

CAN CANINE MOBILITY BENEFIT HUMAN HEALTH?



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AUTHOR'S PROFILE

Erik Hemmingsson obtained his PhD from the University of Bristol, UK, through studies on methods for helping obese women to increase everyday physical activity. For the last five years Dr Hemmingsson has been working at the Karolinska Institutet, Stockholm, Sweden, where he carries out research studies at the Obesity Unit, Karolinska University Hospital. His main research interest continues to be finding new ways of helping obese women increase their everyday physical activity, for example by commuting to and from work in a physically active way.

INTRODUCTION

National health services are now increasingly treating diseases triggered by behaviour, such as obesity and type 2 diabetes, that in theory are highly preventable, but are difficult to manage in practice. Diet and exercise are two key behaviours where there have been rapid changes in population exposure during the last 50 years, i.e. the period where the prevalence of lifestyle-related diseases have increased. The subject of this review exclusively concerns mobility, i.e. physical activity, a behaviour currently linked with about 100-150 health effects in humans. Some of the more important beneficial effects of physical activity from a public-health point of view include reduced total mortality,^{1,3} reduced risk of cardiovascular disease,^{4,5} type 2 diabetes,⁶ enhanced weight management,^{7,8} and improved mental health.^{9,10} The health benefits of increased physical activity are greatest for those who are least physically active.¹¹ However, the health effects of physical activity are transient, making adherence to a physically active lifestyle critical for continued benefit.¹²

Indeed, the positive evidence for the health-enhancing effects of physical activity in humans is now so overwhelming that the research challenges in this field can be divided into two research priorities, (1) further evidence on the dose-response relationship between physical activity and health outcomes (how little can you get away with?), and (2) the development and evaluation of intervention schemes for adoption and maintenance of a physically active lifestyle. This review focuses on the latter research priority, specifically the aid that dogs can provide for humans who would benefit from increasing their daily physical activity, mainly in the form of walking.

TRENDS IN HUMAN HEALTH AND DISEASE

Overconsumption of food (driven by increased availability, bigger servings, increased proportion of fat and sugar, and reduction in fibre) and physical inactivity are behaviours that over time will help manifest diseases, such as obesity (defined as a body mass index [BMI] above 30 kg/m²; weight/height²) and overweight (BMI of 25-30 kg/m²) and type II diabetes, causing massive costs to society and suffering to individuals. Obesity will increase the risk of mortality^{2,18} and various morbidities, many of which have links to low physical activity, notably type II diabetes,^{14,15} coronary heart disease,^{4,16,17} and breast cancer.¹⁸ Of special note in this context is the positive interaction of low fitness/low physical activity with obesity in elevating mortality and cardiovascular relative risk.^{19,20}

Equally disturbing is perhaps the speed at which obesity and type 2 diabetes are spreading.^{21,22} For example, the prevalence of obesity in Swedish military conscripts quadrupled from 1971 to 1995. Data from other countries on prevalence and incidence rates mirror this worrying development. In the US, about 70% are now either overweight or obese, and the trend is for a stable prevalence of people being overweight, but with an increased prevalence of obesity. As more and more people have become obese, the prevalence of type 2 diabetes has increased. Another worrying trend in public health is that mental health has declined, mainly in the form of increased anxiety and depression. Obesity, type 2 diabetes and mental health are all conditions with established links to physical activity.

RATIONALE FOR A PHYSICALLY ACTIVE LIFESTYLE

Although it's unclear as to what extent that changes in physical activity have contributed to the increased prevalence in diseases, there is evidence showing that physical activity has declined over the years while prevalence rates for these lifestyle related diseases, obesity and diabetes, have increased. Although we lack direct historical data on physical activity, we can for example, compare current physical activity with more traditional population groups, such as the Amish people of North America. The Amish, who refrain from using electricity and cars, accumulate 18425 walking steps/day (men; 0% obesity) and 14196 steps/day (women; 9% obesity),²⁴ compared to 8500 steps/day in Swedish

women (12% obesity), and 6500 steps/day in Colorado adults (17% obesity). Note that these pedometer data were obtained using an identical protocol. Despite eating more calories and having a higher energy density diet than we do, the Amish avoid obesity, indicating that their relatively high levels of physical activity may work protectively. The current pattern of disease and the available evidence on physical activity and health help shape the rationale for increased efforts to help individuals increase and maintain healthy levels of physical activity (current recommendations from the Centers for Disease Control and Prevention in the US are for 30 minutes of moderate intensity physical activity, such as brisk walking, per day). Moreover, as the physical-activity related diseases increase in prevalence, and physical activity levels continue to decline, we can expect the benefits of lifestyle intervention to increase proportionally.



Changes in physical activity have led to an increase in the number of people who are overweight. However, the potential exists to change their lifestyle and increase their level of activity.

CONVERTING THEORY INTO LONG-TERM PRACTICE

Whilst there is considerable evidence as to the many beneficial effects of physical activity, the approaches to facilitating long-term increases in physical activity, and the subsequent attainment of those beneficial effects, have only been minimally researched.²³ In short, not much is known about how to best help increase and maintain

adequate levels of physical activity. At a population level, there are now considerable barriers to overcome, such as increased stress, and an increasingly unfriendly environment (car-clogged streets, threat of crime, lack of parks and bicycle lanes). Moreover, we now have more calorie-saving machines than ever – cars, lifts, computers, electric toothbrushes, door openers, etc, with more labour-saving gadgets being developed and marketed on a seemingly daily basis.²⁵

An essential aspect of succeeding with physical activity promotion is that it becomes a routine, a natural part of daily living, as practiced by the Amish. Moreover, 'lifestyle' physical activity is often preferred to going to the gym, or other activities where you have to pay, change clothes, shower, make reservations, etc.²⁶ In other words, the conversion of theory into long-term practice stands a greater chance if activities are kept simple, so that perceived costs (time, money, inconvenience, anxiety) do not outweigh the benefits.

WHAT WORKS?

Two examples of physical activity with particularly good chances of becoming long-term practice are walking and bicycling, mainly taking place during commuting, whilst working, and during free-time recreation. The underlying reasons are not yet fully understood, but bicycling and walking in particular meet important criteria for both adoption and adherence. Compared to more structured, organised activity, i.e. going to the gym, most people find walking to be a better option. This means that walking is perceived as being realistic, that it has potential for becoming a daily routine, no outside expert help is



Simple lifestyle activities, such as bicycling, stand a good chance of increasing physical activity long-term. Dogs can be an important part of any new lifestyle activity.

necessary, it is potentially social and pleasant, the cost is relatively low, and situations where the person feels exposed or uncomfortable are rare. Moreover, walking is already something which people carry out during their everyday lives, and feel familiar with. The change of having to increase an already existing activity is less problematic compared to introducing a new behaviour.

THE POTENTIAL OF DOG WALKING

Social support is undoubtedly one of the key elements of successful behavioural change. Social support can come in many forms, and from various sources. Features of effective social support is that it is non-judgemental, positive as opposed to negative, motivating, and available when needed, i.e. when the person is having a lapse or feeling unmotivated. Effective social support can come from anyone, as long as it has the desired effect. Friends can often be more effective than spouses for example. Dogs are an excellent companion, and provided that they are in the home, rather than being in a shelter, and have suitable mobility, then dogs undoubtedly have the potential to provide high quality, frequent, regular, and long-term social support for walking, mostly by providing tangible cues for action, this being a very effective type of social support. The benefits to the dogs will be that they also receive regular exercise and therefore an aid in any weight control programme, and that they will also get human companionship as well as opportunities to socialise with other dogs.



Dogs offer their owners strong tangible cues for action, a very effective type of social support.

In scrutinising dogs from the point of view of helping people increase their everyday walking it feels reasonable to suggest the following, although there is little scientific data to back these statements up. Firstly, dogs have the potential for creating physical activity routines (mainly



walking), a critical feature of long-term success. This potential is based on the likely fact that it will be difficult to ignore the dog's calls of nature for any lengthy period of time. Moreover, this (fortunate) situation is also likely to dispel any ambivalence of the dog owner of whether to go with the dog for a walk or not. Furthermore, the type of physical activity that dogs naturally invite, i.e. walking, is as described above an activity most people find acceptable. Dog walking also has the potential for increased social interaction, for example with fellow dog-walkers or with family/friends. An additional feature



There are many benefits from dog walking, including weight loss, and positive social interactions, for both the owner and their pet

may also be that the dog can provide enhanced security, particularly when walking after dark. Feeling unsafe is a common self-reported reason for not being out after dark, especially for women. All these reasons indicate that dogs have a serious potential as catalysts for change of physical activity behaviour. In a 6 month pilot study involving overweight owners and dogs, regular walking resulted in 54% of the owners losing weight (mean loss of 3% of starting weight) and 90% of the dogs (mean loss of 10% of starting weight). The dogs were also fed a low fat light diet.²⁷ However, further studies are needed to fully assess this lifestyle benefit that dogs can bring to humans. The potential downside of dog ownership includes the cost of purchase and care. One way of avoiding the cost is to volunteer as a dog walker at shelters, but this will likely result in reduced frequency and type of exposure, i.e. less powerful cues for action, as compared to having

the dog in the home. However, if dog walking at a shelter is undertaken it does also provide additional welfare benefits for those dogs. Sadly, not all people are comfortable with dogs, and may therefore find more effective means of support elsewhere. Lack of willingness to buy a dog in large portions of the population is therefore a limiting factor at a population level.

SUMMARY

We are currently facing a scenario where the prevalence of mobility-related morbidity is on the rise. Increased physical activity is a common denominator for reversing many of the public health problems we are currently facing today, notably obesity, type 2 diabetes and mental health problems. However, there is a shortage of methods for helping people comply with current physical activity guidelines, for example by walking at a brisk pace for 30 minutes or more per day. Having a dog in the home has serious potential for helping people increase physical activity. As long as we are exposed to dogs, we are likely to be provided with effective, regular, frequent, non-judgemental cues for action, mainly walking.



Dogs offer a unique role to help positively change our lifestyle and to facilitate weight loss.

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