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Effect of service dogs on manual wheelchair users with spinal cord injury: A pilot study

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Abstract—Service dogs help people with mobility impairments. They are trained to perform a variety of tasks, such as opening doors, retrieving the telephone, picking up objects, and pulling manual wheelchairs (MWCs). More specifically, using the traction provided by the service dog has physical benefits because MWC users can operate their MWCs with less effort. The objective of this study was to document the effect of a service dog on MWC mobility and user shoulder pain, social participation, and quality of life. Eleven MWC users with spinal cord injury were assessed before and after training with a service dog and 7 mo later. Based on a standardized protocol, all study participants learned how to use the service dog safely and how to move around efficiently in different environments and under different conditions. Results showed that using a service dog increased the distance covered by the MWC users and also significantly decreased shoulder pain and intensity of effort. Using the service dog also produced slight but significant improvements in MWC user skills and social participation and may indicate a trend for improvement in quality of life. More extensive research is needed to precisely identify the effect of service dogs on the long-term management of MWC use.

Key words: assistive device, manual wheelchair, mobility, quality of life, rehabilitation, service dog, shoulder pain, social participation, spinal cord injury, wheelchair skills.

INTRODUCTION

In North America, the number of wheelchair users has grown faster than the growth of the total population. In 2003, about 2 million Americans used a wheelchair compared with 1.5 million in 1992 [1]. Wheelchairs provide a valuable method of mobility for individuals whose locomotion is compromised by physical disability. The use of manual wheelchairs (MWCs) is physically demanding and sometimes impossible in certain environments [2]. Furthermore, excessive use of the upper limbs to propel the MWC and during transfers from one surface to another can have negative consequences: early degenerative problems in scapulohumeral joints, tearing of the rotator cuff, carpal

Abbreviations: 12-MWT = 12-minute walk test, ADL = activity of daily living, DCP = Disability Creation Process, ICC = intraclass correlation coefficient, LIFE-H = Assessment of Life Habits, MWC = manual wheelchair, QLI = Quality of Life Index, RNLI = Reintegration to Normal Living Index, WST = Wheelchair Skills Test, WUSPI = Wheelchair User's Shoulder Pain Index.

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tunnel syndrome, and chronic pain in the shoulder. In fact, between 30 and 73 percent of MWC users report shoulder pain [3–4]. These consequences can lead to a reduction in propulsion capacity over the short term and lower quality of life in the long term [5]. Addressing this reduction in capacity and quality of life remains a challenge for rehabilitation professionals and innovative assistive-device providers.

To address the excessive use of the upper limbs to propel the MWC, service dogs have been used to assist individuals who have a disability other than blindness [6]. These service dogs help to achieve an optimal level of functional independence in activities of daily living (ADLs). Hanebrick and Dillon found that service dogs compensate for a lack of physical function both at home and in the community [7]. Tasks for which service dogs are trained include self-care ADLs such as dressing, transferring to and from the MWC, retrieving the telephone, opening doors, picking up objects like keys, facilitating social relationships, and pulling the MWC [8].

The concept of service dogs helping people with mobility impairments has been advocated since 1975 [6]. Because the MIRA Foundation (www.mira.ca) is the only accredited guide dog and service dog training center in Québec (Canada), we arranged for the MIRA Foundation to lead this study. For the past 18 yr, the MIRA Foundation has been prescribing service dogs to approximately 70 wheelchair users per year, mainly in Québec but also in the rest of Canada. Since 1992, more than 1,000 service dogs have been assigned by the MIRA Foundation, and currently about 400 service dogs are in use by wheelchair users [9].

Despite the increasing use of service dogs, little in the literature concerns their effect on wheelchair users. In a recent systematic review, we identified only 12 articles evaluating social, participation, functional, and psychological outcomes [10]. In another systematic review, Sachs-Ericsson et al. showed that service dogs improved body functioning, activities, participation, and contextual factors [6]. Also, children with disabilities who use wheelchairs and are partnered with service dogs received more frequent social acknowledgments (e.g., friendly glances, smiles, conversations) than when no service dog was present [11]. Eddy et al. found that service dogs enhanced social interaction and reduced the tendency of nondisabled people to ignore or avoid persons with disabilities [12]. Camp also showed that handling a trained service dog could increase the development of personal capabilities, such as being consistent, giving praise, and showing emotion [8]. In fact, trained service dogs were highly beneficial in terms of nine different variables: psychological well-being, self-esteem, internal locus of control, community integration, school attendance, part-time work status, marital status, living arrangements, and number of biweekly paid and unpaid assistance hours [13].

Service dogs also have an economic effect. They are potentially cost-effective components of independent living for people with physical disabilities. Allen and Blascovich demonstrated that they decreased the need for approximately 60 biweekly paid assistance hours [13]. However, according to Sachs-Ericsson et al.'s literature review, the authenticity of this latest study has been challenged repeatedly. Reasons for the controversy include the absence of some important methodological details, stunning response rate, and magnitude of effect sizes [14–17].* A more recent study noted that the vast majority of service dog owners reported that their canine companion had a major positive effect on their lives and that it helped reduce hours of paid assistance [18]. In 2010, using a survey data collection strategy, Shintani et al. compared the health-related quality of life of 10 service dog owners with physical disabilities, not necessarily wheelchair users, who received a service dog with a control group of individuals who did not have a canine companion [19]. They concluded that service dogs can have positive functional and mental effects [19]. Finally, in a large cross-sectional study (n = 76 with and n = 76 without service dogs) that examined whether partnering with service dogs influenced psychosocial well-being and community participation of adult individuals using wheelchairs or scooters, Collins et al. showed that only select individuals (e.g., individuals with progressive disabilities or depressive symptoms) may experience psychosocial benefits from partnering with service dogs [20]. It is unclear whether these benefits might also be derived from companion dogs [20].

Potentially, service dogs can be used to prevent excessive use of the upper limbs and facilitate the achievement of certain lifestyles, helping to overcome environmental obstacles. With this in mind, it is relevant to assess the effectiveness of service dogs for daily mobility. However, while some studies found a positive relationship between having a service dog and socio/psychological outcome measures, only a few examined physical aspects (wheelchair mobility, shoulder pain, etc.). Therefore, the aim of

*Eames E, Eames T. Team talk: Where have all the doggies gone? Off Lead. 1998:8–10.
Eames E, Eames T. Where have all the trainers gone? American Pet Dog Trainers. 1998 Jul/Aug 9.

this study was to document the effect of a service dog on MWC mobility and user shoulder pain, social participation, and quality of life.

METHODS

Study Design

We used a longitudinal interventional study design for this pilot study, in which we assessed participants three times: before obtaining a service dog and beginning the training process (T1), after the 19 d training period (T2), and 7 mo after the training process (T3). Results from the Sachs-Ericsson et al. study demonstrated that a 7 mo period should represent the highest efficiency within the partner/dog team [6].

Sample

We recruited all participants between August 2007 and August 2008 from the MIRA Foundation's waiting list for service dogs. To be included, participants had to (1) be ≥18 yr old, (2) be diagnosed with a traumatic or nontraumatic spinal cord injury, (3) have completed their rehabilitation, (4) have used a MWC for more than 4 h/d for at least 6 mo, and (5) have never owned a service dog. We limited the sample to people with spinal cord injury to ensure a stable condition during the research project.

The recruitment started following the acceptance of the study by the Research Ethics Committee of the Research Centre on Aging. Once the MIRA Foundation approved a potential candidate to receive a service dog, the director of services from the MIRA Foundation made a first call to the potential participant to briefly discuss the study and request authorization to transfer contact information (name and telephone number) to the first author. Mr. Hubert then contacted the potential candidate, gave more information about the study, and asked whether he or she was interested in participating. If the potential participant was interested, he or she was asked to come to the MIRA Foundation center 1 d before the training session to read and sign the consent form.

Independent Variable: Service Dogs

After 1 yr of socialization in a foster family, service dogs are trained for an average of 5 mo by MIRA Foundation staff to perform a variety of tasks, mainly opening doors, retrieving the telephone, picking up objects such as keys, and pulling MWCs. To be selected to be paired with an applicant, specialized trainers observe, in several situations, the behavior of a dog under consideration for that applicant. Thereafter, the participants had a 19 d training period with their dog at the MIRA Foundation center. During this training period based on a standardized procedure developed by the MIRA Foundation over the years specifically for service dogs, all participants learned how to use the service dog safely and efficiently to move around in different environments and under different conditions. All service dogs work for about 7 yr before being retired. Furthermore, during a service dog's lifetime, the MIRA Foundation takes care of their medical condition and health (e.g., musculoskeletal conditions).

For the purpose of this study, we worked with the MIRA Foundation's professional trainers to develop a test to evaluate the working skills of the service dog (Abilities Test for Assistance Dog, available from Dr. Tousignant). The objective of this test was to assess the service dog's skill level in order to determine changes in the service dog's assistance work before and after being paired with a partner. The partner gives the command to the service dog according to the method taught by the MIRA Foundation and the service dog's response is rated as "success" or "fail." An immediate success is scored as 1 point, a failure as 0 points, and a "less clear" response as 0.5 points. The sum of the scores on each item gives the overall score, which is then expressed as the service dog's skill percentage. A service dog that responds to all the commands learned gets a score approaching the maximum score of 100 percent and is therefore ideal; a service dog that does not respond to the commands required to be of assistance gets a score approaching 0 percent. However, the psychometric properties of this test have not been established. The MIRA Foundation training staff evaluated each service dog's working skills in order to control for the service dog's performance throughout the study.

Dependent Variables

Dependent variables are presented based on the Disability Creation Process (DCP) models comprising personal factors, life habits, and environmental factors [21]. The DCP is an explicative model of the causes and consequences of disease, trauma, and other disruptions to a person's integrity and development.

We assessed shoulder pain with the Wheelchair User's Shoulder Pain Index (WUSPI) [22]. This consists of 15 items assessing pain during transfers, self-care, wheelchair mobility, and general activities on a 10 cm visual analog

scale. The anchors for the items range from 0 (no pain) to 10 (worst pain ever experienced), and total scores range from 0 to 150. The English version of the WUSPI has good test-retest reliability (intraclass correlation coefficient [ICC] = 0.99) and high levels of internal consistency [22]. It was translated into French by researchers involved in the present study and professional translators using the back-translation method [23–24].

We measured social participation using the abbreviated version (version 3.1) of the Assessment of Life Habits (LIFE-H) questionnaire. This includes 77 items from the LIFE-H and covers 12 categories of life habits as defined by the DCP model [21]. We used a French version of this questionnaire. A total score is calculated on a normalized scale from 0 to 9 (the higher the score, the greater the person's participation and satisfaction with his or her life habits), using the average scores for items applicable to the person's living situation. The LIFE-H, which is often used in clinical and research settings, was developed initially in French and validated for people with spinal cord injury in the 1990s [25]. The ICC for the overall score on the LIFE-H showed good test-retest reliability (ICC = 0.83). Internal consistency among the 12 lifestyle categories and total score was very high (Cronbach $\alpha = 0.90$) [26].

We estimated perceived quality of life using the Quality of Life Index (QLI) [27]. The QLI consists of two parts: the first measures satisfaction with 37 aspects of life and the second measures the importance of those same aspects. The results are interpreted in four dimensions: (1) health and functioning, (2) social and economic status, (3) psychological and spiritual aspects, and (4) family. The procedure for calculating the elements yields a score representing overall quality of life on a scale of 0 to 30. The higher the score, the greater the satisfaction with the aspects of life. We observed a strong correlation between the QLI's overall score and subdimensions ($r > 0.90$, except for family size: $r > 0.60$). Because of a very high variance explained by the overall score and these subdimensions, we only used the overall score to interpret the quality of life results in our study. Researchers involved in this study and professional translators translated the English version into French using the back-translation method [23–24]. However, study researchers did not validate the French version.

The Reintegration to Normal Living Index (RNLI) is a self-administered outcome measure that assesses the degree to which individuals who have experienced traumatic or incapacitating illness achieve reintegration into normal social activities [28]. The version we used consisted of a scale of 11 items assessing personal satisfaction with ADLs [29]. The concepts measured with the RNLI include mobility, personal care, ADLs, leisure, and social roles. Each item is rated on a three-level scale from 0 to 2 for a maximum score of 22. The lower the score, the better the patient's perceived reintegration. The methodological properties of this instrument are very good to excellent (internal consistency: Cronbach $\alpha = 0.90$; test-retest reliability: $r = 0.83$) [29].

We evaluated MWC skills using three variables: MWC skills, endurance, and intensity of effort. We evaluated MWC skills with version 3.2 of the Wheelchair Skills Test (WST). The WST is a clinical and research outcome measure of an MWC user's ability to perform skills safely [30]. Using an obstacle course, the WST quantifies 57 skills required by a person using an MWC [31] and generates a maximum score of 100 percent. We used the French-Canadian version of the WST. Its methodological properties vary from good to excellent. For the test-retest, intrarater and interrater reliabilities of the WST English version 2.4 and the ICCs for the total scores were 0.90, 0.96, and 0.97, respectively [30]. Similar values were obtained for the French-Canadian version 3.2 [32–33].

We measured endurance by the distance covered with the MWC in an adapted version of the 12-minute walk test (12-MWT) [34] for MWC users. This modified test measures the distance in meters that the participant can propel his or her MWC quickly on a flat, hard surface in 12 min. Some studies have demonstrated that both the 12-MWT and 6-minute walk test have good methodological properties [35–37]. However, no study has verified the reliability and validity for the MWC version. Members of the team translated verbal commands regarding the use of the MWC version of the 12-MWT into French.

We measured intensity of effort with the Borg Scale [38]. This 10-point scale is a simple method of rating perceived exertion that can be used to gauge a person's self-perceived level of intensity in an assessment exercise. A score of 0 means "no effort at all," while a score of 10 means "very, very hard." Borg's scale has been shown to be a valid measure of exercise intensity ($r = 0.80$–0.90) [39]. We used a validated French version of the questionnaire, with similar measurement properties of the English version, for the present study [40].

Data Collection Procedures

We administered all assessment tools using questionnaires in face-to-face interviews with each participant. Once the participant was included in the study, he or she was immediately scheduled for the T1 assessment. The session started with completion of the written questionnaires, followed by the physical tests. The order of the tests was predetermined and the same for all participants. **Table 1** shows the measurement times of the variables in the order they were collected. Shoulder pain was the only variable we measured at T2 because it was the only one in which a potential change was possible. Other variables need a longer period than the 19 d of training with the service dog. The senior investigators (Drs. Tousignant, Corriveau, and Routhier) trained the tester (Mr. Hubert) prior to data collection.

Data Analysis

We described the demographic variables for all participants using the usual descriptive statistics. We examined the effect of the service dogs on the outcome measures using nonparametric Wilcoxon signed rank tests because of the small sample size (n = 11), with the significance level set at 0.05. We performed all of these analyses with SPSS version 15.0 (IBM Corporation; Armonk, New York).

RESULTS

Subject Characteristics

We recruited 3 women and 10 men for the study. The average age was 32.7 ± 12.8 yr (mean ± standard deviation). Five had traumatic paraplegia, five had traumatic quadriplegia, and three had low level spina bifida. On average, they had used their MWCs for 6.9 ± 7.5 yr, and the time since onset of their mobility disability was 9.0 ± 12.3 yr. They were all Caucasian, and 39 percent (n = 5) were married. Of the participants, 15 percent (n = 2) were gainfully employed, 46 percent (n = 6) were retired, and 39 percent (n = 5) were in school. Two participants did not complete the T3 assessment because they had to change their service dog because of behavioral problems. Thus, we included 11 participants in the analyses.

Working Skills of Service Dogs

The service dogs' working skills did not change statistically during the training period and after 7 mo of work, as demonstrated by the Abilities Test for Assistance Dog at T1 and T3, T1 and T2, and T2 and T3 ($p > 0.05$) (**Table 2**).

Effect of Service Dogs

All of the dependent variables showed an improvement after 7 mo of using the service dog's assistance (T3) compared with baseline (T1) (**Tables 2–3**). Shoulder pain was the only outcome variable we assessed at three different times. We reported no change between T1 and T2, but the pain decreased significantly after 7 mo of using the service dog (p = 0.01). Social participation and the ability to return to normal life improved after 7 mo of using the service dog (T3) compared with baseline (T1). However, we found no significant change in quality of life (**Table 2**).

Table 1.
Summary of variables, instruments, and measurement times.

Variable	Instrument	Measurement Time
Independent		
Working Skills of Service Dog	Abilities Test for Assistance Dog	T1, T2, T3
Dependent		
Shoulder Pain	WUSPI	T1, T2, T3
Manual Wheelchair Skills	WST (version 3.2)	T1 (without dog), T3 (with and without dog)*
Endurance	Adapted 12-MWT	T1 (without dog), T3 (with and without dog)*
Effort	Borg Scale	T1 (without dog), T3 (with and without dog)*
Social Participation	LIFE-H (version 3.1)	T1, T3*
Perception of Quality of Life	QLI	T1, T3*
Ability to Return to Normal Life	RNLI	T1, T3*

*Not completed at T2 because no potential changes were possible.
12-MWT = 12-minute walk test, LIFE-H = Assessment of Life Habits, QLI = Quality of Life Index, RNLI = Reintegration to Normal Living Index, T1 = before obtaining service dog, T2 = after 19 d training period, T3 = 7 mo follow-up, WST = Wheelchair Skills Test, WUSPI = Wheelchair User's Shoulder Pain Index.

Table 2.
Differences in variables over time.

Variable	Measurement Time	Mean ± SD	T1–T2 (*p*-value)	T2–T3 (*p*-value)	T1–T3 (*p*-value)
Abilities Test for Assistance Dog (%)	T1	90.0 ± 4.5	0.09	0.08	0.28
	T2	92.4 ± 4.5			
	T3	87.7 ± 7.2			
Shoulder Pain/150	T1	65.7 ± 31.7	0.11	0.003*	0.003*
	T2	70.1 ± 39.2			
	T3	45.5 ± 29.7			
Social Participation of People with Disabilities/9	T1	7.9 ± 1.0	—	—	0.05†
	T2	8.4 ± 1.0			
	T3	22.7 ± 4.4			
Quality of Life/30	T1	24.1 ± 3.0	—	—	0.05
	T2	5.7 ± 3.4			
	T3	2.5 ± 2.4			
Ability to Return to Normal Life/22	T1	90.0 ± 4.5	—	—	0.02†
	T2	92.4 ± 4.5			
	T3	87.7 ± 7.2			

Note: Wilcoxon signed rank test was used to determine *p*-value.
*Statistically significant: $p < 0.005$.
†Statistically significant: $p < 0.05$.
SD = standard deviation, T1 = before obtaining service dog, T2 = after 19 d training period, T3 = 7 mo follow-up.

For the three outcomes measured with and without the service dog's assistance at T3 (MWC skills, endurance, and effort), the difference between T3 and T1 was greater with the service dog's assistance. However, endurance was lower and effort was greater at T3 than at T1 when not using the service dog (**Table 3**).

DISCUSSION

Using an MWC is one of the first alternatives for individuals whose locomotion is compromised by physical impairment. This study demonstrated that MWC users with spinal cord injury living with a service dog improved MWC mobility, slightly in terms of MWC skills but substantially in terms of distance covered and intensity of effort to achieve it. Given the slight but significant improvements in our measures of social participation, this pilot study suggests that service dogs may be viewed as an environmental facilitator that improves interaction between the individual and his or her environment, thereby helping to achieve a better lifestyle, which is in agreement with previous studies identified in a literature review [6].

During the study, we limited the risk of error from several external factors that could have affected the results. Indeed, no participant (1) changed to a different wheelchair, (2) had physiotherapy treatment, (3) moved to another area, (4) changed activity patterns, or (5) changed professional status.

Table 3.
Differences in variables over time.

Variable	Measurement Time	Mean ± SD	T1–T3 (*p*-value)*	T1–T3 (*p*-value)†
Wheelchair Skills (%)	T1	87.6 ± 7.9	0.04‡	0.24
	T3*	91.3 ± 7.9		
	T3†	88.8 ± 8.7		
Endurance (m)	T1	1,293 ± 370	0.01‡	0.05
	T3*	1,834 ± 564		
	T3†	1,202 ± 405		
Effort/10	T1	5.1 ± 1.8	0.003§	0.05‡
	T3*	1.3 ± 0.8		
	T3†	6.7 ± 2.5		

Note: Wilcoxon signed rank test was used to determine the *p*-value.
*With dog's assistance.
†Without dog's assistance
‡Statistically significant: $p < 0.05$.
§Statistically significant: $p < 0.005$.
SD = standard deviation, T1 = before obtaining service dog, T2 = after 19 d training period, T3 = 7 mo follow-up.

We found that the work of the service dog decreased the intensity of effort needed to propel the MWC, which seemed to reduce shoulder pain and perhaps preserve integration of the shoulder. To our knowledge, this is the first study to specifically assess the use of a service dog as an assistive device to decrease shoulder pain. This help is very important because 32 to 100 percent of MWC users experience major shoulder problems, which increase with time [41]. It has been found that the frequency and intensity of pain are correlated with duration of MWC use [42]. It is therefore critical that rehabilitation professionals educate individuals with mobility disabilities to prevent further problems and explain the potential benefits of service dogs.

As shown in this study, service dogs tend to influence MWC mobility and consequently have a positive effect on overall social participation. Service dogs seem to especially help in skills requiring strength (e.g., rolling up a ramp, rolling over a 13 cm-high obstacle, rolling on a surface with resistance, negotiating a 15 cm-high curb) or endurance (e.g., propelling the MWC for several minutes). However, in certain skills, the service dog can be an obstacle (e.g., opening and closing doors). Our observations are fairly similar to those reported by Routhier et al. [43].

Furthermore, the results showed that endurance decreased and effort increased from T1 to T3 when not using the service dogs. This should be explained by the fact that participants did not have to work as hard to be mobile and thus lost some degree of "fitness." This is not necessarily a bad thing since it was in conjunction with the reduction in shoulder pain. This pilot study showed that service dogs are important in increasing mobility in MWC users. Although there was no significant change in quality of life in this small pilot study ($p = 0.05$), it might be found to be significant in a larger study sample.

Because the main objective of using service dogs is to improve general quality of life, the results of this study are not statistically significant but seem to show a tendency toward a positive effect. This is congruent with the positive effect of the support provided by the service dog. Indeed, the results showed that some components of the LIFE-H, such as items related to rolling on uneven and slippery surfaces (e.g., snow), housing (e.g., entering and exiting residence), interpersonal relationships (e.g., maintaining social relationships with peers, neighbors, and colleagues), and the community (e.g., going to community institutions and entering and getting around in stores), are improved after 7 mo of using a service dog. One of the major strengths of this study was that we paid particular attention to controlling the independent variable. The working capacity of the service dogs to perform the tasks for which they were trained was stable between T1 and T3. The service dogs' working skills fluctuated during the research project, which is not surprising. The score was a little better just after the service dog had finished the training (T1) than 7 mo later (T3), when the partner did not regularly perform all of the tasks the dog was trained for. However, the difference was not significant over time ($p > 0.05$).

It would be interesting to consider the service dog more specifically when assessing specific individual MWC skills. The skills included in the WST are representative of the range of skills that MWC users may need to regularly perform, varying from the most basic to the very difficult (e.g., ascend or descend a 7.5° incline, go through a hinged door in both directions, go over a 15 cm pothole, and rolling on gravel). Even if the WST is generally performed in a laboratory setting, the tasks mimic those an MWC user needs to develop in daily living. Since the WST evaluates each skill separately, without any link to the person's ADLs, this does not demonstrate the full potential of the service dog. In the WST, the obstacles make sense only to the human partner. The WST setup (skills individually) does not make sense to the service dog. A priori, it does not represent "real life" for the service dog. If the service dog was familiar with the obstacles before the assessment, the score would probably be different and the difference between T1 and T3 potentially greater. Instructions regarding the use of service dogs could also be incorporated in the WST, as was already the case for a human partner who needed a caregiver to perform the skills. Also, perhaps some practice runs would help to familiarize the service dog with the testing situation and would minimized the nonfamiliarization effect.

A selection bias may have affected our results. The participants were probably more motivated than other service dog partners since they agreed to participate in this research project. Furthermore, even if most of the tests used are known for their good psychometric properties in their English version, the psychometric properties were not established for most of the French versions. In the study, we controlled information bias by standardization of the tester prior to the assessments. However, even if some of the questionnaires were constructed to be self-administered, an evaluator administered all the tests and questionnaires as an interview. Finally, the sample size was small and all participants came from only one organization providing service

dogs in the province of Québec. Those facts together can affect the results because the participants may not represent all potential MWC users who would meet the inclusion criteria.

Also, the companionship, love, and comfort provided by an animal with which one has a bond can significantly improve the quality of a person's life. They cannot be separated from the physical tasks performed by the service dog. In the present study, it is still difficult to separate the emotional from the physical effect. This interaction could probably be interpreted as a factor that overestimates the effect of the service dog on few outcomes.

CONCLUSIONS

In conclusion, the results of this pilot study demonstrated that using a service dog significantly decreased shoulder pain and the intensity of the effort made, generated slight improvements in MWC mobility and social participation, and may have indicated a trend toward improved quality of life and increase of distance covered. Since service dogs may be viewed as environmental facilitators that improve interaction between the individual and his or her environment, thereby helping to achieve a better lifestyle, this pilot study allowed us to establish the need for a larger study. Additional data will be needed to verify whether better mobility has a real effect on quality of life. More extensive research could precisely identify the mid- and long-term effect of service dogs on the management of MWC use.

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Study concept and design: G. Hubert, H. Corriveau, M. Tousignant, F. Routhier, N. Champagne.
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