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Barriers and Facilitators to Participation in Physical Activity Among a Multiple Sclerosis Population

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Author's Declaration

I, the undersigned declare that this project which I am submitting is all my own work and that the data presented is authentic.

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Table of Contents

	Page
1. Introduction	3
2. Objectives	5
3. Methodology	5
<i>3.1 Study Design</i>	5
<i>3.2 Ethics</i>	6
<i>3.3 Sample Selection</i>	6
<i>3.4 Data Collection</i>	7
<i>3.5 Data Analysis</i>	7
4. Results	8
<i>4.1 Subject Demographics and Exercise Patterns</i>	8
<i>4.2 Barriers</i>	12
<i>4.2.1 Barriers associated with mobility levels</i>	17
<i>4.2.2 Barriers according to exercise guidelines</i>	18
<i>4.3 Facilitators</i>	19
<i>4.3.1 Facilitators associated with mobility levels</i>	21
<i>4.3.2 Facilitators according to exercise guidelines</i>	21
5. Discussion	22
<i>5.1 Barriers</i>	22
<i>5.2 Facilitators</i>	24
<i>5.3 Strengths and Limitations</i>	25
<i>5.4 Implications for Practice</i>	26
<i>5.5 Future Research</i>	26
6. Conclusion	27
7. References	28
8. Appendices	31

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Barriers and Facilitators to Participation in Physical Activity amongst a Multiple Sclerosis Population

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Background: Current evidence states that people with MS participate in significantly less exercise than non-diseased populations (Motl et al 2005). Recent research has identified numerous factors that may influence physical activity levels among people with MS. It is yet to be determined whether these differ for those who perform different levels of exercise and those who have various mobility levels.

Objectives: Primary: To investigate the greatest barriers and facilitators to exercise in an MS population. Secondary: To investigate how barriers and facilitators differ for those with various ambulatory statuses. To investigate whether less active individuals perceive alternative barriers and facilitators to people who meet exercise guidelines.

Methods: An internet questionnaire was advertised on the MS Ireland website and in the MS Ireland e-newsletter. Regional branch members were also informed of this research. Descriptive statistics were used to analyse data and presented in term of frequencies and percentages. Thematic analysis was used to analyse qualitative data.

Results: Exercise guidelines were not met by 22 participants. Barriers were mainly due to MS, particularly fatigue (80.9%), physical ability (65.2%) and balance (63.8%). Transport issues were uncommon (<11%). Gym costs were the main environmental barrier (60%) and lack of motivation was the main psychological barrier (66%). Key facilitators were enjoyable exercise (58.1%), reduction in MS symptoms (55.8%) and better mobility (41.9%).

Conclusion: Many people with MS fail to perform current exercise guidelines. Therefore, barriers and facilitators need to be considered when designing exercise programmes for people with MS to increase physical activity levels.

Key words: multiple sclerosis, barriers, facilitators, exercise

Reference: Motl, R.W., McAuley, E. and Snook, E.M. (2005) 'Physical activity and multiple sclerosis: a meta-analysis', *Multiple Sclerosis*, 11(4), 459-463.

1. Introduction

Multiple Sclerosis (MS) is a chronic, demyelinating inflammatory disease of the central nervous system, affecting over 2.5 million people worldwide. It is approximately twice as common in women when compared to men, with usual age of onset between 25 and 30 (Thompson et al 2008). Symptoms can include loss of function, fatigue, reduced balance and co-ordination, pain, depression, reduced sensation, cognitive and autonomic dysfunction (White and Dressendorfer 2004; NMSS 2003 cited in Motl et al 2005).

In previous years it was suggested that exercise could pose negative effects on people with MS, possibly causing symptom exacerbations as well as inducing fatigue (Turner et al 2009; White and Dressendorfer 2004). However, exercise is now suggested to be safe and is recommended for all people with MS. A recent systematic review has proposed numerous benefits of exercise (Rietberg et al 2011). These include improvements in muscle power, exercise tolerance, mobility-related activities and mood when compared to non-exercise groups. It has also demonstrated increases in walking speed, endurance, balance, aerobic capacity and improved mood as well as reducing fatigue (Turner et al 2009). However, current evidence states that people with MS participate in less exercise than groups consisting of non-diseased and diseased subjects, with significant differences when compared to non-diseased populations (Motl et al 2005). Lower levels of exercise were found to cause increased frequency in symptoms associated with motor function, such as weakness and balance issues, among other symptoms (Snook and Motl 2008). Low exercise levels may be due to reduced mobility and fatigue which lead to weight gain and secondary comorbidities such as cardiovascular disease, diabetes mellitus and obesity (White and Dressendorfer 2004).

Recently there has been a growing interest in exploring barriers and facilitators of exercise in people with MS in the literature. Following a detailed database search ten articles were sourced. These studies comprised of six questionnaires, three semi-structured interviews and two focus groups. They included two pilot studies, one which was a semi-structured interview that was followed up by a questionnaire (Kayes et al 2010a, Kayes et al 2010b), the other which primarily focused on participants with moderate to severe MS i.e. an Expanded Disability Status Scale of 6.0-8.0 (Vanner et al

2008). More recent research has shown that transport and environmental issues such as building and parking accessibility are not as prevalent as initially suggested (Kayes et al 2010a, Kayes et al 2010b, Beckerman et al 2010). Of those that focused primarily on MS, fatigue was the most consistent barrier (Beckerman et al 2010, Kayes et al 2010b, Stroud et al 2009, Vanner et al 2008, Borkoles et al 2008, Becker et al 2004) and embarrassment was the most common psychological issue (Kayes et al 2010b, Vanner et al 2008, Borkoles et al 2008, Becker et al 2004). However, other factors such as time constraints and lack of personal knowledge are becoming increasingly common and were reported in all but two studies (Stroud et al 2009, Borkoles et al 2008). These studies consisted of mainly female participants and people with relapsing-remitting MS. However, Vanner et al 2008 mainly consisted of people with secondary-progressive MS as these were the population they aimed to assess.

Facilitators of exercise were assessed through methods similar to barriers. One of these studies used both focus groups and questionnaires on separate subjects (Elsworth et al 2009). The others consisted of focus groups (Rimmer et al 2004) and semi-structured interviews (Dodd et al 2005). Of these, only one focused predominantly on MS (Dodd et al 2005). The remaining studies assessed facilitators in general neurological conditions (Elsworth et al 2009) and reported on the view of fitness professionals and architects as well as people with general disabilities (Rimmer et al 2004). Facilitators reported were predominantly external factors such as the support, encouragement and knowledge of professionals as reported in all studies, as well as exercise that is group based and enjoyable (Elsworth et al 2009, Dodd et al 2005). Facilitators, however, have not been explored as extensively as barriers of physical activity.

A meta-analysis (Motl et al 2005) suggested the need to research the possibility of factors such as disability and perceived barriers as being correlates of exercise in MS, in order to increase compliance and adherence of participation in an exercise programme.

A decline in ambulatory status i.e. partial or no use of lower limbs was determined to be the strongest predictor of physical activity participation (Kayes et al 2010a). However, previous research has failed to determine whether barriers and facilitators are influenced by different levels of activity and mobility.

2. Objectives

- To investigate what are the greatest barriers and facilitators to exercise in an MS population.
- To investigate how barriers and facilitators differ for people with various ambulatory statuses.
- To investigate whether those who meet current exercise guidelines perceive alternative barriers to those who are less active.

3. Methodology

3.1 Study Design

A questionnaire design was chosen as a progression from a final year project based in University of Limerick, which looked at barriers and facilitators to exercise in an MS population (Garrett and Coote 2006). An online questionnaire design was chosen to allow a larger population to be targeted. It is cost effective and was predicted to have a larger response rate than paper questionnaires. However, questionnaires have been proven to have lower response rates than other forms of research and this appears to be a more significant issue where web designed surveys are concerned (Fink 2009). This is continuing to improve as people have greater access to PCs and display better computer literacy. Questionnaires have also been previously utilised to assess barriers and facilitators of exercise in the MS population (Becker and Stuifbergen 2004, Vanner et al 2008, Elsworth et al 2009; Turner et al 2009; Stroud et al 2009; Beckerman et al 2010; Kayes et al 2010b).

The questions used in this research were based on obtaining general demographic information, levels of exercise participants engaged in, as well as barriers and facilitators which applied to them. Levels of mobility were identified according to the “lower limb disability” category of The Guy’s Neurological Disability Scale (Table 1). This was found to be a reliable and valid measure for the assessment of people with MS and is considered to be suitable for questionnaires (Rossier & Wade 2002). The

remainder of the questionnaire included open and closed questions to allow participants to elaborate on answers where required.

Table 1. The Guy's Neurological Disability Scale (GNDS) (Lower limb disability category)

0 = Walking is not affected.
1 = Walking is affected but patient is able to walk independently.
2 = Usually uses unilateral support to walk outdoors, but walks independently indoors.
3 = Usually uses bilateral support to walk outdoors, or unilateral support to walk indoors.

3.2 Ethics

Ethical approval was granted by the Clinical Therapies Research Ethics Committee (CTREC).

3.3 Sample Selection

Members of the regional branches of MS Ireland as well as those who had access to the electronic newsletter distributed by the MS Ireland who fitted the inclusion and exclusion criteria were considered as potential participants.

Inclusion Criteria

- Diagnosis of MS
- Male or female
- Over 18 years of age
- Any level of disability

Exclusion criteria

- Non-English speaking

3.4 Data Collection

MS Ireland were contacted and informed of the details of the research project. They agreed to aid with recruitment and provided permission to advertise the questionnaire on the MS Ireland website (Appendix 1). A copy of the information leaflet (Appendix 2) and a link to the questionnaire (Appendix 3) were emailed to MS Ireland to be placed on the website. Members of the branches were notified of the research project via an electronic newsletter which is sent to 3000 members four times yearly. A reminder was sent through another electronic newsletter two months after the initial newsletter. The regional office co-ordinators of the Cork, Limerick and Galway branches of the MS Society Ireland were contacted via email in which they were asked to notify their branch members of the research project and were provided with the links to the survey on the MS Ireland website. Consent was implied with the completion of the questionnaire.

3.5 Data Analysis

Descriptive statistics were used to analyse data. Data was presented in the form of frequencies and percentages in tables. Microsoft Office Excel (2010) was used to graphically present some results and to allow data to be arranged according to different variables. Thematic analysis was performed in Microsoft Office Word (2010) to analyse common themes of open-ended questions and additional commentary.

4. Results

A total of 51 questionnaires were returned. Of these, one participant indicated they were not willing to participate in the study and two questionnaires were insufficiently completed. This resulted in a valid response rate of n=48. As some questions were not answered by all respondents, responses are displayed as percentages of the number of respondents to a question.

4.1 Subject Demographics and Exercise Patterns

Participants were mostly female. The average age of subjects was 40.62 years (± 11.51) and relapsing-remitting MS was the most common diagnosis (Table 2).

Table 2. Participants' demographic information

Characteristic		<i>n</i> (% proportion of sample)
Gender (n=47)	Male	11 (23.4%)
	Female	36 (76.6%)
Age (years) (n=46)		40.62 \pm 11.51
Type of MS (n=47)	Primary progressive	3 (6.4%)
	Secondary progressive	3 (6.4%)
	Relapsing-remitting	39 (83%)
	Benign	1 (2.1%)
	Don't Know	2 (4.3%)
Employment (n=45)	Full time	19 (42.2%)
	Part time	8 (17.8%)
	Unemployed at present	19 (42.2%)
Living arrangement (n=47)	Lives alone	6 (12.8%)
	Lives with family	40 (85.1%)
	Other	1 (2.1%)

As can be seen from Table 3 most participants had high levels of mobility and required no assistive device. However, some subjects had low levels of mobility and required the use of a wheelchair.

Table 3. Participants' Ambulatory Status

Assistive Device	Guy's Neurological Disability Score	n(% proportion of sample)
No assistive device	0	33 (71.7%)
1 stick or crutch	2	7 (15.2%)
2 sticks or crutches	3	0 (0%)
Walking frame	3	0 (0%)
Manual wheelchair	4	3 (6.5%)
Power wheelchair	5	3 (6.5%)

Table 4 displays the background information on subjects' MS. The average length of diagnosis was 14.36 years (± 7.38), with a range of 1-38 years.

Table 4. Participants' History of MS

	Mean \pm SD
Length of diagnosis (n=44)	14.36 \pm 7.38
Admissions to hospital in previous 12 months (n=47)	0.58 \pm 1.07
Number of relapses in previous 12 months (n=46)	1.24 \pm 1.32

Current exercise guidelines recommended by the American College of Sports Medicine for the MS population are a minimum of 30 minutes of cardiovascular exercise 2-3 times per week, along with strength training twice a week (ACSM 2008). Results indicate 19 participants (40%) meet current guidelines for cardiovascular exercise. However, none of these participants adhere to the guidelines for strength training. A total of 22 subjects (46%) do not meet the guidelines for either form of exercise. It is not possible to determine whether the remaining 7 subjects are meeting the guidelines due to insufficient information on the volume and frequency of exercise they perform.

Exercise patterns of the subjects are shown in Table 5 and Table 6, as well as the activities they perform (Table 7).

Table 5. Type and location of exercise participation

Participation in exercise		n(% proportion of sample)
Exercise type (n=48)	Exercise that increases heart rate (cardiovascular)	29 (60.42%)
	Exercise with weights or moving against your body weight (strength training)	13 (27.08%)
Location of exercise (n=46)	Home	17 (36.97%)
	Outdoors	22 (47.83%)
	Gym	16 (34.78%)
	Rehabilitation centre	9 (19.57%)
	Other (Swimming pool)	4 (8.7%)

As can be seen from the table, cardiovascular exercise is engaged in more frequently than strength training. The most common setting for exercise was outdoors. Home exercise and the gymnasium were also popular choices.

Table 6. Quantity of exercise partaken in

Participation in Exercise	Mean \pm SD
Exercise frequency/week (n=48)	3 \pm 2.04
Volume of exercise/minutes (n=47)	31.63 \pm 19.35

On average, participants exercised 3 times per week. This ranged from 0-10 times per week. An average of 31 minutes was spent on each exercise session. Similarly, this had a large range of 0-60 minutes.

Table 7. Types of activities subjects engage in (n=48)

Walking	25	Weights	1
Swimming	12	Treadmill	1
Exercise bike	8	Standing	1
Gym	4	Step aerobics	1
Yoga	4	Badminton	1
Pilates	4	Core strengthening	1
Flexibility/stretching	4	Mixed martial arts	1
Group exercise	2	Range of motion exercises	1
Whole body vibration	2	Horse riding	1
Physiotherapy programme	2	Spinning	1
Walking with weights	1		

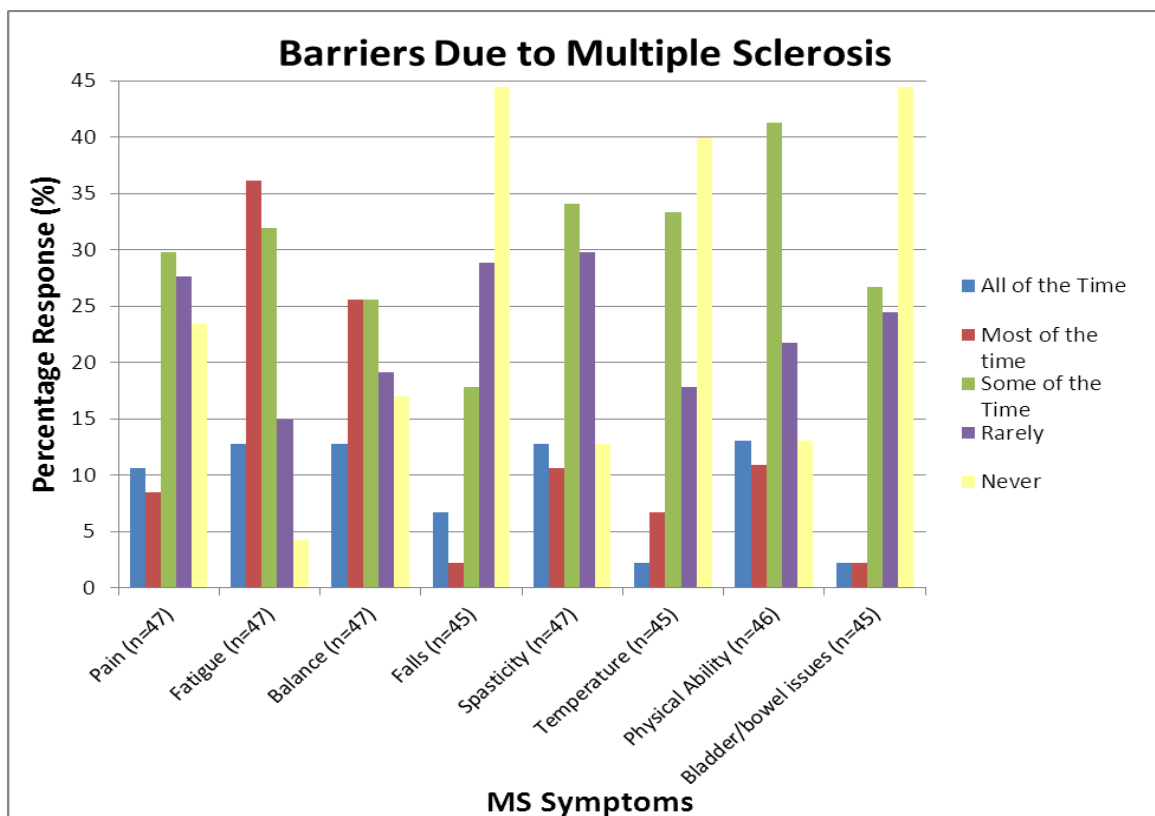
Subjects participate in a diverse range of activities. Of these, walking is the most popular choice, being performed by over half of the subjects (n=25).

4.2 Barriers

MS Symptoms

Fatigue (n=38, 80.9%), physical ability (n=30, 65.22%) and balance (n=30, 63.8%) were the most common barriers to affect participants. These three factors along with spasticity were cited most often as barriers “all of the time” (n=6). A summary of these findings is displayed in Figure 1.

Figure 1. Barriers to participation due to MS Symptoms



Fatigue was reiterated as a barrier in qualitative data (n=5).

“The biggest one if fatigue”

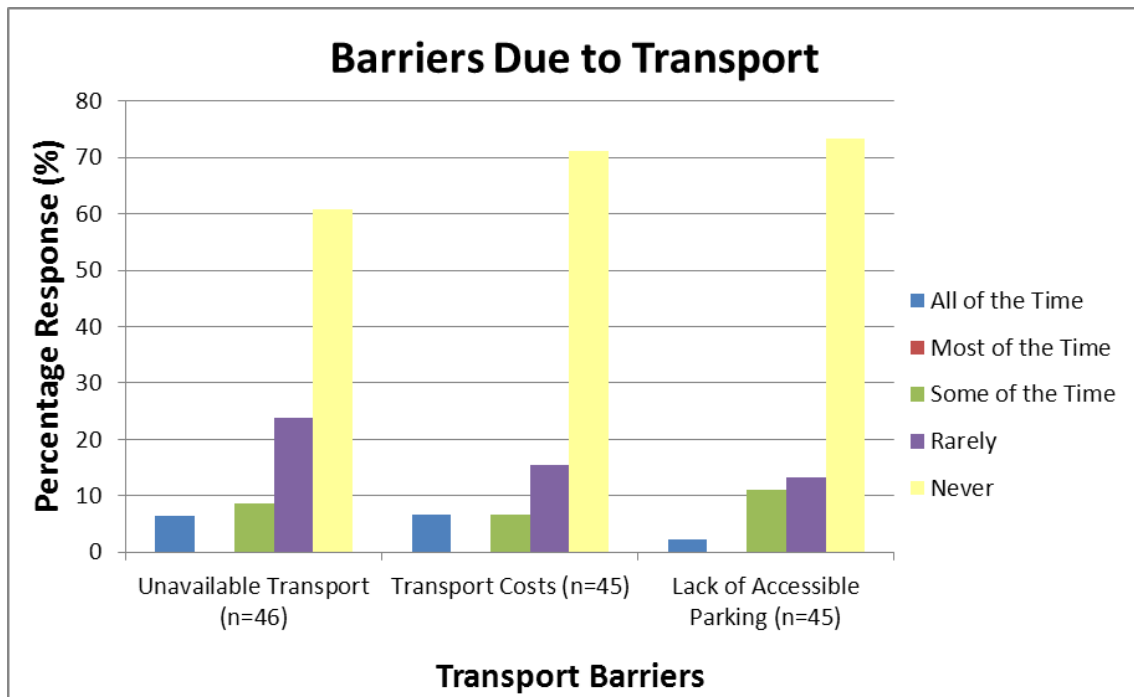
Another theme was temperature (n=3)

“When I overheat I always ended up giving up”

Transport

Barriers due to transport were reported by 13-15% of participants. Three participants reported unavailable transport and transport costs as barriers “all of the time”. However, the majority never consider transport as a challenge as can be seen from Figure 2.

Figure 2. Barriers to participation due to transport

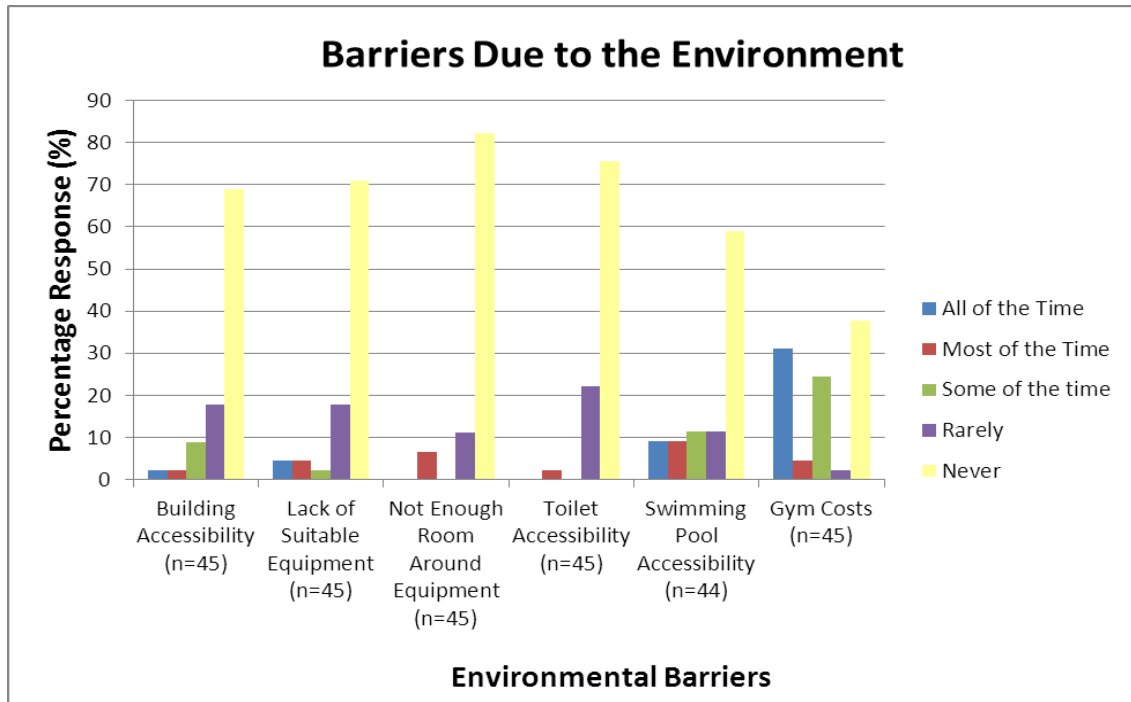


Transport never arose as a theme in qualitative data.

Environment

Gym costs were reported as a barrier in general by 27 (60%) participants. Of these, 14 subjects considered them to be a barrier “all of the time”. It can be seen from Figure 3 that other environmental barriers were mostly considered to never be an obstacle.

Figure 3. Barriers to participation due to the environment



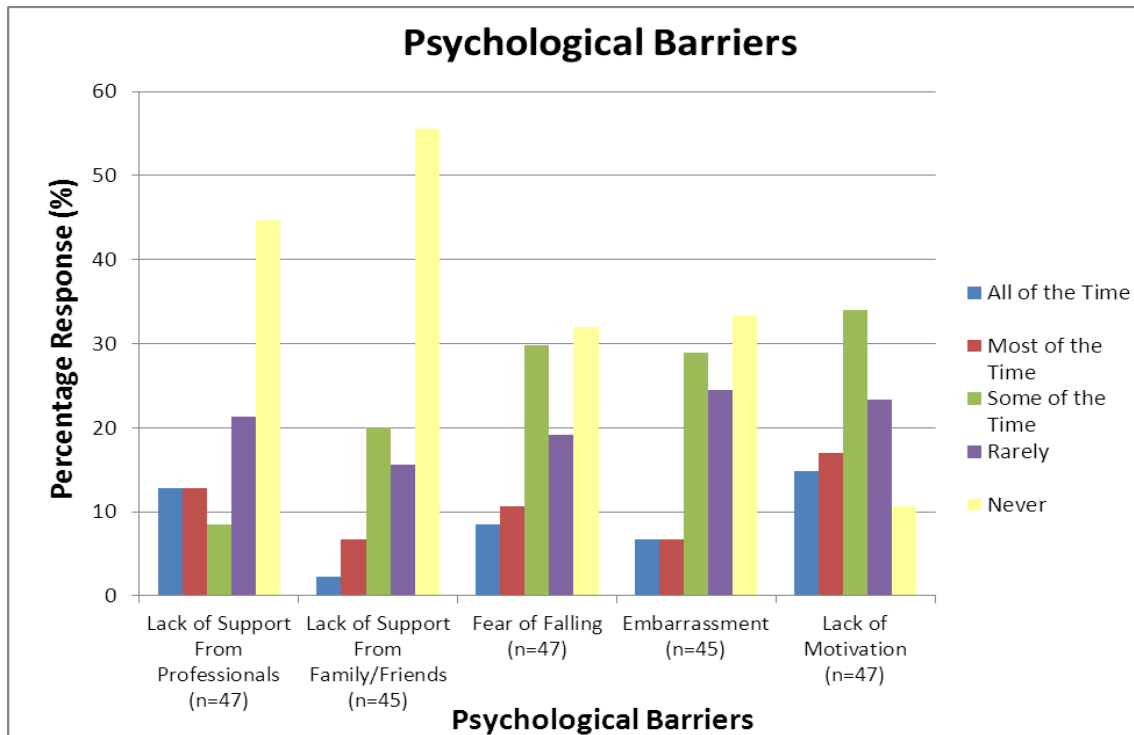
Gym costs was the only environmental factor to arise from qualitative data (n=3) as participants suggest there is a

“lack of available low cost facilities”

Psychological

Lack of motivation (n=31, 65.9%), fear of falling (n=23, 48.9%) and embarrassment (n=19, 42.2%) were the most common barriers in the general sample. Lack of motivation was also the most common barrier “all of the time” (n=7). Lack of support from professionals was also cited as a barrier “all of the time” (n=6).

Figure 4. Psychological barriers to participation



The issues of motivation (n=2) and lack of support from professionals (n=3) were the most common themes arising from qualitative data.

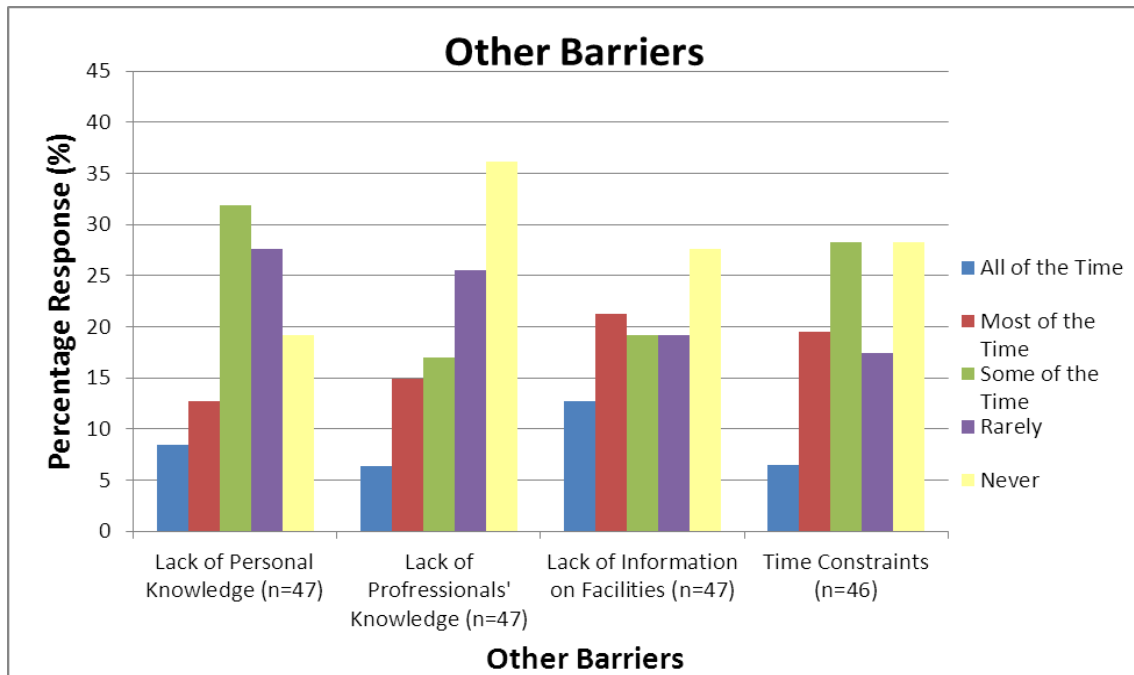
“maybe laziness”

“support is sadly lacking in the medical professional”

Other

Time constraints (n=25, 54.3%), lack of personal knowledge and lack of information on facilities (n=25, 53.2%) were the most common barriers reported by participants. Lack of information about suitable facilities was also the most prevalent barrier “all of the time” (n=6) as can be seen from Figure 5.

Figure 5. Other barriers to participation



New themes arose from the open question “Are there barriers which not have been mentioned that apply to you?”. No more than one subject suggested each theme.

It was highlighted that MS medication had the potential to

“twiddle your body chemistry”.

Coping with the “*work/life balance*” and depression were also suggested as barriers.

The issue of raising a family while coping with MS was also illustrated.

“...parenting...completely zapped my energy. When you have young kids you are sleep deprived and exhausted.”

Barriers associated with mobility levels

Temperature and physical ability were reported as barriers in all participants with a GNDS of 5 (n=3, 100%). However, gym costs were considered a barrier “all of the time” (n=2).

Participants with a GNDS of 4 (n=3) considered fatigue, falls, balance, spasticity, physical ability, bladder/bowel issues and fear of falling as the most common barriers, each being cited by two subjects (66.6%). Balance, falls, fear of falling and lack of motivation were reported as barriers “all of the time” (n=1, 33.3%).

Subjects with a GNDS of 2 (n=7) reported balance, spasticity, physical ability, gym costs, fear of falling, embarrassment, and lack of information on available facilities as the most common general barriers (n=6, 85.7%). Gym costs were also documented as a barrier which affected 4 subjects “all of the time”, followed by difficulty getting into a swimming pool, cited by 3 subjects.

For those with a GNDS of 0 (n=33) fatigue (n=27, 81.8%), lack of motivation (n=21, 63.6%) and time constraints (n=19, 57.6%) were the most common general barriers. Once again gym cost was the most common barrier to affect subjects “all of the time” (n=7).

Barriers according to exercise guidelines

For those who meet the guidelines for cardiovascular exercise (n=19), fatigue was considered the most common barrier (n=15, 78.9%), followed by spasticity and time constraints (n=12, 63.2%). Gym costs was most commonly reported as a barrier which was an issue “all of the time” (n=4).

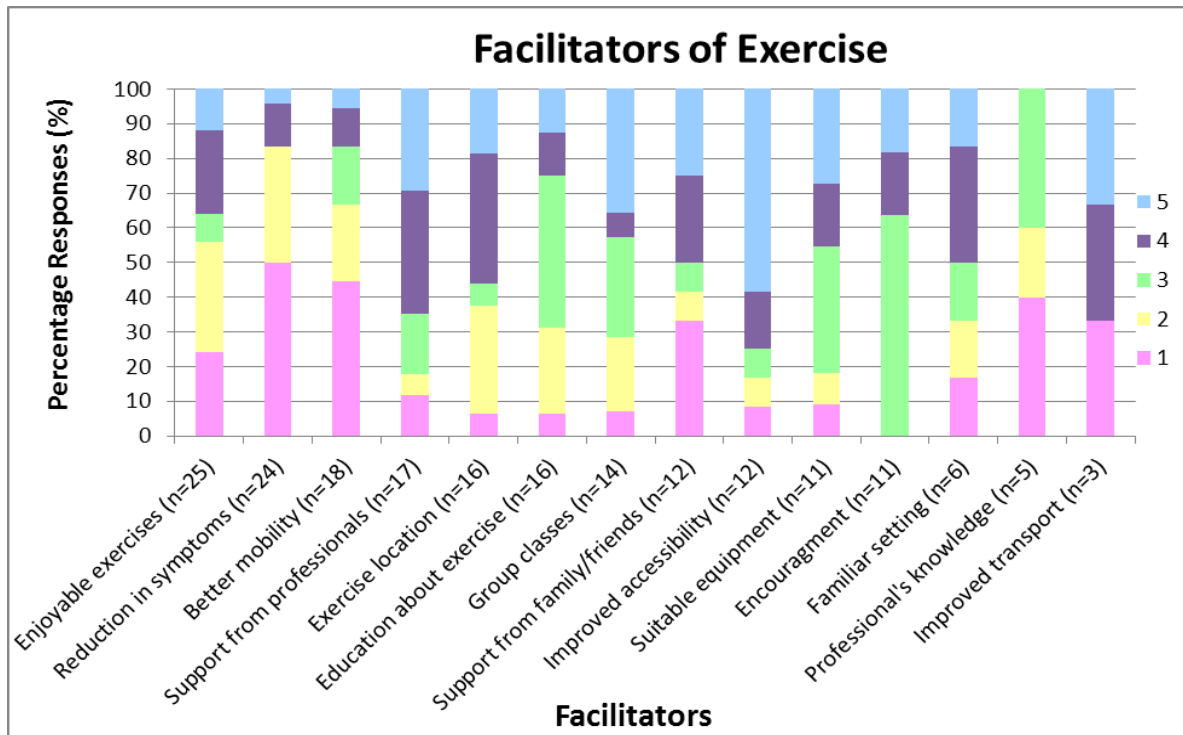
Fatigue (n=17, 77.3%), balance and lack of motivation (n=16, 72.7%) were the most common barriers for people who did not meet the guidelines (n=22). Again, gym costs was cited as a barrier “all of the time” (n=7), followed by physical ability and lack of information on available facilities (n=6).

Overall, barriers due to MS were most commonly reported. Of these most frequent factors were fatigue (n=38), balance and physical ability (n=30). Other than factors due to MS, lack of motivation (n=31) and gym costs (n=27) was also considered to be consistent issues.

4.3 Facilitators

Based on a list of 14 items, participants chose their top 5 facilitators for exercise as displayed in Figure 5. The most predominant facilitator was enjoyable exercises (n=25) and the least common was improved transport (n=7). However, reduction in symptoms was most commonly reported as the number 1 facilitator (n=12).

Figure 5. Facilitators of exercise in people with MS



Three themes arose from the open question “Are there any facilitators which have not been mentioned that apply to you?”

The issue of support from others was the most common theme (n=4), including support from professionals

“Had enormous support.....from my physiotherapist. So positive!”

“Availability of knowledgeable professionals on a regular basis to provide on to-one help and advice”

and family/friends

“Motivation by others to keep coming back”

“Family coaching”

The other theme was finance in general

“Money!”

and particularly focused on gym costs

“It would help if gym membership was....subsidised or covered by health insurance.”

Facilitators associated with mobility levels

Subjects with a GNDS score of 5 (n=3) considered better mobility, reduction in MS symptoms, group classes, enjoyable exercises, encouragement from the exercise leader, and support from healthcare professionals as well as from family and friends as facilitators. Of these, better mobility and reduction in MS symptoms were the top facilitators (n=1, 33.3%).

Reduction in MS symptoms, location of exercise, enjoyable exercises, education about exercise and support from healthcare professionals were considered the most frequent facilitators in participants with a GNDS score of 4 (n=3). Better mobility was mentioned as the top facilitator by all 3 (100%) subjects.

Those with a GNDS score of 2 (n=7) considered each factor except for familiar setting as a facilitator. Of these, better mobility was the most common facilitator (n=5, 71.4%), followed by reduction in MS symptoms, location of exercise, improved accessibility and enjoyable exercises (n=4, 57.1%)

All the facilitators were considered to be influential by subjects with a GNDS score of 0 (n=33). The most common facilitators were reduction in MS symptoms and enjoyable exercise (n=17, 51.5%), followed by support from healthcare professionals (n=13, 39.4%) and education about exercise (n=12, 36.4%).

Facilitators according to exercise guidelines

For those who meet the guidelines for cardiovascular exercise (n=19), all items except for improved transport were considered facilitators. The most common facilitators were reduction in MS symptoms (n=12, 63.2%) and enjoyable exercise (n=11, 57.9%).

Subjects who did not meet the guidelines (n=22) considered all the factors provided as facilitators to participation. The most frequently cited facilitators were better mobility (n=10, 45.5%), enjoyable exercises (n=9, 40.9%) and reduction in MS symptoms (n=8, 36.4%).

5. Discussion

This study provides an important comprehension of the greatest barriers and facilitators to exercise in an MS population. It expands on previous research by ascertaining the barriers and facilitators for people with MS who participate in different levels of exercise and who have various levels of mobility.

Previous research has suggested people with MS do not participate in sufficient levels of exercise (Beckerman et al 2010, Motl et al 2005). Similarly, this study discovered 46% of the sample does not meet current exercise guidelines and none of these met the guidelines for strengthening exercise. It is indicated that people with MS are aware of the benefits of exercise (Stroud et al 2009, Vanner et al 2008). However, this appears to bear no influence on exercise participation. Consequences of reduced levels of activity are less participation in leisure and social activities, along with activities of daily life (Rietberg et al 2001). It has been previously suggested that higher levels of disability or disease severity result in less physical activity e.g. those with primary progressive MS may experience more obstacles when exercising than those with relapsing-remitting MS (Beckerman et al 2010, Motl et al 2005). However, 69% of subjects did not require an assistive device to mobilise, yet guidelines were not adhered to. There were an equal number of participants in full term employment as who were unemployed; therefore, it is difficult to determine if these factors bore any influence on results found. As the majority of subjects were living with family, it is possible they would have greater sources of support. However, living alone has been documented to be associated with increased levels of exercise (Turner et al 2009), although reasons why remain unclear. Therefore, it is imperative that the influence of barriers and facilitators on exercise levels are contemplated.

5.1 Barriers

Barriers due to MS were most commonly reported. These included fatigue (80.9%), balance and physical ability (65.22%) and balance (63.8%) As these issues specifically affect people with MS, this could exemplify reasons why exercise is perceived as a greater challenge among this population (Stroud et al 2009). Lack of motivation (65.9%) was also considered to be consistent issue. This can regularly be a consequence of depression, an issue which is often associated with MS (White and Dressendorfer

2004) and something which all healthcare professionals should be aware of when managing this population. Gym costs, reported by 60% of subjects were a barrier universal to all samples, affecting numerous participants “all of the time”. In addition, it was an issue which transpired in qualitative data. Subsidised or reduced fees for people with disabilities are potential solutions to increase exercise participation, which were also alluded to by participants. This factor is a possible explanation why subjects preferred to exercise outdoors or at home. Thus, exercise programmes need to be designed with this in consideration.

When comparing mobility levels, physical ability was a barrier highlighted by participants who required assistive devices. Likewise, a questionnaire study assessing people with MS who had mild to severe disabilities illustrated that difficulty walking had statistically significant correlations with lower levels of activity (Motl et al 2008). Therefore, rehabilitation may need to include adaptive activities for those with mobility deficits.

Participants who meet and don't meet exercise guidelines report fatigue as their main obstacle, suggesting even people who exercise have similar barriers to overcome, reiterated by Stroud et al (2009). Fatigue is reported in up to 65% of individuals with MS (White and Dressendorfer 2004), due to underlying pathology and can be further complicated by deconditioning (Becker et al 2004). It is a symptom which must be consistently accounted for in rehabilitation as White and Dressendorfer (2004) illustrated that physical activity can improve symptoms of fatigue. However, a systematic review found no benefit of exercise on fatigue when compared to no exercise (Rietberg et al 2011). Although this result was based on high quality randomised trials, small sample sizes were a major limitation.

It is documented that factors specific to MS such as bowel/bladder issues and uhtoff's phenomenon, where the body tends to overheat, can pose as barriers. However, comparable to recent research, these factors are not as prevalent and mainly affect participants “some of the time”. This could possibly be due to improvement in MS symptoms, perhaps attributable to advances in medications. In the literature these aspects were only cited in Elsworth et al (2009) and Kayes et al (2010a). However, it was not documented how many subjects were specifically affected.

Comparable to recent research, the majority of transport and environmental issues are not as prevalent as other influences (Kayes et al 2010b, Beckerman et al 2010). This could be due to advances in legislation which have standardised accessibility requirements (Department of the Environment, Heritage and Local Government 2000). Likewise, samples in this study and other research have mainly been subjects with mild to moderate disability. These individuals may not consider issues of transport and accessibility as challenges, which could have influenced findings.

5.2 Facilitators

The top facilitators reported by all participants were similar among all samples. Enjoyable exercise was the principal facilitator (58.1%) and was also reported in previous literature (Elsworth et al 2009, Dodd et al 2005). Designing content of exercise programmes is a key role for professionals, particularly physiotherapists, and is an area where they could pose as a major influence on participation by collaborating with patients to determine their primary interests.

Reduction in MS symptoms was identified as a facilitator by 55.8% of the sample. Despite beliefs that exercise could instigate symptom exacerbation, it has been proposed that as part of symptom management that exercise benefits areas such as strength, fatigue and flexibility (White and Dressendorfer 2004). Therefore people with MS should be educated on the current exercise guidelines and how exercise has the potential to improve MS symptoms, as these were the most prominent barriers.

As 41.9% of participants indicated that better mobility was considered a primary facilitator, where possible, people should be encouraged to remain active in order to maintain their mobility status. This is supported by high quality evidence that demonstrates the benefit of exercise on mobility-related activities when contrasted to no exercise (Rietberg et al 2011).

Similar to all the literature which has assessed facilitators, external factors such as the influence of the healthcare professional were considered important to this sample but were not as prevalent as factors previously discussed. This further reiterates the influence of professionals, as subjectively reported by participants.

Interestingly, when participants discussed facilitators in an open question, themes related to barriers were conveyed by several participants. Similarly barriers arose as the main theme when subjects were allowed to provide final commentary. This suggests that the focus should be shifted to recognising areas that could increase rather than decline exercise levels.

5.3 Strengths and Limitations

The use of questionnaires allowed for access to a greater number of subjects than other qualitative method such as focus groups. Potential participants were not contacted by email to ensure anonymity as when participants fear of a breach of confidentiality this may lead to lower response rates (Dillman 2000). In regards to the sample obtained, the ratio of males to females was similar to general MS population (1:3) (Thompson et al 2008) and a wide range in length of diagnosis was present. However, limitations were also evident. This is a cross-sectional study, thus assessing one point in time; therefore, future studies should perform research over longer time periods. Although a broad inclusion and exclusion criteria was used, the generalisability of the results may be compromised due to the small sample size. It may be considered that results are only applicable to younger people with MS who have higher levels of mobility and with relapsing-remitting MS. A limitation of using questionnaires is all data was self-reported by participants and there may be issues with reliability and inaccurate scoring if participants wish to provide socially desirable answers (Beckerman et al 2010). Measuring items such as physical ability with a device such as an accelerometer can be considered more sensitive and reliable (Weikert et al 2010), however, the focus of this study was to assess barriers and facilitators as opposed to levels of activity.

5.4 Implications for Practice

A primary role of rehabilitation for people with MS is to increase their levels of activity and participation in order to improve function and promote independence. It similarly encourages improvements in self-esteem and psychological health (Rietberg et al 2011). Promoting exercise is a major responsibility for healthcare professionals in this population. Therefore, barriers and facilitators that affect individuals should be taken into consideration by clinicians when designing exercise programmes with an aim to increasing adherence to exercise participation. Similar recommendations are outlined in existing research in this area.

5.5 Future Research

Any future research addressing barriers and facilitators should aim to review older people with MS as exercise has a similar importance in this population. More research on this topic is required in people who are consistently meeting exercise guidelines for both cardiovascular and strengthening exercise to determine if this would alter results. It is evident that people with MS experience barriers to exercise. In future, research is required to determine the most effective ways to address these barriers. As a progression from this, research is needed to assess if levels of physical activity change when barriers and facilitators are taken into consideration.

6. Conclusion

The findings of this questionnaire confirm that people with MS continue to face many challenges when attempting to perform physical activity. However, there are also facilitators that have the potential to increase exercise adherence in this population. A better comprehension of these factors should encourage the development of individually tailored exercise programmes for people with MS. This could lead to better exercise adherence, as well as improved outcomes in terms of their physical, social and psychological needs (Rietberg et al 2011). Further research is required on the implementation of these findings and their effects on levels of physical activity.

7. References

American College of Sports Medicine (2008) 'Exercise is Medicine' [online] available: <http://www.exerciseismedicine.org/YourPrescription.htm>. [accessed 22 Jan 2011]

Becker, H. and Stuifbergen, A. (2004) 'What makes it so hard? Barriers to health promotion experienced by people with multiple sclerosis and polio', *Family & community health*, 27(1), 75.

Beckerman, H., de Groot, V., Scholten, M.A., Kempen, J.C.E. and Lankhorst, G.J. (2010) 'Physical Activity Behaviour of People With Multiple Sclerosis: Understanding How They Can Become More Physically Active', *Physical Therapy*, 90(7), 1001-1013.

Borkoles, E., Nicholls, A.R., Bell, K., Butterly, R. and Polman, R.C.J. (2008) 'The lived experiences of people diagnosed with multiple sclerosis in relation to exercise', *Psychology & Health*, 23(4), 427-441.

Department of the Environment, Heritage and Local Government (2000) 'Technical Guidance M: Access for People with Disabilities', available: <http://www.environ.ie/en/Publications/DevelopmentandHousing/BuildingStandards/FileDownload,1655,en.pdf> [accessed 23 March 2011]

Dillman, D.A. (2000) *Mail and Internet Surveys: The Tailored Design Method*, 2nd ed., Canada: John Wiley and Sons, Inc.

Dodd, K.J., Taylor, N.F., Denisenko, S. and Prasad, D. (2006) 'A qualitative analysis of a progressive resistance exercise programme for people with multiple sclerosis', *Disability & Rehabilitation*, 28(18), 1127-1134.

Elsworth, C., Dawes, H., Sackley, C., Soundy, A., Howells, K., Wade, D., Hilton-Jones, D., Freebody, J. and Izadi, H. (2009) 'A study of perceived facilitators to physical activity in neurological conditions', *International Journal of Therapeutic Rehabilitation*, 16(1), 17.

Fink, A. (2009) *How to conduct surveys: a step-by-step guide*, 4th ed., London: SAGE.

Garrett, M and Coote, S. (2006) 'Barriers to exercise experienced by people with multiple sclerosis', unpublished.

Kayes, N.M., McPherson, K.M., Schluter, P., Taylor, D., Leete, M. and Kolt, G.S. (2010a) 'Exploring the facilitators and barriers to engagement in physical activity for people with multiple sclerosis', *Disability & Rehabilitation*, 1-11.

Kayes, N.M., McPherson, K.M., Taylor, D., Schlüter, P.J. and Kolt, G.S. (2010b) 'Facilitators and barriers to engagement in physical activity for people with multiple sclerosis: a qualitative investigation', *Disability & Rehabilitation*, 1-18.

Motl, R.W., Snook, E.M. and Schapiro, R.T. (2008) 'Symptoms and physical activity behaviour in individuals with multiple sclerosis', *Research in nursing & health*, 31(5), 466-475.

Motl, R.W., McAuley, E. and Snook, E.M. (2005) 'Physical activity and multiple sclerosis: a meta-analysis', *Multiple Sclerosis*, 11(4), 459-463.

National Multiple Sclerosis Society (2003) "Multiple Sclerosis Information sourcebook", Information Resource Centre and Library of the National Multiple Sclerosis Society, New York.

Rietberg, M.B., Brooks, D., Uitdehaag, B. and Kwakkel, G. (2011) 'Exercise Therapy for Multiple Sclerosis (Review)', *The Cochrane Collaboration* (1).

Rimmer, J.H., Riley, B., Wang, E., Rauworth, A. and Jurkowski, J. (2004) 'Physical activity participation among persons with disabilities: Barriers and facilitators', *American Journal of Preventive Medicine*, 26(5), 419-425.

Rossier, P. and Wade, D.T. (2002) 'The Guy's Neurological Disability Scale in patients with multiple sclerosis: a clinical evaluation of its reliability and validity', *Clinical rehabilitation*, 16(1), 75-95.

Snook, E.M. and Motl, R.W. (2008) 'Physical Activity Behaviours in Individuals with Multiple Sclerosis: Roles of Overall and Specific Symptoms, and Self-Efficacy', *Journal of pain and symptom management*, 36(1), 46-53.

Stroud, N., Minahan, C. and Sabapathy, S. (2009) 'The perceived benefits and barriers to exercise participation in persons with multiple sclerosis', *Disability & Rehabilitation*, 31(26), 2216-2222.

Thompson, A., Rompani, P., Dua, T., Douglas, I., Battaglia, M. and Porter, B. (2008) 'WHO/MSIF: Atlas of MS: multiple sclerosis resources across the world', available: http://www.who.int/mental_health/neurology/Atlas_MS_WEB.pdf [accessed 04 March 2011]

Turner, A.P., Kivlahan, D.R. and Haselkorn, J.K. (2009) 'Exercise and Quality of Life Among People With Multiple Sclerosis: Looking Beyond Physical Functioning to Mental Health and Participation in Life', *Archives of Physical Medicine and Rehabilitation*, 90(3), 420-428.

Vanner, E.A., Block, P., Christodoulou, C.C., Horowitz, B.P. and Krupp, L.B. (2008) 'Pilot study exploring quality of life and barriers to leisure-time physical activity in persons with moderate to severe multiple sclerosis', *Disability and Health Journal*, 1(1), 58-65.

Weikert, M., Motl, R.W., Suh, Y., McAuley, E. and Wynn, D. (2010) 'Accelerometry in persons with multiple sclerosis: Measurement of physical activity or walking mobility?', *Journal of the neurological sciences*, 290(1-2), 6-11.

White, L.J. and Dressendorfer, R.H. (2004) 'Exercise and Multiple Sclerosis', *Sports Medicine*, 34(15), 1077-1100.

8. Appendices

8.1 Appendix 1. Recruitment Advertisement



UNIVERSITY of LIMERICK
O L L S C O I L L U I M N I G H

Participants needed for research in exercise and Multiple Sclerosis

As a participant in this study, you would be asked to complete a questionnaire. This questionnaire will cover the following topics:

- Amount of regular exercise undertaken by participants
- Barriers and challenges of exercise
- Facilitators of exercise

The questionnaire will take approximately 10-15 minutes to complete and will be automatically returned to the research team when finished.

If you are interested in participating and would like any further information, please do not hesitate to contact any of the research team:

Dr. Susan Coote Email: susan.coote@ul.ie Tel: 061 234 278

Linda Brosnan Email: 0735043@studentmail.ul.ie

The procedures used in this study have been approved by Clinical Therapies Research Ethics Committee.

8.2 Appendix 2. Patient Information Leaflet



UNIVERSITY of LIMERICK
OLLSCOIL LUIMNIGH

Participant Information Leaflet

Title

Barriers and Facilitators to Participation in Physical Activity amongst a Multiple Sclerosis Population

Introduction

It is suggested that many people with Multiple Sclerosis are not meeting the recommended amounts of exercise according to the guidelines. This study is a Final Year Project to examine the reasons this could be through assessing the barriers to exercise and also the aspects that might improve compliance in exercise.

Procedure

People who are willing to participate will have to complete a questionnaire. This will include answering questions in relation to the amount of physical activity you usually carry out, and any reasons you feel exercise may be more difficult and also aspect which make exercise easier. Once you confirm you are willing to participate in the study, you will receive an information leaflet with further details about the study. A questionnaire will then be e-mailed to you from a member of the research team . Once you complete this questionnaire you are implying consent to participate in this research. It will take approximately 10-15 minutes to complete the questionnaire and once you are finished it will be returned to

Participation Criteria

Participants included according to the following criteria:

- Have a diagnosis of MS
- Male or female
- Over 18 years of age
- Any level of disability
- Any ethnic background
- English speaking

Potential Risks and Benefits

There are no direct risks to participating in this study. The time it takes to complete the questionnaire may be considered an indirect risk. Similarly, there are no direct benefits associated with participation. Indirect benefits are the results will contribute to previous research on exercise in MS. By identifying the barriers and facilitators to exercise, more effective exercise programmes can be developed for this population.

Confidentiality

We will only report summarised results of the data. No personal information, such as name and contact details, which could possibly identify you as a participant will be required to complete this questionnaire. Therefore, your identity will remain unknown to the research team and in the published results. Your participation in this study is completely voluntary and if you do not wish to participate, you simply do not complete the questionnaire. If you decide at any stage after completing the questionnaire that you wish to withdraw your participation and use of your data from the study, you are entitled to do so and there will be no repercussions. Please contact a member of the research team to inform them if this occurs.

If you have any questions regarding the study please do not hesitate to contact any of the research team:

Dr. Susan Coote
Telephone: 061 234 278
Email: susan.coote@ul.ie

Linda Brosnan
Email: 0735043@studentmail.ul.ie

The procedures used in this study have been approved by the University of Limerick Faculty of Education and Health Sciences Research Ethics Committee.

If you have concerns about this study and wish to contact someone independent, you may contact:

Professor Alan Donnelly,

The Chairman of the Education and Health Sciences Research Ethics Committee,

University of Limerick,

Limerick.

Tel: (061) 202808

Your participation is greatly appreciated

8.3 Appendix 3. Questionnaire



UNIVERSITY of LIMERICK
OLLSCOIL LUIMNIGH

*A questionnaire to identify the barriers and
facilitators to participation in physical activity
amongst a Multiple Sclerosis population*

The following questionnaire will require you to answer questions on your Multiple Sclerosis and factors that may be affected by your diagnosis. You will be asked about the amount of exercise you participate in and the barriers and facilitators that affect this. By completing this questionnaire, you are implying consent that you are willing to participate in this study. A carer may also complete the questionnaire but they must remember that the questions are directed at a person with MS.

Participation is completely voluntary and if you do not wish to be involved, you do not have to complete the questionnaire.

Please tick the relevant answers for you.

1. This questionnaire is being completed by

- | | |
|-----------------------------------|---------------------------------|
| <input type="checkbox"/> Myself | <input type="checkbox"/> Carer |
| <input type="checkbox"/> Relative | <input type="checkbox"/> Friend |

2. What is your gender?

- | | |
|-------------------------------|---------------------------------|
| <input type="checkbox"/> Male | <input type="checkbox"/> Female |
|-------------------------------|---------------------------------|

3. What age are you?

4. What type of MS do you have?

- | | |
|--|--|
| <input type="checkbox"/> Primary-progressive | <input type="checkbox"/> Relapsing-remitting |
| <input type="checkbox"/> Secondary-progressive | <input type="checkbox"/> Benign |

5. How many years is it since your diagnosis?

6. What do you use to move around outdoors?
- | | |
|--|--|
| <input type="checkbox"/> No assistive device | <input type="checkbox"/> 1 stick or 1 crutch |
| <input type="checkbox"/> 2 stick or 2 crutches | <input type="checkbox"/> Walking frame or rollator |
| <input type="checkbox"/> Manual wheelchair | <input type="checkbox"/> Power wheelchair |

7. How many times have you been admitted to hospital in the past 12 months for an issue related to MS?

8. How many relapses have you had in the past 12 months?

9. Are you currently employed?
- | | | |
|------------------------------------|------------------------------------|--|
| <input type="checkbox"/> Full time | <input type="checkbox"/> Part time | <input type="checkbox"/> Unemployed at present |
|------------------------------------|------------------------------------|--|

10. Do you live?
- | | | |
|--------------------------------|--------------------------------------|--------------------------------|
| <input type="checkbox"/> Alone | <input type="checkbox"/> With family | <input type="checkbox"/> Other |
|--------------------------------|--------------------------------------|--------------------------------|

11. Do you do exercise that causes your heart rate to increase e.g. brisk walking, swimming?

12. Do you do exercise which involves weights or moving against your body weight?

13. What kind of activities do you do?

14. How many times per week do you exercise?

15. How long do you usually spend at an exercise session?

16. Where do you usually exercise?

Home

Gym

Outdoors

Rehabilitation centre e.g. physiotherapy class

Other (please specify)

17. Please indicate how often the following factors reduce your participation in exercise: Barriers due to MS

	All of the time	Most of the time	Some of the time	Rarely	Never
Pain					
Fatigue					
Balance					
Falls					
Spasticity/stiffness					
Temperature					
Physical Ability					
Bladder/bowel issues					

18. Please indicate how often the following factors reduce your participation in exercise: Barriers due to transport

	All of the time	Most of the time	Some of the time	Rarely	Never
Unavailable transport					
Transport costs					
Lack of accessible parking					

19. Please indicate how often the following factors reduce your participation in exercise: Barriers due to the environment

	All of the time	Most of the time	Some of the time	Rarely	Never
Building Accessibility e.g. ramps, lifts, narrow doorways					
Lack of suitable equipment					
Not enough room around equipment					
Poor toilet accessibility					
Difficulty getting into swimming pool					
Gym membership costs					

20. Please indicate how often the following factors reduce your participation in exercise: Psychological barriers

	All of the time	Most of the time	Some of the time	Rarely	Never
Lack of support from professionals					
Lack of support from family/friends					
Fear of falling					
Embarrassment					
Lack of motivation					

21. Please indicate how often the following factors reduce your participation in exercise: Other barriers

	All of the time	Most of the time	Some of the time	Rarely	Never
Lack of knowledge of what I should/should not do					
Lack of professionals knowledge					
Lack of information on available facilities					
Time constraints					

22. Are there any barriers which have not been mentioned that apply to you? Please give details

23. Please tick the top 5 things that would need to change for you to do more exercise, 1 being the most important, 5 being the least important.

FACILITATOR	0	1	2	3	4	5
Better mobility						
Reduction in MS symptoms						
Improved accessibility e.g. parking, ramps						
Suitable equipment						
Familiar setting						
Group classes						
Enjoyable exercises						
Professionals level of knowledge						
Education about suitable exercises						
Encouragement from exercise leader						

Support from health care professionals						
Support from family/friends						

24. Are there any facilitators which have not been mentioned that apply to you? Please give details.

25. Have you any further comments?

Thank you for your time in completing this questionnaire

8.4 Appendix 4. Raw Data

Table.1 Barriers experienced by people with MS

Barriers	All of the time	Most of the time	Some of the time	Rarely	Never
<u>MS Symptoms</u>					
Pain (n=47)	5	4	14	13	11
Fatigue (n=47)	6	17	15	7	2
Balance (n=47)	6	12	12	9	8
Falls (n=45)	3	1	8	13	20
Spasticity (n=47)	6	5	16	14	6
Temperature (n=45)	1	3	15	8	18
Physical Ability (n=46)	6	5	19	10	6
Bladder/bowel issues (n=45)	1	1	12	11	20
<u>Transport</u>					
Unavailable Transport (n=46)	3	0	4	11	28
Transport Costs (n=45)	3	0	3	7	32
Lack of Accessible Parking (n=45)	1	0	5	6	33
<u>Environment</u>					
Building Accessibility (n=45)	1	1	4	8	31
Lack of Suitable Equipment (n=45)	2	2	1	8	32
Not Enough Room Around Equipment (n=45)	0	3	0	5	37
Toilet Accessibility (n=45)	0	1	0	10	34
Swimming Pool Accessibility (n=44)	4	4	5	5	26
Gym Costs (n=45)	14	2	11	1	17
<u>Psychological</u>					
Lack of Support From Professionals (n=47)	6	6	4	10	21
Lack of Support From Family/Friends (n=45)	1	3	9	7	25
Fear of Falling (n=47)	4	5	14	9	15
Embarrassment (n=45)	3	3	13	11	15
Lack of Motivation (n=47)	7	8	16	11	5
<u>Other</u>					
Lack of Personal Knowledge (n=47)	4	6	15	13	9
Lack of Professionals' Knowledge (n=47)	3	7	8	12	17
Lack of Information on Facilities (n=47)	6	10	9	9	13
Time Constraints (n=46)	3	9	13	8	13

Table 2. Facilitators experienced by people with MS

Facilitators	Ranking					Total
	1	2	3	4	5	
Enjoyable exercises (n=25)	6	8	2	6	3	25
Reduction in symptoms (n=24)	12	8	0	3	1	24
Better mobility (n=18)	8	4	3	2	1	18
Support from professionals (n=17)	2	1	3	6	5	17
Exercise location (n=16)	1	5	1	6	3	16
Education about exercise (n=16)	1	4	7	2	2	16
Group classes (n=14)	1	3	4	1	5	14
Support from family/friends (n=12)	4	1	1	3	3	12
Improved accessibility (n=12)	1	1	1	2	7	12
Suitable equipment (n=11)	1	1	4	2	3	11
Encouragement (n=11)	0	0	7	2	2	11
Familiar setting (n=6)	1	1	1	2	1	6
Professional's knowledge (n=5)	2	1	2	0	0	5
Improved transport (n=3)	1	0	0	1	1	3

Qualitative Raw Data

Are there any barriers which have not been mentioned that apply to you? Please give details.

- Can't think of any
- Also have disc problems and people don't seem to understand what i can do with have both problems
- Fatigue work/life balance
- No - maybe laziness? Or feelings of "It's not going to do me any good. I'll never walk again!" Motivation???
- In 1970's very little emphasis/support particularly from professionals. However, I noticed the obvious link between personal motivation & good health in the general population & so I began to incorporate tiny insignificant exercises into my daily lifestyle - could see the benefits of my little routines when my brother had MS diagnosis (1990) & v. quickly lost his basic levels of energy & strengths when his use of a wheel-chair became routine & had very little exposure to monitored exercises programme - lack of interest in the cost/benefit analysis & interest & support is sadly lacking in the medical professional i.e. GP's -----
Neurologists
- No barriers yet. This week numbness in left leg.
- No
- No
- I have a young family. I found the first few years very tough parenting and it completely zapped my energy. We couldn't afford leisure centre membership for ages and i tried other exercises like walking, an MS Ireland gym class but because I find it terribly difficult to exercise when I overheat I always ended up giving up after a short time. A year ago we were eventually able to afford leisure centre membership and I now have access to a pool which has made a huge difference. I swim about twice a week. It has taken a long time to work it up. I am really happy I have found something to work for me at last and I'm enjoying it and seeing improvement. It would be great if people with MS got some form of discount for leisure centres, it would give people more opportunities! Now that my kids are in school I have time to look after myself more and my quality of life is slowly improving. When you have young kids you are sleep deprived and exhausted and for me my fatigue was so bad exercise just made it worse for a long while till i got enough sleep and more time to myself.
- I had to leave one gym because it did not have air con - major impact on my fatigue & functioning.
- Lack of available low cost facilities.
- No. Since i started exercising a few years ago most barriers have gone, i used to fall, trip, etc. but not since commencing exercises
- A lot of the medicines proscribed for MS twiddle your body chemistry. Depression and hormone imbalance are common barriers for me. The biggest one is the fatigue.

Are there any facilitators which have not been mentioned that apply to you? Please give details.

- No don't think so
- Have had enormous support in starting and maintaining frequent swimming and stretching from my physiotherapist. So positive!
- Motivation by others to keep coming back. Difficult to maintain discipline. Easy to find excuses not to exercise. 6 years of inadequately addresses LBP and associated pain is my main barrier.
- Lack of money and care from doctors
- No
- Many MS classes seem to be held during working time
- No
- Joining a gym/classes can be incredibly expensive, especially where I live in Dublin 1. That is a matter factor for me as M.S. can be quite expensive anyway, what with oils, vitamins, diet, Dr. appointments for things not directly resulting from M.S. but indirectly connected (pill, flues, etc.) - it would help if gym membership was in some way subsidised or covered by health insurance.
- Family coaching- I ticked too many so they all disappeared off screen!! I wanted to '1' them all- i was excluded from the last session-I NEED YOU!!
- No. Problem with above it is not accepting my answers!!
- No
- Money!
- Availability of knowledgeable professionals on a regular basis to provide one-to-one help and advice.
- No
- I think some of those checkboxes are faulty. Dang. Did you get enough data from the earlier parts of the survey?

Have you any further comments?

- I have found both the exercises and yoga a great benefit and will keep doing when the classes start again my problem is my left leg not as bad since doing getting the balance right etc.
- Would love to get fitter and be to withstand doing more exercises without feeling so tired
- Wish my neurologist had told me about importance of physio in managing my MS - nobody told me, and it was I myself who figured physio must help, and made the appointment.
- I have been relapse free for many years. LBP has developed and may/may not be allied to my MS. Huge issue with mixed messages from neuro/ortho and physio professionals. Deeply frustrating and costly in Q of L and financial cost
- None
- No
- I would like to have an exercise class nearby me as i have weight on me and would like to get rid of it for when and if i do get bad, so i can carry my own weight thank you
- Group sessions would be the most motivating from someone with a thorough knowledge of MS. PA to motivate and support for exercise would be fabulous.
- Thankfully I am able to exercise most of the time. I suffer from dragging my right leg if i walk too far, but aided by a walking stick, I try to go as far as i can. The hydrotherapy also helps to build up my muscles and keep them toned.
- As a nation I think we need more public leisure centres and as i said earlier i think people with MS or people with disabilities should get a discount. Many people with MS don't work and if they do, not for long hours. Most people with MS struggle financially and it can be a huge factor in choosing exercise. Leisure Centres usually have all the equipment but again there seems to be a lack of them especially outside cities. In the UK they have MS Therapy Centres with HBO treatment and other exercise classes and equipment. Maybe some sort of therapy centres could be set up in Ireland within time thorough the health for access to a lot of treatments for people with disabilities.
- Cannot do more exercises than 3 full 1 hour workouts in the gym per week ...
- Unavailability of physiotherapists and physical therapists at a reasonable cost is the biggest problem for me even though I live in a big town.
- No
- I'm really looking forward to genomic treatments for MS. If big pharma can de facto pause the disease, there'll be more time to find a cure. Do you have a blood sample bank or MRI library (etc.) I could contribute to?