- GCSE (or equivalent)
- Other (please specify: _____)
- No formal qualifications

What is your ethnic group?

- **White** (English/Welsh/Scottish/Northern Irish/British; Irish; Gypsy or Irish Traveller; Any other White background, please describe_____)
- **Mixed/Multiple ethnic groups** (White and Black Caribbean; White and Black African; White and Asian; Any other Mixed/Multiple ethnic background, please describe_____)
- **Asian/Asian British** (Indian; Pakistani; Bangladeshi; Chinese; Any other Asian background, please describe_____)
- **Black/ African/Caribbean/Black British** (African; Caribbean; Any other Black/African/Caribbean background, please describe_____)
- **Other ethnic group** (Arab; Any other ethnic group, please describe_____)
- **I would prefer not to say**

Are you employed?

Yes, full time / part time / no, I am unemployed / retired / a student / other (please specify)_____

Apart from you, how many people live in your household?

____ adults ____children

What is the name of your dog?

_____

How old is your dog?

_____ years (please leave blank if you do not know how old your dog is)

Is your dog male or female?

Male / female

Is your dog neutered?

Yes / no / I don't know

What breed is your dog?

_____

Would you describe your dog as:

Small / medium / large

Do you know your dog's weight?

Yes (please specify _____ in kg or lbs) / No

Do you have any other dogs?
Yes / no

If yes, please provide the age, gender, and breed of the other dog(s) that you have:
_____

Do you have any pets other than a dog(s)?
Yes / no

It yes, what other pets you have? (please specify what type of pets you have and the number of each)
_____

How many people in your household feed your dog?

____ adults ____children

Are you the person who most frequently feeds your dog?

Yes / no

How many people in your household exercise your dog?

____ adults ____children

Are you the person who most frequently exercises your dog?

Yes / no

What is your primary source of information on diet or nutrition for your dog? Please select only one.

Friends or family / books or magazines / the Internet / a breeder or trainer / my vet / staff at the vets / a groomer / the TV or radio / staff at the pet store / other (please specify: _____)

What is your primary source of information on exercising your dog? Please select only one.

Friends or family / books or magazines / the Internet / a breeder or trainer / my vet / staff at the vets / a groomer / the TV or radio / staff at the pet store / other (please specify: _____)

Do you monitor your dog's weight?
Yes / no

How often do you (or your vet) weigh your dog?

Several times a day / once a day / several times a week / once a week / less than once a week / less than once a month / never

Below is a set of pictures illustrating dog weight. Please choose a picture which bests describes your dog:

Very underweight	Underweight	Normal weight	Overweight	Very overweight
☐	☒	☒	☒	☒

Does your dog currently have any health problems?

Yes / no

If yes, please specify / describe

_____

Owner pet relationship

Please tell us whether you agree or disagree with some very brief statements about your dog.

SD - Strongly disagree D - Disagree U - Undecided A - Agree SA - Strongly agree

I consider my dog a friend.	SD	D	U	A	SA
I talk to my dog.	SD	D	U	A	SA
Owning a dog adds to my happiness.	SD	D	U	A	SA
I talk to others about my dog.	SD	D	U	A	SA
I often play with my dog.	SD	D	U	A	SA
My dog knows how I feel about things.	SD	D	U	A	SA
My dog is considered part of the family.	SD	D	U	A	SA

SECTION 2: QUESTIONS ABOUT HOW YOU FEED YOUR DOG

What type of treats/snacks do you give your dog in a day? Please write
_____
_____

How frequently do you feed your dog treats (not including dental sticks, chews, or bones)?
Nine to ten a day / Seven to eight times a day / Five to six times a day / Three to four times a day / One to two a day / Several times a week / Once a week / Less than once a week / Never

How frequently do you give your dog dental sticks, chews, or bones?
Nine to ten a day / Seven to eight times a day / Five to six times a day / Three to four times a day / One to two a day / Several times a week / Once a week / Less than once a week / Never

What do you mostly feed your dog? Please indicate the percentage of each feed that you give your dog daily, e.g., 25% dry food, 75% tinned food, or 100% home cooked etc).

Dry food	_____%
Raw meat (non-supermarket only)	_____%
Dog meat sausage / supermarket raw meat	_____%
Tinned food	_____%
Table scraps / leftovers	_____%
Home cooked	_____%
Other (please specify)	_____%

How do you feed your dog?

Leave it in the bowl / Follow the label instructions / Provide the food and remove it after some time if the dog does not eat all of it

How many meals does your dog receive in a typical day?

_____ meals

How much do you feed your dog?
1 cup = 250ml measuring cup contains approximately 90g dry food

- ☐ Less than ½ cup a day
- ☐ ½ to 1 cup a day
- ☐ 1 to 1 ½ cups a day
- ☐ 1 ½ to 2 cups a day
- ☐ 2 to 2 ½ cups a day
- ☐ 2 ½ to 3 cups a day
- ☐ 3 to 3 ½ cups a day
- ☐ 3 ½ to 4 cups a day
- ☐ 4 to 4 ½ cups a day
- ☐ 4 ½ to 5 cups a day
- ☐ Over 5 cups a day
- ☐ Food is always available
- ☐ Somebody else feed my dog
- ☐ Other , please write _____

Please read the statements below and choose the response most appropriate to your dog.

	Never	Rarely	Some-times	Often	Always
My dog gets excited when there is food around.	□	□	□	□	□
My dog spends most of his/her walks off the lead.	□	□	□	□	□
My dog gets human leftovers in his/her food bowl.	□	□	□	□	□
My dog hangs around for titbits even if there is not much chance of getting them.	□	□	□	□	□
My dog is choosy about which titbits he eats.	□	□	□	□	□
My dog hangs around when I am preparing or eating human food.	□	□	□	□	□
My dog will turn down food if s/he is not hungry.	□	□	□	□	□
My dog finishes a meal straight away.	□	□	□	□	□
My dog inspects unfamiliar foods before deciding whether to eat them.	□	□	□	□	□
My dog runs around a lot.	□	□	□	□	□
After a meal my dog is still interested in eating.	□	□	□	□	□
My dog takes his/her time to eat a meal.	□	□	□	□	□
My dog eats titbits straight away.	□	□	□	□	□
My dog gets bits of human food when we are eating.	□	□	□	□	□

As before, please read the following statements and choose the option most appropriate to your dog.

	Not at all true	Somewhat true	Mainly true	Definitely true
My dog would eat anything.	□	□	□	□
My dog is very fit.	□	□	□	□
My dog often gets human food.	□	□	□	□
My dog gets an upset tummy on some foods.	□	□	□	□
I think my dog could do with losing some weight.	□	□	□	□
My dog's walks are mostly on the lead.	□	□	□	□
I restrict my dog's exercise because of veterinary advice.	□	□	□	□
I alter the food my dog gets in order to control his/her weight.	□	□	□	□
My dog seems to be hungry all the time.	□	□	□	□
My dog's walks involve a lot of energetic play or chasing.	□	□	□	□
I am careful about my dog's weight.	□	□	□	□
My dog has a sensitive stomach.	□	□	□	□
My dog is very greedy.	□	□	□	□
My dog regularly sees the vet for health problems.	□	□	□	□
I am happy with my dog's weight.	□	□	□	□
I weigh or measure how much food I give my dog.	□	□	□	□
I am careful to regulate the exercise my dog gets in order to keep him/her slim.	□	□	□	□
My dog gets a lot of exercise.	□	□	□	□
My dog often gets tummy upsets.	□	□	□	□
My dog gets no food at human mealtimes.	□	□	□	□

My dog would eat non-food objects like stones, toys or socks.	□	□	□	□

The following questions ask you to indicate whether you agree or disagree with the following statements regarding the *amount* of food that you feed your dog.

	Strongly disagree	Disagree	Some-what disagree	Neither agree nor disagree	Some-what agree	Agree	Strongly agree
It is important that I feed my dog the appropriate amount of food in a day.	□	□	□	□	□	□	□
My dog is overfed because I indulge him/her.	□	□	□	□	□	□	□
It's important that I feed my dog as much as he/she wants to eat.	□	□	□	□	□	□	□
My dog eats only the amount he/she needs.	□	□	□	□	□	□	□
My dog is overfed because others feed the dog.	□	□	□	□	□	□	□
I don't know how much to feed my dog.	□	□	□	□	□	□	□
My dog is overfed because he/she is always wants food.	□	□	□	□	□	□	□
My vet believes that I feed my dog too much.	□	□	□	□	□	□	□
Other dog owners believe that I feed my dog too much.	□	□	□	□	□	□	□
I would like to feed my dog the amount that is recommended to me by my vet.	□	□	□	□	□	□	□
I would like to feed my dog the amount that is recommended to me by other dog owners.	□	□	□	□	□	□	□

Overall, how much control do you feel you have over the amount you feed your dog?

Completely in not my control	Not in my control	Somewhat not in my control	Unsure	Somewhat in my control	In my control	Completely in my control
□	□	□	□	□	□	□

How likely is it that you will feed your dog the appropriate amount of food in the future?

Extremely unlikely	Unlikely	Somewhat unlikely	Neither likely nor unlikely	Somewhat likely	Likely	Extremely likely
□	□	□	□	□	□	□

The following questions ask you to indicate whether you agree or disagree with the following statements regarding the *type* of food you feed your dog.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
It's important that I feed my dog the appropriate type of food.	□	□	□	□	□	□	□
I feed my dog inappropriate food because I like to spoil him/her.	□	□	□	□	□	□	□
My dog isn't given the appropriate type of food because others feed the dog.	□	□	□	□	□	□	□
I would like to feed my dog the type of food that is recommended to me by my vet.	□	□	□	□	□	□	□
It's important that I feed my dog whatever he/she likes to eat.	□	□	□	□	□	□	□
I don't know what type of food to feed my dog.	□	□	□	□	□	□	□
My vet believes that I don't feed my dog the appropriate type of food.	□	□	□	□	□	□	□
Other dog owners believe that I don't feed my dog the appropriate type of food.	□	□	□	□	□	□	□
I feed my dog inappropriate types of food because the other food is too expensive.	□	□	□	□	□	□	□
I feed my dog inappropriate types of food because he/she likes that kind of food.	□	□	□	□	□	□	□
I would like to feed my dog the type of food that is recommended to me by other dog owners.	□	□	□	□	□	□	□

Overall, how much control do you feel you have over the type of food you feed your dog?

Completely not in my control	Not in my control	Somewhat not in my control	Unsure	Somewhat in my control	In my control	Completely in my control
□	□	□	□	□	□	□

How likely is it that you will feed your dog the appropriate type of food in the future?

Extremely unlikely	Unlikely	Somewhat unlikely	Neither likely nor unlikely	Somewhat likely	Likely	Extremely likely
□	□	□	□	□	□	□

The following questions ask you to indicate whether you agree or disagree with the following statements regarding the *frequency* with which you feed meals to your dog.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
My dog isn't fed the appropriate number of times a day because others feed the dog.	□	□	□	□	□	□	□
It's important that I feed my dog the appropriate number of times a day.	□	□	□	□	□	□	□
I don't know how many times in a day I should feed my dog.	□	□	□	□	□	□	□
It's important that I feed my dog whenever he/she wants to be fed.	□	□	□	□	□	□	□
My vet believes that I should feed my dog more frequent meals during the day.	□	□	□	□	□	□	□
Other dog owners believe that I should feed my dog more frequent meals during the day.	□	□	□	□	□	□	□
I don't have time to feed my dog more frequent meals during the day.	□	□	□	□	□	□	□
I would like to feed my dog as often as is recommended to me by my vet.	□	□	□	□	□	□	□
I would like to feed my dog as often as is recommended to me by other dog owners.	□	□	□	□	□	□	□

Overall, how much control do you feel you have over the number of times you feed your dog during the day?

Completely not in my control	Not in my control	Somewhat not in my control	Unsure	Somewhat in my control	In my control	Completely in my control
□	□	□	□	□	□	□

In the future, how likely is it that you will feed your dog the appropriate number of times during the week?

Extremely unlikely	Unlikely	Somewhat unlikely	Neither likely nor unlikely	Somewhat likely	Likely	Extremely likely
□	□	□	□	□	□	□

SECTION 3: HOW YOU EXERCISE YOUR DOG

How many times a week do you exercise your dog?
(please write)_____

What is the main type of exercise you give your dog?

 Walk on lead

 Run on lead

 Take for a swim

 Play fetch or other games

 Other (please write)_____

On average, what is the length of time of each exercise session?

 Less than 15 minutes

 15 to 30 minutes

 30 to 45 minutes

 45 to 60 minutes

 Over 60 minutes

How many days do you walk with your dog in a typical week? (Dog walking is an activity in which both the dog and the owner are walking together.)
_____

How much time do you spend walking during your typical dog walk?
minutes per walk_____

On days you walk with your dog(s), on average how many walks do you go on? (Please check only 1)
1 walk 2 walks 3 walks 4 walks 5 walks more than 5 walks

Do you play with your dog in the garden or inside your home?

Yes / No

The following questions ask you to indicate whether you agree or disagree with the following statements regarding the *duration* of exercise you give your dog

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
It is important that I exercise my dog for the appropriate length of time.	□	□	□	□	□	□	□
My dog isn't exercised for long enough because others exercise the dog.	□	□	□	□	□	□	□
My vet believes that I don't exercise my dog for the appropriate length of time.	□	□	□	□	□	□	□
Other dog owners believe that I don't exercise my dog for the appropriate length of time.	□	□	□	□	□	□	□
I would like to exercise my dog for the length of time that is recommended to me by my vet.	□	□	□	□	□	□	□
I would like to exercise my dog for the length of time that is recommended to me by other dog owners.	□	□	□	□	□	□	□
I don't exercise my dog for long enough because I don't like to.	□	□	□	□	□	□	□
I don't exercise my dog for long enough because he/she gets tired.	□	□	□	□	□	□	□
I don't exercise my dog for long enough because I am physically unable to.	□	□	□	□	□	□	□
It is important that I exercise my dog for as long as he/she likes.	□	□	□	□	□	□	□
My dog doesn't need to be exercised.	□	□	□	□	□	□	□
I don't know what the appropriate length of time my dog should be exercised.	□	□	□	□	□	□	□

Overall, how much control do you feel you have over the length of time you exercise your dog?

Completely not in my control	Not in my control	Somewhat not in my control	Unsure	Somewhat in my control	In my control	Completely in my control
□	□	□	□	□	□	□

How likely is it that in the future that you will exercise your dog for the appropriate length of time?

Extremely unlikely	Unlikely	Somewhat unlikely	Neither likely nor unlikely	Somewhat likely	Likely	Extremely likely
□	□	□	□	□	□	□

The following questions ask you to indicate whether you agree or disagree with the following statements regarding the *number of times you* exercise your dog

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
I don't know how often I should exercise my dog.	□	□	□	□	□	□	□
My vet believes that I don't exercise my dog as frequently as I should.	□	□	□	□	□	□	□
Other dog owners believe that I don't exercise my dog as frequently as I should.	□	□	□	□	□	□	□
I would like to exercise my dog as frequently as my vet recommends.	□	□	□	□	□	□	□
I would like to exercise my dog as frequently as other dog owners recommend.	□	□	□	□	□	□	□
I don't exercise my dog frequently enough because I don't like to.	□	□	□	□	□	□	□
I don't exercise my dog as frequently as I should because I don't have time.	□	□	□	□	□	□	□
I don't exercise my dog as frequently as I should because he/she is badly behaved.	□	□	□	□	□	□	□
It is important to me that my dog is fit.	□	□	□	□	□	□	□
My dog isn't exercised frequently enough because others exercise the dog.	□	□	□	□	□	□	□
It is important that I exercise my dog as frequently as he/she likes.	□	□	□	□	□	□	□
It is important I exercise my dog the appropriate number of times a week.	□	□	□	□	□	□	□

Overall, how much control do you feel you have over how frequently you exercise your dog?

Completely not in my control	Not in my control	Somewhat not in my control	Unsure	Somewhat in my control	In my control	Completely in my control
□	□	□	□	□	□	□

How likely is it in the future that you will exercise your dog the appropriate number of times a week?

Extremely unlikely	Unlikely	Somewhat unlikely	Neither likely nor unlikely	Somewhat likely	Likely	Extremely likely
□	□	□	□	□	□	□

The following questions ask you to indicate whether you agree or disagree with the following statements regarding the *type* of exercise that you give your dog

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
It is important that I give my dog the appropriate type of exercise.	□	□	□	□	□	□	□
It is important that I give my dog the type of exercise that he/she likes.	□	□	□	□	□	□	□
My dog isn't given the appropriate type of exercise because others exercise the dog.	□	□	□	□	□	□	□
I don't give my dog the appropriate type of exercise because I don't like to.	□	□	□	□	□	□	□
I don't give my dog the appropriate type of exercise because he/she doesn't like that type.	□	□	□	□	□	□	□
I don't know what type of exercise to give my dog.	□	□	□	□	□	□	□
My vet believes that I don't give my dog the appropriate type of exercise.	□	□	□	□	□	□	□
Other dog owners believe that I don't give my dog the appropriate type of exercise.	□	□	□	□	□	□	□
I would like to give my dog the type of exercise that is recommended to me by my vet.	□	□	□	□	□	□	□
I would like to give my dog the type of exercise that is recommended to me by other dog owners.	□	□	□	□	□	□	□
I don't give my dog the appropriate type of exercise because I don't have access to the appropriate areas.	□	□	□	□	□	□	□

Overall, how much control do you feel you have over the type of exercise you give your dog?

Completely not in my control	Not in my control	Somewhat not in my control	Unsure	Somewhat in my control	In my control	Completely in my control
□	□	□	□	□	□	□

How likely is it, in the future that you will give your dog the appropriate type of exercise?

Extremely unlikely	Unlikely	Somewhat unlikely	Neither likely nor unlikely	Somewhat likely	Likely	Extremely likely
□	□	□	□	□	□	□

Support for dog walking

Using the scale below, please indicate how often family members and friends do each of the behaviours below with you.

0 - Never 1 - Rarely 2 - Occasionally 3 - Often 4 - Very often

	Friends	Family
Walk a dog with me.	_____	_____
Offer to walk a dog with me.	_____	_____
Give me helpful reminders to walk the dog(s).	_____	_____
Give me encouragement to walk the dog(s).	_____	_____
Change their schedule to walk a dog with me.	_____	_____
Discuss walking dogs with me.	_____	_____
Plan activities with me that include dog walking.	_____	_____

Confidence

Please rate (circle) how <u>confident</u> you are that you would consistently do the following activities if you really wanted to.

SD - Strongly disagree D - Disagree U - Undecided A - Agree SA - Strongly agree

Get up early, even on weekends, to walk your dog.	SD	D	U	A	SA
Walk the dog after a long, tiring day at work.	SD	D	U	A	SA
Walk the dog even though you are feeling depressed.	SD	D	U	A	SA
Walk the dog when undergoing a stressful life change (divorce, death in family, moving, new baby, health issues).	SD	D	U	A	SA
Walk the dog when your family is asking for more time from you.	SD	D	U	A	SA
Walk the dog when you have household chores to do.	SD	D	U	A	SA
Walk the dog when social obligations are very time consuming.	SD	D	U	A	SA
Walk the dog when you have excessive demands at work.	SD	D	U	A	SA
Read, study, use the internet or watch T.V. less in order to walk your dog more.	SD	D	U	A	SA
Walk the dog even in the dark.	SD	D	U	A	SA

Expectations about dog walking

Please circle your level of agreement with these statements about walking with your dog(s).

SD - Strongly disagree D - Disagree U - Undecided A - Agree SA - Strongly agree

Walking with my dog(s) will improve my health.	SD	D	U	A	SA
Walking with my dog(s) will improve the health of my dog.	SD	D	U	A	SA
Walking with my dog(s) will maintain my health.	SD	D	U	A	SA
Walking with my dog(s) will maintain the health of my dog.	SD	D	U	A	SA
I will enjoy walking with my dog.	SD	D	U	A	SA
Walking with my dog(s) will increase my opportunities for socializing.	SD	D	U	A	SA
Walking with my dog(s) will provide me with companionship.	SD	D	U	A	SA
Walking with my dog(s) will improve my mood.	SD	D	U	A	SA
Walking with my dog(s) will reduce my stress.	SD	D	U	A	SA
Walking with my dog(s) will help me cope with stressors.	SD	D	U	A	SA
Walking with my dog(s) will give me a sense of accomplishment.	SD	D	U	A	SA
Walking with my dog(s) will make my dog happy.	SD	D	U	A	SA
Walking with my dog(s) will increase my energy.	SD	D	U	A	SA
Walking with my dog(s) will make my dog behave better.	SD	D	U	A	SA

Please indicate (circle) how important the following outcomes of dog walking are to you

VU - Very unimportant U - Unimportant N – Neither
I - Important VI - Very important

Improve my health.	VU	U	N	I	VI
Improve the health of my dog.	VU	U	N	I	VI
Maintain my health.	VU	U	N	I	VI
Maintain the health of my dog.	VU	U	N	I	VI
Give me enjoyment.	VU	U	N	I	VI
Increase my opportunities for socializing.	VU	U	N	I	VI
Provide me with companionship.	VU	U	N	I	VI
Improve my mood.	VU	U	N	I	VI
Reduce my stress.	VU	U	N	I	VI

Help me cope with stressors.	VU	U	N	I	VI
Give me a sense of accomplishment.	VU	U	N	I	VI
Make my dog happy.	VU	U	N	I	VI
Increase my energy.	VU	U	N	I	VI
Make my dog behave better.	VU	U	N	I	VI

Please circle your level of agreement with the following statements about your dog(s)..

SD - Strongly disagree D - Disagree U - Undecided A - Agree SA - Strongly agree

Having my dog makes me walk more.	SD	D	U	A	SA
My dog provides encouragement for me to go on walks.	SD	D	U	A	SA
My dog provides social support for me to go on walks.	SD	D	U	A	SA

What factors encourage you to walk with your dog(s)? (Check all that apply)

____ My health	____ My dog's health	____ Maintain my weight
____ Lose weight	____ Good weather	____ Dog's enjoyment
____ Maintain dog's weight	____ Reduce dog's weight	____ Large dog
____ Energetic dog	____ Other: (please specify):	_____

What factors discourage you to walk with your dog(s)? (Check all that apply)

____ Cold weather	____ Hot weather	____ Rain
____ Snow	____ My health	____ Dog is old
____ Dog is wild	____ Dog's health	____ Lack of time
____ Small dog	____ Untrained dog	____ Dog difficult to control
____ Difficult for me to walk	____ More than one dog to walk	
____ Other: (please specify):	_____	

Your neighborhood

Please circle your level of agreement with the following statements about your neighborhood. Neighborhood is defined as the area surrounding your home, whether you live in an urban, suburban, or rural area.

SD - Strongly disagree D - Disagree U - Undecided A - Agree SA - Strongly agree

Large open, grassy areas.	SD	D	U	A	SA
Paths that provide interesting walks.	SD	D	U	A	SA
A fenced area where dogs are allowed to be o_ the leash.	SD	D	U	A	SA
Children's playground separate from dog area.	SD	D	U	A	SA
Dog dropping (poo) bags and bins at entrances and exits to parks and trails.	SD	D	U	A	SA
Outdoor lighting present.	SD	D	U	A	SA
Signs to say if dogs are permitted.	SD	D	U	A	SA
Signs to remind people to pick up after their dog.	SD	D	U	A	SA
Signs to say whether dog is allowed to be on or off leash.	SD	D	U	A	SA
Trees and shrubs for dogs to sniff.	SD	D	U	A	SA
Access to drinking water for dogs.	SD	D	U	A	SA
Sitting areas with benches.	SD	D	U	A	SA
Interesting things to look at while walking.	SD	D	U	A	SA
A local group supportive of dog walking.	SD	D	U	A	SA
Sidewalks that are well maintained (paved, even, few cracks).	SD	D	U	A	SA
So much traffic that it is difficult or unpleasant to walk.	SD	D	U	A	SA
Crime that makes it unsafe to go on walks during the day.	SD	D	U	A	SA
Crime that makes it unsafe to go on walks at night.	SD	D	U	A	SA
Other dogs which may interfere with my walk.	SD	D	U	A	SA

Supplementary Material C

Follow-up Questionnaire

QUESTIONS ABOUT YOUR DOG's WEIGHT

1. Do you know your dog's weight?

Yes / No

2. What is the current weight of your dog (in kg)?

My dog's weight (in kg) is _____

3. Below is a set of pictures illustrating dog weight. Please choose a picture which bests describes your dog:

Very underweight	Underweight	Normal weight	Overweight	Very overweight
☐	☒	☒	☒	☒

4. Do you monitor your dog's weight?

Yes / no

5. How often do you (or your vet) weigh your dog?

Several times a day / once a day / several times a week / once a week / less than once a week / less than once a month / never

QUESTIONS ABOUT HOW YOU FEED YOUR DOG

1. What type of treats/snacks do you give your dog in a day? Please write:

_____
_____

2. How frequently do you feed your dog treats (not including dental sticks, chews, or bones)?

Nine to ten a day / Seven to eight times a day / Five to six times a day / Three to four times a day / One to two a day / Several times a week / Once a week / Less than once a week / Never

3. How frequently do you give your dog dental sticks, chews, or bones?

Nine to ten a day / Seven to eight times a day / Five to six times a day / Three to four times a day / One to two a day / Several times a week / Once a week / Less than once a week / Never

4. What do you mostly feed your dog?

Please indicate the percentage of each feed that you give your dog daily, e.g., 25% dry food, 75% tinned food, or 100% home cooked etc).

Dry food	_____%
Raw meat (non-supermarket only)	_____%
Dog meat sausage / supermarket raw meat	_____%
Tinned food	_____%
Table scraps / leftovers	_____%
Home cooked	_____%
Other (please specify)_____	_____%

5. How do you feed your dog?

Leave it in the bowl / Follow the label instructions / Provide the food and remove it after some time if the dog does not eat all of it

6. How many meals does your dog receive in a typical day? _____ meals

7. How much do you feed your dog?
1 cup = 250ml measuring cup contains approximately 90g dry food

☐ Less than ½ cup a day	☐ 3 ½ to 4 cups a day
☐ ½ to 1 cup a day	☐ 4 to 4 ½ cups a day
☐ 1 to 1 ½ cups a day	☐ 4 ½ to 5 cups a day
☐ 1 ½ to 2 cups a day	☐ Over 5 cups a day
☐ 2 to 2 ½ cups a day	☐Food is always available
☐ 2 ½ to 3 cups a day	☐ Somebody else feed my dog

□ 3 to 3 ½ cups a day □ Other , please write _____

8. The following questions ask you to indicate whether you agree or disagree with the following statements regarding the <u>amount of food</u> that you feed your dog.

	Strongly disagree	Disagree	Some-what disagree	Neither agree nor disagree	Some-what agree	Agree	Strongly agree
It is important that I feed my dog the appropriate <u>amount</u> of food in a day.	□	□	□	□	□	□	□
My dog is overfed because I indulge him/her.	□	□	□	□	□	□	□
It's important that I feed my dog as much as he/she wants to eat.	□	□	□	□	□	□	□
My dog eats only the amount he/she needs.	□	□	□	□	□	□	□
My dog is overfed because others feed the dog.	□	□	□	□	□	□	□
I don't know how much to feed my dog.	□	□	□	□	□	□	□
My dog is overfed because he/she is always wants food.	□	□	□	□	□	□	□
My vet believes that I feed my dog too much.	□	□	□	□	□	□	□
Other dog owners believe that I feed my dog too much.	□	□	□	□	□	□	□
I would like to feed my dog the amount that is recommended to me by my vet.	□	□	□	□	□	□	□
I would like to feed my dog the amount that is recommended to me by other dog owners.	□	□	□	□	□	□	□

9. Overall, how much control do you feel you have over the *<u>amount</u>* you feed your dog?

Completely not in my control	Not in my control	Somewhat not in my control	Unsure	Somewhat in my control	In my control	Completely in my control
□	□	□	□	□	□	□

10. How likely is it that you will feed your dog the appropriate *<u>amount of food</u>* in the future?

Extremely unlikely	Unlikely	Somewhat unlikely	Neither likely nor unlikely	Somewhat likely	Likely	Extremely likely
□	□	□	□	□	□	□

11. The following questions ask you to indicate whether you agree or disagree with the following statements regarding the *type of food* you feed your dog.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
It's important that I feed my dog the appropriate type of food.	□	□	□	□	□	□	□
I feed my dog inappropriate food because I like to spoil him/her.	□	□	□	□	□	□	□
My dog isn't given the appropriate type of food because others feed the dog.	□	□	□	□	□	□	□
I would like to feed my dog the type of food that is recommended to me by my vet.	□	□	□	□	□	□	□
It's important that I feed my dog whatever he/she likes to eat.	□	□	□	□	□	□	□
I don't know what type of food to feed my dog.	□	□	□	□	□	□	□
My vet believes that I don't feed my dog the appropriate type of food.	□	□	□	□	□	□	□
Other dog owners believe that I don't feed my dog the appropriate type of food.	□	□	□	□	□	□	□
I feed my dog inappropriate types of food because the other food is too expensive.	□	□	□	□	□	□	□
I feed my dog inappropriate types of food because he/she likes that kind of food.	□	□	□	□	□	□	□
I would like to feed my dog the type of food that is recommended to me by other dog owners.	□	□	□	□	□	□	□

12. Overall, how much control do you feel you have over the *type of food* you feed your dog?

Completely not in my control	Not in my control	Somewhat not in my control	Unsure	Somewhat in my control	In my control	Completely in my control
□	□	□	□	□	□	□

13. How likely is it that you will feed your dog the appropriate *type of food* in the future?

Extremely unlikely	Unlikely	Somewhat unlikely	Neither likely nor unlikely	Somewhat likely	Likely	Extremely likely
□	□	□	□	□	□	□

14. The following questions ask you to indicate whether you agree or disagree with the following statements regarding the *frequency* with which you feed meals to your dog.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
My dog isn't fed the appropriate number of times a day because others feed the dog. Strongly	□	□	□	□	□	□	□
It's important that I feed my dog the appropriate number of times a day.	□	□	□	□	□	□	□
I don't know how many times in a day I should feed my dog.	□	□	□	□	□	□	□
It's important that I feed my dog whenever he/she wants to be fed.	□	□	□	□	□	□	□
My vet believes that I should feed my dog more frequent meals during the day.	□	□	□	□	□	□	□
Other dog owners believe that I should feed my dog more frequent meals during the day.	□	□	□	□	□	□	□
I don't have time to feed my dog more frequent meals during the day.	□	□	□	□	□	□	□
I would like to feed my dog as often as is recommended to me by my vet.	□	□	□	□	□	□	□
I would like to feed my dog as often as is recommended to me by other dog owners.	□	□	□	□	□	□	□

15. Overall, how much control do you feel you have over the *number of times* you feed your dog during the day?

Completely not in my control	Not in my control	Somewhat not in my control	Unsure	Somewhat in my control	In my control	Completely in my control
□	□	□	□	□	□	□

16. In the future, how likely is it that you will feed your dog the appropriate *number of times* during the week?

Extremely unlikely	Unlikely	Somewhat unlikely	Neither likely nor unlikely	Somewhat likely	Likely	Extremely likely
□	□	□	□	□	□	□

QUESTIONS ABOUT HOW YOU EXERCISE YOUR DOG

1. How many times a week do you exercise your dog?
(please write)_____

2. What is the main type of exercise you give your dog?

 Walk on lead

 Run on lead

 Take for a swim

 Play fetch or other games

 Other (please write)_____

3. On average, what is the length of time of each exercise session?

 Less than 15 minutes

 15 to 30 minutes

 30 to 45 minutes

 45 to 60 minutes

 Over 60 minutes

4. How many days do you walk with your dog in a typical week?
_____

5. How much time do you spend walking during your typical dog walk?
minutes per walk_____

6. On days you walk with your dog(s), on average how many walks do you go on? (Please check only 1)
1 walk 2 walks 3 walks 4 walks 5 walks more than 5 walks

7. Do you play with your dog in the garden or inside your home?

Yes / No

9. The following questions ask you to indicate whether you agree or disagree with the following statements regarding the *duration* of exercise you give your dog

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
It is important that I exercise my dog for the appropriate length of time.	□	□	□	□	□	□	□
My dog isn't exercised for long enough because others exercise the dog.	□	□	□	□	□	□	□
My vet believes that I don't exercise my dog for the appropriate length of time.	□	□	□	□	□	□	□
Other dog owners believe that I don't exercise my dog for the appropriate length of time.	□	□	□	□	□	□	□
I would like to exercise my dog for the length of time that is recommended to me by my vet.	□	□	□	□	□	□	□
I would like to exercise my dog for the length of time that is recommended to me by other dog owners.	□	□	□	□	□	□	□
I don't exercise my dog for long enough because I don't like to.	□	□	□	□	□	□	□
I don't exercise my dog for long enough because he/she gets tired.	□	□	□	□	□	□	□
I don't exercise my dog for long enough because I am physically unable to.	□	□	□	□	□	□	□
It is important that I exercise my dog for as long as he/she likes.	□	□	□	□	□	□	□
My dog doesn't need to be exercised.	□	□	□	□	□	□	□
I don't know what the appropriate length of time my dog should be exercised.	□	□	□	□	□	□	□

10. Overall, how much control do you feel you have over the *length of time* you exercise your dog?

Completely not in my control	Not in my control	Somewhat not in my control	Unsure	Somewhat in my control	In my control	Completely in my control
□	□	□	□	□	□	□

11. How likely is it that in the future that you will exercise your dog for the appropriate *length of time*?

Extremely unlikely	Unlikely	Somewhat unlikely	Neither likely nor unlikely	Somewhat likely	Likely	Extremely likely
□	□	□	□	□	□	□

12. The following questions ask you to indicate whether you agree or disagree with the following statements regarding the *number of times you* exercise your dog

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
I don't know how often I should exercise my dog.	□	□	□	□	□	□	□
My vet believes that I don't exercise my dog as frequently as I should.	□	□	□	□	□	□	□
Other dog owners believe that I don't exercise my dog as frequently as I should.	□	□	□	□	□	□	□
I would like to exercise my dog as frequently as my vet recommends.	□	□	□	□	□	□	□
I would like to exercise my dog as frequently as other dog owners recommend.	□	□	□	□	□	□	□
I don't exercise my dog frequently enough because I don't like to.	□	□	□	□	□	□	□
I don't exercise my dog as frequently as I should because I don't have time.	□	□	□	□	□	□	□
I don't exercise my dog as frequently as I should because he/she is badly behaved.	□	□	□	□	□	□	□
It is important to me that my dog is fit.	□	□	□	□	□	□	□
My dog isn't exercised frequently enough because others exercise the dog.	□	□	□	□	□	□	□
It is important that I exercise my dog as frequently as he/she likes.	□	□	□	□	□	□	□
It is important I exercise my dog the appropriate number of times a week.	□	□	□	□	□	□	□

13. Overall, how much control do you feel you have over how *frequently* you exercise your dog?

Completely not in my control	Not in my control	Somewhat not in my control	Unsure	Somewhat in my control	In my control	Completely in my control
□	□	□	□	□	□	□

14. How likely is it in the future that you will exercise your dog the *appropriate number of times* a week?

Extremely unlikely	Unlikely	Somewhat unlikely	Neither likely nor unlikely	Somewhat likely	Likely	Extremely likely
□	□	□	□	□	□	□

15. The following questions ask you to indicate whether you agree or disagree with the following statements regarding the *type of exercise* that you give your dog

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
It is important that I give my dog the appropriate type of exercise.	□	□	□	□	□	□	□
It is important that I give my dog the type of exercise that he/she likes.	□	□	□	□	□	□	□
My dog isn't given the appropriate type of exercise because others exercise the dog.	□	□	□	□	□	□	□
I don't give my dog the appropriate type of exercise because I don't like to.	□	□	□	□	□	□	□
I don't give my dog the appropriate type of exercise because he/she doesn't like that type.	□	□	□	□	□	□	□
I don't know what type of exercise to give my dog.	□	□	□	□	□	□	□
My vet believes that I don't give my dog the appropriate type of exercise.	□	□	□	□	□	□	□
Other dog owners believe that I don't give my dog the appropriate type of exercise.	□	□	□	□	□	□	□
I would like to give my dog the type of exercise that is recommended to me by my vet.	□	□	□	□	□	□	□
I would like to give my dog the type of exercise that is recommended to me by other dog owners.	□	□	□	□	□	□	□
I don't give my dog the appropriate type of exercise because I don't have access to the appropriate areas.	□	□	□	□	□	□	□

16. Overall, how much control do you feel you have over the *type of exercise* you give your dog?

Completely not in my control	Not in my control	Somewhat not in my control	Unsure	Somewhat in my control	In my control	Completely in my control
□	□	□	□	□	□	□

17. How likely is it, in the future that you will give your dog the appropriate *type of exercise*?

Extremely unlikely	Unlikely	Somewhat unlikely	Neither likely nor unlikely	Somewhat likely	Likely	Extremely likely
□	□	□	□	□	□	□

Support for dog walking

18. Using the scale below, please indicate how often family members and friends do each of the behaviours below with you.

0 - Never 1 - Rarely 2 - Occasionally 3 - Often 4 - Very often

	Friends	Family
Walk a dog with me.	_____	_____
Offer to walk a dog with me.	_____	_____
Give me helpful reminders to walk the dog(s).	_____	_____
Give me encouragement to walk the dog(s).	_____	_____
Change their schedule to walk a dog with me.	_____	_____
Discuss walking dogs with me.	_____	_____
Plan activities with me that include dog walking.	_____	_____

Confidence

19. Please rate (circle) how confident you are that you would consistently do the following activities if you really wanted to.

SD - Strongly disagree D - Disagree U - Undecided A - Agree SA - Strongly agree

Get up early, even on weekends, to walk your dog.	SD	D	U	A	SA
Walk the dog after a long, tiring day at work.	SD	D	U	A	SA
Walk the dog even though you are feeling depressed.	SD	D	U	A	SA
Walk the dog when undergoing a stressful life change (divorce, death in family, moving, new baby, health issues).	SD	D	U	A	SA
Walk the dog when your family is asking for more time from you.	SD	D	U	A	SA
Walk the dog when you have household chores to do.	SD	D	U	A	SA
Walk the dog when social obligations are very time consuming.	SD	D	U	A	SA
Walk the dog when you have excessive demands at work.	SD	D	U	A	SA
Read, study, use the internet or watch T.V. less in order to walk your dog more.	SD	D	U	A	SA
Walk the dog even in the dark.	SD	D	U	A	SA

Expectations about dog walking

20. Please circle your level of agreement with these statements about walking with your dog(s).

SD - Strongly disagree D - Disagree U - Undecided A - Agree SA - Strongly agree

Walking with my dog(s) will improve my health.	SD	D	U	A	SA
Walking with my dog(s) will improve the health of my dog.	SD	D	U	A	SA
Walking with my dog(s) will maintain my health.	SD	D	U	A	SA
Walking with my dog(s) will maintain the health of my dog.	SD	D	U	A	SA
I will enjoy walking with my dog.	SD	D	U	A	SA
Walking with my dog(s) will increase my opportunities for socializing.	SD	D	U	A	SA
Walking with my dog(s) will provide me with companionship.	SD	D	U	A	SA
Walking with my dog(s) will improve my mood.	SD	D	U	A	SA
Walking with my dog(s) will reduce my stress.	SD	D	U	A	SA
Walking with my dog(s) will help me cope with stressors.	SD	D	U	A	SA
Walking with my dog(s) will give me a sense of accomplishment.	SD	D	U	A	SA
Walking with my dog(s) will make my dog happy.	SD	D	U	A	SA
Walking with my dog(s) will increase my energy.	SD	D	U	A	SA
Walking with my dog(s) will make my dog behave better.	SD	D	U	A	SA

21. Please indicate (circle) how important the following outcomes of dog walking are to you

VU - Very unimportant U - Unimportant N – Neither
I - Important VI - Very important

Improve my health.	VU	U	N	I	VI
Improve the health of my dog.	VU	U	N	I	VI
Maintain my health.	VU	U	N	I	VI
Maintain the health of my dog.	VU	U	N	I	VI
Give me enjoyment.	VU	U	N	I	VI
Increase my opportunities for socializing.	VU	U	N	I	VI
Provide me with companionship.	VU	U	N	I	VI
Improve my mood.	VU	U	N	I	VI
Reduce my stress.	VU	U	N	I	VI

Help me cope with stressors.	VU	U	N	I	VI
Give me a sense of accomplishment.	VU	U	N	I	VI
Make my dog happy.	VU	U	N	I	VI
Increase my energy.	VU	U	N	I	VI
Make my dog behave better.	VU	U	N	I	VI

22. Please circle your level of agreement with the following statements about your dog(s)..

SD - Strongly disagree D - Disagree U - Undecided A - Agree SA - Strongly agree

Having my dog makes me walk more.	SD	D	U	A	SA
My dog provides encouragement for me to go on walks.	SD	D	U	A	SA
My dog provides social support for me to go on walks.	SD	D	U	A	SA

23. What factors encourage you to walk with your dog(s)? (Check all that apply)

____ My health	____ My dog's health	____ Maintain my weight
____ Lose weight	____ Good weather	____ Dog's enjoyment
____ Maintain dog's weight	____ Reduce dog's weight	____ Large dog
____ Energetic dog	____ Other: (please specify):	_____

24 What factors discourage you to walk with your dog(s)? (Check all that apply)

____ Cold weather	____ Hot weather	____ Rain
____ Snow	____ My health	____ Dog is old
____ Dog is wild	____ Dog's health	____ Lack of time
____ Small dog	____ Untrained dog	____ Dog difficult to control
____ Difficult for me to walk	____ More than one dog to walk	
____ Other: (please specify):	_____	

Supplementary Material D

Characteristics of Owners and Dogs at Baseline (by Condition and Overall)

	Intervention		Control		Overall	
Variable	*N*		*N*		*N*	
Characteristics of the owners						
Modal age of owner	24	45 to 60	26	45 to 60	50	45 to 60
Percentage of male owners	24	29%	26	46%	50	38%
Modal highest educational qualification of owners	21	A level (or equivalent)	24	No formal qualifications	45	A level (or equivalent)
Percentage of white owners	11	100%	11	100%	22	100%
Percentage of owners in full time employment	24	25%	27	33%	51	29%
Characteristics of the household						
Average number of adults in the household (*SD*)	23	1.4 (1.1)	27	1.4 (0.85)	50	1.4 (0.97)
Average number of adults that feed the dog (*SD*)	24	1.7 (0.87)	30	1.8 (0.50)	54	1.7 (0.69)
Average number of adults that exercise the dog (*SD*)	25	1.7 (0.83)	31	1.9 (0.81)	56	1.8 (0.81)
Average number of children in the household (*SD*)	23	0.35 (0.94)	27	0.63 (1.42)	50	0.50 (1.22)
Average number of children that feed the dog (*SD*)	25	0.24 (0.60)	30	0.23 (1.10)	55	0.24 (0.90)
Average number of children that exercise the dog (*SD*)	25	0.24 (0.52)	31	0.06 (0.25)	56	0.14 (0.40)
Percentage of owners that most frequently feed dog	25	92%	31	77%	56	84%

Percentage of owners that most frequently exercise dog	25	84%	29	72%	54	78%
Percentage of owners who have other dogs	25	40%	29	28%	54	33%
Percentage of owners who have other pets	20	25%	27	22%	47	23%
Modal source of information on diet or nutrition	24	My vet	29	My vet	53	My vet
Modal source of information on exercising	24	My vet	29	My vet	53	My vet
Average score on the 'dog attachment scale' (Cutt et al., 2008)	25	4.6 (0.48)	31	4.7 (0.39)	56	5.6 (0.43)
Characteristics of the dogs						
Average age of dogs in sample (*SD*)	24	6.3 (2.8)	29	6.8 (3.8)	53	6.5 (3.3)
Percentage of male dogs in sample	24	63%	28	50%	52	56%
Percentage of neutered dogs in sample	23	96%	30	93%	53	94%
Percentage of small dogs in sample	24	29%	29	38%	53	34%
Percentage of medium dogs in sample	24	42%	29	34%	53	38%
Percentage of large dogs in sample	24	29%	29	28%	53	28%
Percentage of dogs in sample that have health problems	25	48%	31	26%	56	36%
Breed of the dogs (owner reported)						
Hound	4	8%	3	5%	7	7%
Gundog (sporting)	9	18%	11	19%	20	19%
Terrier	11	22%	6	11%	17	16%
Utility (non-sporting)	2	4%	3	5%	5	5%

Working / herding	4	8%	7	12%	11	10%
Toy	2	4%	8	14%	10	9%
Mixed	14	29%	12	21%	26	25%
Not specified	3	6%	7	12%	10	9%
Dog Obesity Risk and Appetite (DORA) questionnaire (Raffan et al., 2015)						
Food responsiveness and satiety (dog factor 1)	21	58 (25)	27	64 (24)	48	62 (24)
Lack of fussiness (dog factor 2)	22	54 (28)	27	55 (29)	49	55 (28)
Interest in food (dog factor 3)	23	67 (24)	30	72 (21)	53	70 (22)
Owner's perception of their dog's weight (owner factor 1)	24	68 (28)	30	63 (27)	54	65 (26)
Owner's intervention to control weight (owner factor 2)	24	51 (25)	29	62 (28)	53	57 (27)
Restrictions on human food (owner factor 3)	22	64 (20)	29	71 (23)	51	68 (22)
Exercise taken (owner factor 4)	23	56 (24)	29	61 (20)	52	59 (22)
Signs of gastrointestinal disease (health factor 1)	24	28 (27)	31	19 (24)	55	23 (25)
Current disease (health factor 2)	24	22 (28)	31	11 (18)	55	16 (24)
Dog motivation score	20	59 (23)	25	66 (19)	45	63 (21)
Owner motivation score	21	60 (16)	27	65 (17)	48	63 (16)
The Dogs and Physical Activity (DAPA) Tool (Cutt et al., 2008)						
Extent to which neighborhood is viewed as suitable for dog walking (*SD*)	23	3.6 (0.44)	28	3.6 (0.48)	51	3.6 (0.46)

Note. Baseline characteristics on measures that were also taken at follow-up are provided in Supplementary Material B.

Supplementary Material E

Descriptive Statistics for Outcome Variables at Baseline and Follow-Up by Condition

	Intervention						Control					
	Baseline (all participants)		Baseline (only participants who completed the follow-up assessment)		Follow-up		Baseline (all participants)		Baseline (only participants who completed the follow-up assessment)		Follow-up	
Variable	*N*		*N*		*N*		*N*		*N*		*N*	
Average percentage change in dogs' weight per week - calculated from veterinary records (*SD*)					25	-0.095 (0.68)					25	-0.22 (0.53)
Average weight of dogs in kg - calculated from veterinary records (*SD*)	51	23 (13)	30	21 (14)	30	21 (14)	45	25 (15)	31	24 (14)	31	23 (14)
Average weight of dogs in kg – owner reported (*SD*)	24	24 (13)	9	29 (13)	9	28 (14)	24	25 (16)	6	27 (9.4)	6	26 (9.7)
Average body condition score – veterinary practice rated (*SD*)	41	7.0 (1.1)	15	6.9 (1.2)	15	6.4 (1.1)	33	7.0 (0.94)	13	6.8 (0.90)	13	6.3 (0.83)
Average body condition score - owner reported on 5-point scale (*SD*)	25	3.9 (0.40)	9	3.9 (0.60)	9	3.6 (0.53)	31	4.0 (0.52)	11	4.1 (0.54)	11	3.9 (0.54)
Percentage of owners who monitor their dog's weight	25	88%	8	100%	13	77%	31	74%	11	64%	11	82%

Modal frequency with which owners' report weighing dog	22	Less than once a month	8	Less than once a month	12	Less than once a month	28	Less than once a month	11	Less than once a month	11	Less than once a month
Modal frequency of giving treats to the dog	24	One or two a day	9	Three to four times a day to several times a week[1]	12	One or two a day	30	One or two a day	11	Three to four times a day[2]	12	One or two a day
Modal frequency of giving dental sticks, chews, or bones to the dog	25	One or two a day	7	Several times a week to never[3]	9	One or two a day	30	One or two a day	11	One or two a day	12	Several times a week
Average proportion of food types provided (*SD*)												
Dry food	24	0.66 (0.34)	10	0.77 (0.31)	10	0.79 (0.27)	31	0.65 (0.36)	12	0.64 (0.43)	12	0.67 (0.38)
Raw meat (non-supermarket only)	24	0.033 (0.16)	10	0.00 (0.00)	10	0.00 (0.00)	30	0.11 (0.31)	12	0.17 (0.40)	12	0.067 (0.23)
Dog meat sausage / supermarket raw meat	24	0.025 (0.10)	10	0.00 (0.00)	10	0.00 (0.00)	30	0.00 (0.00)	12	0.00 (0.00)	12	0.042 (0.14)
Tinned food	24	0.14 (0.21)	10	**0.20 (0.28)**	10	**0.16 (0.26)**	30	0.10 (0.19)	12	**0.00 (0.00)**	12	**0.0042 (0.014)**
Table scraps / leftovers	24	0.031 (0.10)	10	0.020 (0.042)	10	0.050 (0.016)	30	0.027 (0.086)	12	0.033 (0.12)	12	0.021 (0.058)

[1] Three categories selected with equal frequency: 'Three to four times a day', 'One or two a day', and 'Several times a week'.
[2] Equally frequent as 'one or two a day'.
[3] Three categories selected with equal frequency: 'Several times a week', 'Once a week' and 'Never'.

Home cooked	24	0.069 (0.18)	10	0.00 (0.00)	10	0.050 (0.016)	30	0.087 (0.24)	12	0.092 (0.29)	12	0.092 (0.29)
Other	24	0.050 (0.18)	10	0.010 (0.032)	10	0.045 (0.083)	29	0.028 (0.11)	12	0.067 (0.16)	12	0.11 (0.22)
Modal method of feeding dog	21	Leave it in the bowl	8	Leave it in the bowl	14	Leave it in the bowl	24	Leave it in the bowl	10	Leave it in the bowl	12	Leave it in the bowl
Average number of meals fed in a typical day (*SD*)	25	**2.1 (0.70)**	9	2.2 (0.67)	9	2.3 (0.87)	31	**1.8 (0.55)**	12	1.9 (0.53)	12	1.9 (0.56)
Average number of (half) cups of food fed per day (1 cup = 250ml or 90g)	22	4.0 (2.1)	9	3.4 (1.7)	9	3.6 (1.4)	26	4.2 (2.1)	9	4.4 (1.7)	9	3.2 (1.6)
Average number of times per week that the dog is exercised (*SD*)	23	13 (9.0)	7	14 (11)	7	16 (7.8)	31	12 (8.2)	11	11 (4.7)	11	14 (10)
Modal type of exercise given to the dog	24	Walk on lead	9	Walk on lead	12	Walk on lead	31	Walk on lead	12	Walk on lead	12	Walk on lead
Modal length of each exercise session	24	30 to 45 minutes	9	30 to 45 minutes	11	30 to 45 minutes	31	30 to 45 minutes	10	30 to 45 minutes	12	15 to 30 minutes or 45 to 60 minutes[4]
Average number of days that dog is walked in a typical week (*SD*)	24	6.2 (1.7)	9	7.0 (0.00)	9	7.0 (0.00)	31	6.2 (1.7)	11	6.9 (0.30)	11	7.0 (0.00)
Average time spent walking on a typical dog walk (minutes) (*SD*)	22	30 (22)	6	52 (36)	6	48 (18)	31	44 (22)	10	48 (24)	10	40 (20)
Average number of walks per day (on days when dog is walked) (*SD*)	24	2.5 (1.6)	9	3.2 (2.0)	9	2.2 (1.3)	31	2.3 (1.6)	11	2.3 (1.1)	11	2.5 (1.2)

[4] Selected with equal frequency.

Percentage of owners that play with their dog in the garden or at home	24	88%	9	78%	12	83%	31	81%	12	92%	12	83%
Measures of social cognitions (from Rohlf et al., 2010)												
Average intentions to feed the appropriate amount / type / frequency of food (*SD*)	24	6.2 (0.75)	10	6.8 (0.28)	10	6.7 (0.47)	31	6.1 (1.2)	11	5.9 (1.4)	11	6.3 (1.1)
Average perceived value of appropriate feeding (*SD*)	25	6.2 (0.72)	10	6.5 (0.67)	10	6.5 (0.36)	31	6.3 (0.94)	11	6.5 (1.0)	11	6.3 (0.89)
Average lack of knowledge with respect to feeding (*SD*)	24	2.2 (1.1)	10	1.9 (1.2)	10	2.3 (1.3)	31	2.0 (1.3)	11	2.4 (1.4)	11	2.2 (1.3)
Average strength of beliefs about feeding to please the dog (*SD*)	24	**2.5 (1.4)**	10	**2.0 (1.2)**	10	**1.6 (0.43)**	31	**2.3 (1.1)**	11	**2.6 (1.1)**	11	**2.9 (1.5)**
Average owner centred barriers to appropriate feeding (*SD*)	25	3.0 (1.7)	10	2.2 (1.5)	10	2.2 (1.3)	31	2.5 (1.5)	11	3.5 (1.7)	11	3.0 (1.4)
Average dog centred barriers to appropriate feeding (*SD*)	25	3.1 (1.4)	10	2.8 (1.7)	10	2.8 (1.0)	31	2.8 (1.5)	11	3.0 (1.9)	11	2.8 (1.5)
Average strength of normative beliefs from vet with respect to feeding (*SD*)	24	3.0 (1.3)	10	2.7 (1.7)	10	2.5 (1.2)	31	3.2 (1.1)	10	3.3 (1.2)	10	2.9 (1.4)
Average strength of normative beliefs from others with respect to feeding (*SD*)	24	2.7 (1.3)	10	2.6 (1.6)	10	2.3 (1.1)	31	3.0 (1.5)	10	3.4 (1.8)	10	2.4 (0.97)
Average motivation to comply with vet's beliefs about feeding (*SD*)	25	5.6 (1.1)	10	6.1 (0.8)	10	5.5 (1.8)	31	5.3 (1.3)	10	5.5 (1.6)	10	5.3 (1.5)

Average motivation to comply with other owners' beliefs about feeding (*SD*)	25	2.9 (1.5)	10	2.9 (1.5)	10	2.5 (1.3)	31	2.9 (1.6)	11	3.6 (1.7)	11	2.9 (1.1)
Average perceived behavioral control with respect to feeding (*SD*)	25	5.7 (1.2)	10	5.6 (1.4)	10	6.6 (0.45)	31	6.0 (1.2)	11	5.7 (1.4)	11	6.4 (1.0)
Average intentions to provide the right duration, frequency, and type of exercise (*SD*)	23	6.1 (0.83)	7	6.7 (0.37)	7	6.3 (0.54)	30	5.9 (1.2)	11	6.0 (1.2)	11	6.0 (1.0)
Average perceived value of exercise (*SD*)	23	5.9 (0.88)	7	6.3 (0.64)	7	6.2 (0.76)	30	6.1 (0.76)	11	6.0 (0.93)	11	5.8 (1.5)
Average lack of knowledge about exercise (*SD*)	23	2.4 (1.3)	7	2.1 (1.2)	7	2.4 (1.7)	29	2.3 (1.3)	10	2.1 (1.0)	10	2.0 (0.96)
Average strength of beliefs about exercising to please the dog (*SD*)	23	5.0 (1.1)	7	**4.9 (1.4)**	**7**	**3.7 (1.4)**	30	5.6 (1.0)	10	**5.9 (0.88)**	**10**	**4.7 (0.84)**
Average owner-centered barriers to exercise (*SD*)	23	1.8 (0.68)	7	1.5 (0.50)	7	1.8 (0.53)	29	2.3 (1.6)	10	2.1 (0.99)	10	1.8 (0.87)
Average other-centered barriers to exercise (*SD*)	23	2.3 (1.5)	7	1.5 (0.42)	7	1.4 (0.37)	28	2.1 (1.3)	10	2.1 (1.5)	10	2.5 (1.5)
Average dog-centered barriers to exercise (*SD*)	23	2.2 (0.98)	7	2.3 (1.0)	7	2.5 (0.79)	29	2.0 (1.3)	10	1.8 (0.79)	10	1.7 (0.98)
Average strength of normative beliefs from vet with respect to exercise (*SD*)	23	2.6 (1.4)	7	1.6 (0.48)	7	2.3 (1.6)	29	2.8 (1.4)	10	3.1 (1.5)	10	2.6 (1.3)
Average strength of normative beliefs from others with respect to exercise (*SD*)	23	2.6 (1.2)	7	2.0 (0.69)	7	2.0 (1.1)	28	2.7 (1.3)	10	3.0 (1.4)	10	2.3 (1.1)

Average motivation to comply with vet's beliefs about exercise (*SD*)	23	5.4 (1.6)	7	6.1 (0.42)	7	5.1 (1.8)	28	5.0 (1.5)	10	5.5 (1.5)	10	5.3 (1.6)
Average motivation to comply with others' beliefs about exercise (*SD*)	23	3.3 (1.5)	7	3.7 (1.3)	7	2.7 (1.4)	28	3.0 (1.5)	10	3.3 (1.9)	10	2.5 (1.5)
Average perceived behavioral control with respect to exercise (*SD*)	23	5.8 (1.1)	7	6.6 (0.47)	7	6.2 (0.79)	30	5.8 (1.3)	11	5.7 (1.5)	11	6.1 (1.3)
Measures of social cognitions from the Dogs and WalkinG Survey (DAWGS; Richards et al., 2013)												
Average level of support from friends for dog walking (*SD*)	20	0.8 (0.80)	6	1.6 (1.1)	6	1.4 (0.93)	25	0.69 (0.79)	7	1.7 (1.3)	7	2.8 (3.0)
Average level of support from family for dog walking (*SD*)	22	1.4 (0.89)	5	0.94 (0.92)	5	2.7 (3.6)	26	1.5 (1.1)	7	0.79 (0.90)	7	2.3 (3.1)
Average level of support from the dog for walking (*SD*)	23	4.2 (0.65)	7	4.4 (0.57)	7	4.4 (0.52)	28	4.4 (0.65)	9	4.4 (0.69)	9	4.6 (0.60)
Average self-efficacy for dealing with obstacles to dog walking *SD*)	23	3.7 (0.81)	7	4.2 (0.37)	7	4.3 (0.43)	29	3.8 (1.1)	9	4.0 (0.61)	9	3.8 (0.81)
Average positive expectations about the outcomes of dog walking (*SD*)	23	4.3 (0.52)	7	4.2 (0.71)	7	4.3 (0.79)	29	4.4 (0.51)	9	4.3 (0.60)	9	4.4 (0.54)
Average importance of positive outcomes of dog walking (*SD*)	23	4.3 (0.49)	7	4.3 (0.67)	7	4.2 (0.66)	29	4.3 (0.53)	9	4.3 (0.61)	9	4.3 (0.61)
Average number of perceived reinforcements for dog walking (*SD*)	23	6.1 (2.2)	7	5.1 (2.9)	7	5.6 (1.7)	28	6.9 (4.9)	9	5.8 (2.3)	9	5.2 (2.3)
Average number of perceived barriers to dog walking (*SD*)	23	2.3 (1.8)	7	1.6 (1.8)	7	2.4 (1.5)	28	2.0 (1.6)	9	2.1 (1.5)	9	2.3 (1.7)

Note. Cells in **bold font** on the same row differ significantly ($p < .05$) between the intervention and control conditions for the relevant comparison (e.g., at baseline or at follow-up). There were also some main effects of time (e.g., on BCS scores as rated by the veterinary practice, PBC with respect to feeding) but these are only highlighted if they differed between the conditions (i.e., there was an interaction between time and condition).