Exercise Professionals: Barriers And Facilitators To Working With Stroke Survivors

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EXERCISE PROFESSIONALS: BARRIERS AND FACILITATORS TO WORKING WITH
STROKE SURVIVORS

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A dissertation submitted in partial fulfilment of the requirements for the degree of
MSc in Neurology & Gerontology.

School of Physiotherapy,
Faculty of Medicine and Health Sciences,
Royal College of Surgeons in Ireland.

September 2016

Supervisor: Professor Marie Guidon
Declaration

I declare that this thesis, which I submit to RCSI for examination in consideration of the award of a Master of Science in Neurology and Gerontology is my own personal effort. Where any of the content presented is the result of input or data from a related collaborative research programme this is duly acknowledged in the text such that it is possible to ascertain how much of the work is my own. I have not already obtained a degree in RCSI or elsewhere on the basis of this work. Furthermore, I took reasonable care to ensure that the work is original, and, to the best of my knowledge, does not breach copyright law, and has not been taken from other sources except where such work has been cited and acknowledged within the text.

Signed _________________________________

RCSI Student Number __14104288__________________________

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SUMMARY

Introduction: Stroke survivors (SSs) are largely inactive despite the benefits of exercise. Community-based exercise professionals (EPs) skilled in exercise prescription and personal motivation may have a role to play in promoting exercise for SSs. However, little is known about EPs’ opinions towards working with SSs.

Aims: To investigate EPs’ opinions towards working with SSs.

Objectives: To identify EPs’ barriers and facilitators towards working with SSs and to investigate their relationship with EPs education on stroke. To investigate EPs skills, interest and experience working with SSs.

Methods: A descriptive study was conducted using an online survey designed by the researcher. Purposive sampling was used to survey EPs on the Register of Exercise Professionals in Ireland (n=277). Descriptive and inferential statistics were calculated.

Results: The response rate was 31.4% (87/277). Barriers identified by EPs included the level of supervision SSs require (56.2%; 41/73), a scarcity of suitable equipment for SSs (68.4%; 50/73) and information on psychological problems post stroke (83.5%; 61/73). Facilitators identified included the availability of training courses (93%; 66/71) including theory (94.4%, 67/71) and practical (100%; 71/71) training on stroke and having suitable equipment (97.2%; 67/71) for SSs. EPs who had not completed education on stroke were statistically significantly more likely to agree with barriers related to not having a disability-related policy, lack of information on psychological problems post stroke and lack of experience. Only 22.1% (19/86) of EPs had experience with SSs. Seventy six percent (58/76) of EPs were interested in one-to-one exercise with SSs but only 52.6% (40/76) were interested in group exercise. EPs reported having good skills in motivating (81.6%; 62/76) and
communicating (68.5%; 52/76) with SSs but 40.7% (31/76) reported poor skills in providing group exercise sessions for SSs.

Conclusion and Implications of Findings: EPs are interested in working with SSs despite their lack of experience and the barriers they face. Training opportunities for EPs should be developed to facilitate EPs' work with SSs.
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List of Abbreviations

ACSM: American College of Sports Medicine
CPD: Continuing Professional Development
EP: Exercise Professional
FET: Fisher’s Exact Test
HSE: Health Service Executive
ISCP: Irish Society of Chartered Physiotherapists
N/A: Not Applicable
NERF: National Exercise Referral Framework
REPs: Register of Exercise Professionals
SS: Stroke Survivor
SPSS: Statistical Packages for the Social Sciences
UK: United Kingdom
USA: United States of America
INTRODUCTION

Each year approximately 10,000 people in Ireland suffer a stroke and 30,000 people are living in the community with disabilities as a result of a stroke (Irish Heart Foundation, 2015). The incidence of stroke, especially among younger ages, is increasing, along with the disability-related costs (Ovbiagele et al, 2013). Greater emphasis, therefore, is needed to explore on how best to support these stroke survivors (SSs) in the community (Brainin et al, 2011). SSs have been encouraged to participate in regular exercise for many years to prevent complications, minimise disability, improve cardiorespiratory fitness and decrease the risk of recurrent strokes (Gordon et al, 2004). There is convincing evidence from a Cochrane systematic review that exercise is safe and effective post stroke (Saunders et al, 2014). Cardiorespiratory training with SSs has demonstrated statistically significant improvements including improved walking speed and endurance and reduced dependence on others during ambulation (Saunders et al, 2014). These exercise-related improvements are important because walking is an outcome valued by SSs themselves (Wood et al, 2010).

Despite the benefits of exercise, SSs often exhibit significantly reduced cardiorespiratory fitness compared to healthy age-matched controls in terms of quantity, intensity and duration (Field et al, 2013; Smith et al, 2012). Inadequate exercise and sedentary behaviour among SSs can increase the risk of loss of independence and limit participation in work, leisure and community activities while increasing health costs (Rimmer, 2012). Sedentary lifestyles can also elevate the risk of further health problems including recurrent stroke and cardiovascular disease which further reduce activity (Gordon et al, 2004; Rimmer et al, 2012). Engaging and re-engaging with exercise can however be difficult. Eighty-one percent of people
with physical disabilities expressed the need for support in doing so (Junker and Carlberg, 2011). SSs have similarly expressed the wish to exercise but they face many barriers (Elsworth et al, 2009). Barriers to exercise include a shortage of suitable community exercise programmes and access to qualified personnel to help them increase their physical activity (Simpson et al, 2011). These barriers need to be investigated and eliminated for SS to help them reap the benefits of physical activity (Saunders et al, 2014). SSs have cited they want personnel to help them perform safe and suitable exercises supplemented with motivational strategies but SSs did not specify what qualification such personnel should have (Simpson et al, 2011).

Irish stroke guidelines state SSs should have access to exercise interventions (Irish Heart Foundation, 2010). Traditionally, physiotherapists deliver exercise interventions for SSs. Physiotherapists have reported an inability to fully support the physical activity needs of people with neurological conditions due to constraints in health systems (Mulligan et al, 2011). Furthermore, there is a shortage of community-based services for SSs in Ireland (Hickey et al, 2012). People with neurological conditions have also cited a shortage of suitable exercise opportunities available to maximise their recovery and goal attainment (Turner-Stokes et al, 2013).

Cardiac rehabilitation is arguably analogous with stroke rehabilitation and SSs gain similar training-related benefits from cardiac rehabilitation compared to non-stroke participant (Mead and Bernhardt, 2011). Interestingly, physiotherapists, together with exercise professionals (EPs) who have completed the relevant training courses are involved in delivering cardiac rehabilitation exercise interventions for those following myocardial infarct (Irish Society of Cardiac Rehabilitation, 2016). The widespread availability of cardiac rehabilitation programmes and training courses for EPs on cardiac rehabilitation contrasts with the shortage of exercise programmes for
SSs and training courses for EPs (Mead and Bernhardt, 2011). Physiotherapists have stated EPs, skilled in exercise instruction and motivation, are very helpful and willing to work with clients with neurological conditions (Mulligan et al, 2011). The opportunity for EPs to work with SSs may be under-recognised (Oprescu et al, 2012).

EPs who work in community exercise facilities e.g. leisure centres, have the potential to support SSs community-based exercise (Rimmer and Henley, 2013). Physiotherapists and SSs have cited barriers to EPs working with SSs, including the perceived lack of knowledge and training of EPs about stroke and adaptive exercises (Rimmer et al, 2008; Wiles et al, 2008). To overcome this barrier, an innovative model has emerged where physiotherapists educate EPs about stroke and support them in delivering a suitable exercise programmes for SSs (Merali et al, 2015). This model has seen EPs in leisure centres and community gyms successfully deliver exercise interventions for SSs (Cramp et al, 2010; Harrington et al, 2010; Stuart et al, 2009). Benefits cited by SSs include the de-medicalisation of physical activity, improved self-efficacy to participate in physical and social activities and social support from peers and EPs (Norris et al, 2013, Reed et al, 2010). EP-led exercise programmes also have the additional benefit of running long term while those run by health professionals are often time limited (Best et al, 2012). Unfortunately, EP-led exercise programmes are not commonly seen in the community (Best et al 2012; Fullerton et al, 2007). To help translate research to practice, it is important to investigate key stakeholders opinions. EPs’ opinions have been largely unstudied in relation to exercise provision for SSs stroke. Exploring EPs’ opinions will help guide how to best to support them in relation to working with SSs and increase the number of EP-led exercise interventions for SSs (Davies et al, 2010).
CHAPTER 1 LITERATURE REVIEW

1.1 Exercise Professionals

Exercise Professional (EP) is a broad term for a number of professional roles including prescription, instruction and promotion of exercise for health, leisure, fitness and athletic performance (International Confederation of Registers for Exercise Professionals, 2016). EPs are involved in developing and implementing exercise programmes for individuals and groups as well as providing the necessary motivation and education on exercise (International Confederation of Register for Exercise Professionals, 2016). Clients place trust in EPs to provide them with exercise programmes that will help them achieve their exercise-related goals. Although, unlike many health professionals, EPs are not required by law to possess a license to practice (Rosado et al, 2014). Some EPs’ certificates are awarded after limited training and education (Rosado et al, 2014). Currently, there is no regulation controlling the practice of EPs in Ireland (Register of Exercise Professionals in Ireland, 2015). This raises issues when considering EPs working with vulnerable clients such as stroke survivors (SSs).

Internationally, Registers of Exercise Professionals (REPs) are independent public registers which recognise and provide accreditation of EP qualifications across countries including Ireland, United Kingdom (UK), Canada, United States of America (USA), Australia, New Zealand, Belgium and South Africa (International Confederation of Register for Exercise Professionals, 2016). REPs objectives are to assure the public, employers and other professionals that EPs on the register are appropriately qualified, insured and adhere to a code of ethical practice (REPs Ireland, 2015). The REPs Ireland (2015) code of ethics states EPs cannot discriminate against clients because of disability or impairment. EPs must
nonetheless, work within their boundaries of confidence. Little is known about EPs’ interest and confidence in their skills in relation to working with SSs leaving their scope of practice with SSs undefined.

1.2 Exercise Professionals’ Interest in Working with Stroke Survivors

The number of EPs working with SSs is unknown but it is believed to be low (Rimmer and Henley, 2013). Literature on EPs’ interest in working with SSs is scarce. It is therefore, unclear if lack of interest contributes to the low number of EPs working with SSs. EPs working with SSs is still a relatively new area in research and practice (Merali et al, 2015). To gain some insight into this area, research encompassing EPs’ interest in working with other special populations will be examined. A survey of community EPs (n=580) in the USA reported EPs would be interested in working with a client with Multiple Sclerosis and that it would be beneficial for the EP, the client and other club members alike (Kasser et al, 2013). While Multiple Sclerosis is a neurological disease, it differs from stroke as it is neurodegenerative in nature. Results must therefore be interpreted with caution when considering SSs. The study focused on a person with Multiple Sclerosis with mild disability. This may have impacted EPs’ responses along with the non-representative sample of self-declared EPs recruited. A random sample of American College of Sports Medicine (ACSM) certified EPs (n=325) in the USA reported they were interested in working with clients with obesity and found it professionally gratifying (Hare et al, 2000). Clients with obesity, however, may not present with the sensory, cognitive or communication problems SSs may have. Such research on EPs and special populations cannot be fully extrapolated to SSs, leaving EPs’ interest in working with SSs unclear.
1.3 Exercise Professionals Skills in Relation to Working with Stroke Survivors

EPs’ training, qualifications and skills required to work with special populations such as SSs is undefined (Warburton et al, 2013). Specific knowledge and training required for ACSM certification improved EPs’ perceived confidence working with clients with obesity (Hare et al, 2000). ACSM is considered the gold standard certification for EPs (ACSM, 2015). It was unclear what specific theoretical or practical experience involved in obtaining an ACSM certification provided EPs with more confidence over other training courses due to the monothematic survey instrument employed. EPs providing one-to-one exercise sessions for SSs were confident of their skills to work with SSs although they indicated further training on stroke and communication links with physiotherapists would be beneficial (Wiles et al, 2008). Eighty-six percent of EPs surveyed in the UK indicated they had difficulty with communication when dealing with inactive populations (Central YMCA, 2014). SSs want a professional skilled not only in exercise prescription but also motivational strategies to support their exercise (Simpson et al, 2011). Interestingly, 46% of EPs surveyed indicated they had limited skills in behavioural change and motivation suitable for inactive populations (Central YMCA, 2014). Managers of exercise facilities believe EPs are under skilled in providing social and psychological support to inactive populations (Central YMCA, 2014). Supporting SSs may be more demanding on EPs skills as SSs may be inactive but also present with physical, sensory, perceptual, cognitive and communication problems.

According to the REPs in the UK and the Quality Assurance Framework for exercise referral systems, EPs working with SSs need to have advanced skills and a specialist qualification in the field (UK: Department of Health 2001). To support this, EPs in the UK can undertake a training course to develop the skills and knowledge to safely
and effectively deliver exercise interventions for SSs (Later Life Training, 2015). The course is accredited by REPs UK and supported by the Chartered Society of Physiotherapists. A similar training programme on fitness after stroke has been established for EPs in Australia (Heartmoves, 2015). No recommendations are currently in place in Ireland and no courses on stroke are currently available for EPs. The National Exercise Referral Framework is currently being developed and REPs Ireland need to engage with National Exercise Referral Framework (NERF) management to set training standards (NERF Draft, 2014). The NERF Draft (2014) also states training should be provided at undergraduate level and through e-learning for graduates. Many third level institutes include adaptive physical activity and exercise and health modules in recreation and leisure courses and exercise in special populations’ modules in sports science degree programmes (Qualifax, 2016). No research is however, available as to whether these modules provide EPs with adequate experience and skills to work with SSs.

1.4 Exercise Professionals’ Experience working with Stroke Survivors

Educational and practical experiences are crucial in providing EPs with the confidence to work with special populations (Rosado et al, 2014). EPs’ experience with SSs in Ireland is likely limited due to the scarcity of community exercise interventions for SSs that they can become involved in (Hickey et al, 2012). This shortage of EP-led exercise programmes for SSs has also been seen internationally. Only 6% (14/230) of exercise facilities surveyed in Scotland and 12% (26/213) surveyed in Toronto offered exercise programmes for SSs (Best et al, 2012; Fullerton et al, 2007). This contrasts with cardiac rehabilitation where EPs, who have undergone the appropriate training, can easily gain experience delivering the latter stages of the programme to people post myocardial infarcts and coronary artery
grafting (Irish Association for Cardiac Rehabilitation, 2016). Exercise plays a key role in secondary prevention of recurrent stroke and myocardial infarct alike (Billinger et al, 2014). Research has begun exploring adapted cardiac rehabilitation for SSs (Lennon and Blake, 2009). This may increase opportunities for EPs to gain experience working with SSs.

An increasing number of studies have been conducted across the UK, Canada, Australia and Italy, whereby EPs successfully delivered exercise interventions for SSs in the community (Merali et al, 2015). Interventions discussed in a review by Merali and colleagues (2015) were predominantly group based including task orientated circuits (Cramp et al, 2009; Harrington et al, 2010; Kilbride et al, 2013; Salbach et al, 2014) and strengthening programmes (Cramp et al, 2009; Sims et al, 2009; Stuart et al, 2009). EPs involved were described as qualified or accredited. Of those involved, only two studies specified the accrediting body (Kilbride et al, 2013; Salbach et al, 2014) and one specified the EP had experience with an exercise scheme where general practitioners referred clients (Cramp et al, 2010). EPs in only one study were REPs members, in this case it was REPs Canada (Salbach et al, 2014). Results from other studies must therefore be interpreted with caution when considering the qualification of the involved EPs.

Results from feasibility studies of EP-led exercise programmes for SSs demonstrated statistically significant improvements in impairments including gait, balance and strength and improved activity and participation levels (Cramp et al, 2009; Kilbride et al, 2013; Salbach et al, 2014; Sims et al, 2009; Stuart et al, 2009). Following an EP-led circuit training intervention, the participating SSs returned to activities of daily living such as dressing and shopping and reported less difficulty with them (Harrington et al, 2010). These improvements, not seen in the control group, were
maintained at one year post intervention (p=0.024). SSs reported support from the EPs and other SSs in the group improved their self-efficacy to participate in physical and social activities and that it demedicalisation the exercise (Norris et al, 2013; Reed et al, 2010). This social support from peers is important as it facilitates long term physical activity behaviours among SSs (Nicholson et al, 2013). Despite the encouraging quantitative and qualitative results, there is a lack of EP-led exercise interventions for SSs internationally (Best et al, 2012; Fullerton et al, 2011). Understanding barriers and facilitators towards working with this population is fundamental to increase the uptake of EPs providing exercise interventions for SSs (Davies et al, 2010).

1.5 Exercise Professionals Barriers and Facilitators

There is a dearth of literature regarding EPs’ barriers and facilitators towards working with SSs, therefore the literature on special populations and managers of exercise facilities was also explored to gain further understanding on the topic. Barriers and facilitators are discussed under subheadings outlined below.

1.5.1 Training, Education and Information-Related Barriers

Physiotherapists and SSs have cited barriers to working with EPs including their perceived lack of knowledge and training about stroke and adaptive exercises (Rimmer et al, 2008; Wiles et al, 2008). This resonates with EPs self-reported need for further training to help them work with SSs and other special populations (Moore et al, 2011; Wiles et al, 2008). EPs pre-qualification training therefore may not adequately prepare them to work with special populations. A survey of ACSM certified EPs outlined that 34% (112/330) of EPs found designing exercise programmes and counselling obese people difficult (Hare et al, 2000). EPs indicated they require education not only on the condition and physical problems, but also on
communicating with inactive populations and providing interpersonal support to special populations (Central YMCA, 2014; Moore et al, 2011; Wiles et al, 2008). This highlights that EPs barrier of lack of information on stroke spans across many areas of stroke.

Managers of community exercise facilities with \( n=26 \) and without \( n=160 \) stroke specific exercise programmes in Toronto reported that a shortage of qualified staff was a barrier to implementing a stroke exercise programmes (Fullerton et al, 2007). However, the qualifications of the EPs employed in such facilitates were not reported. Continuing professional development (CPD) training courses provides an opportunity for EPs to gain knowledge, experience and skills beyond their initial training (REPs Ireland, 2015). EPs have cited the absence of training courses as a barrier to working with SSs and those with disability (Rimmer et al, 2004). These studies were conducted in the USA and the UK but it is likely to also be a barrier for EPs in Ireland due to the absence of courses available here. If EPs do not received adequate training on stroke during their pre-qualification training, it may be very difficult to overcome their lack of knowledge post-qualification if there are no suitable courses available to them.

1.5.2 Training, Education and Information-Related Facilitators

EPs’ education was critical for successful outcomes when conducting exercise interventions with teenagers with juvenile idiopathic arthritis (Hutzal et al, 2009). Likewise, EPs receive extensive training to work in cardiac rehabilitation including exercise considerations in special populations, cardiac rehabilitation exercise prescription, changing behaviour and motivational interviewing (Irish Association of Cardiac Rehabilitation, 2016).
To overcome the shortage of courses on stroke for EPs, physiotherapists have been encouraged to assist EPs in prescribing safe and effective exercise for SSs (Morris and Williams, 2009). In fact, a survey of EPs delivering exercise interventions for SSs in Scotland reported “most” EPs had received training from a physiotherapist (Best et al, 2012). This has been termed a ‘healthcare-recreation partnership model’ which is becoming more commonly seen in the literature (Merali et al, 2015). The partnership involves physiotherapists training EPs on stroke and supporting them to deliver a specific exercise interventions for SSs (Cramp et al, 2010; Harrington et al, 2010; Reed et al, 2010; Salbach et al, 2014; Stuart et al, 2009). Physiotherapists were also involved in prescribing appropriate exercises, attending the first exercise session and observing exercise classes (Salbach et al, 2014; Stuart et al, 2009; Wiles et al, 2008). This partnership is aimed at addressing EPs barriers to working with SSs including their lack of training and experience (Merali et al, 2015). Due to the lack of detailed description of the physiotherapists’ training and EPs’ qualifications in the involved studies, difficulty can arise interpreting and translating this research into practice. It is debatable if these short training courses by physiotherapists overcome the information-related barriers EPs encounter and no research has been conducted on EPs’ opinions on this.

The Irish Society of Chartered Physiotherapists (ISCP) Scope of Practice document does not provide recommendations on training EPs (ISCP, 2012). According to the European Region World Confederation for Physical Therapy (2008) Standards of Practice, physiotherapists must ensure clients are in a safe environment. It is also unclear if a physiotherapist trains an EP on how to implement an exercise programme with a SS, who is responsible for the ongoing risk assessment of the SSs, the environment and the equipment. Furthermore, when comparing this to cardiac
rehabilitation, EPs need to attend 35 hours of contact teaching and carry out 100 hours of self-directed learning to qualify to work with clients post myocardial infarct (Irish Association of Cardiac Rehabilitation, 2016). It is unlikely that EPs training from physiotherapists as part of the healthcare-recreation partnership is as extensive as that described in cardiac rehabilitation (Merali et al, 2015). The lack of information and training on stroke EPs receive, could be better addressed by formal training courses such available in the UK and Australia (Heartmoves, 2015; Later Life Training, 2015). Formal training courses on stroke therefore need to be developed in Ireland to facilitate EPs working with SSs.

1.5.3 Safety-Related Barriers

EPs have cited many safety-related barriers towards working with people with disabilities such as fears of liability and lack of disability-related policies in place (Rimmer et al, 2004). In contrast, managers of exercise facilities (n=35) surveyed reported having formal procedures for handling accessibility and disability-related complaints in place and a designated staff member to supervise disability act compliance (Rimmer et al, 2005). This indicates there may be a difference between barriers for EPs and managers of exercise facilities. It must also be considered that these studies were conducted in the USA; current practice in Ireland is unknown.

EPs have highlighted that the level of supervision SSs require is a barrier to working with them (Rimmer et al, 2004). This was also seen during an EP-led exercise interventions whereby the physiotherapist removed an EP from conducting the intervention due to difficulty supervising SSs (Salbach et al, 2014). This highlights safety issues despite the experienced EP met REPs Canada eligibility criteria and had received training on stroke from the physiotherapist (Salbach et al, 2014). Stuart et al (2009) ran a similar intervention and did not report any adverse events. Due to the
limited description of the training that the physiotherapists provided the EPs’, and the lack of standardisation between studies, it is unclear if these adverse events could have been avoided. It also highlights the outcome of EPs training should be evaluated before they start working with SSs similar to cardiac rehabilitation. To become a cardiac rehabilitation instructor, EPs need to pass both written and oral examinations (Irish Association of Cardiac Rehabilitation, 2016). EP-led exercise interventions by Sims et al (2009) and Kilbride et al (2013) did not document any physiotherapy involvement and no adverse events were reported. It must be noted that unlike Salbach et al (2014) and Stuart et al (2009), studies by Sims et al (2009) and Kilbride et al (2013) did not aim to evaluate safety. Further research is required to outline safety standards including EPs training criteria for running exercise interventions with SSs.

1.5.4 Safety-Related Facilitators

Ireland Active is a not-for-profit company which can assist EPs in compliance queries and evaluates facilities provisions for those with disability including disability awareness, staff training and accessible equipment (Ireland Active, 2016). Ireland Active is a potential resource for EPs who wish to improve safety standards for their clients with disabilities. While policies can help protect both SSs and EPs, EPs who are on the REPs in Ireland are required to maintain adequate professional insurance to protect themselves against liability (REPs Ireland, 2015). No research is available as to whether adequate insurance overcomes the barrier of fear of liability for EPs. The exercise industry, health services and policymakers must work together to help EPs and exercise facilities to ensure suitable policies are in place to safely support clients with disability such as SSs (Rimmer et al, 2004).
EPs working with SSs in the UK reported that stronger links with physiotherapists are needed to improve safety standards (Wiles et al, 2008). EPs recommend better referral systems and physiotherapists attending the first exercise session with clients would facilitate them working with people with disability community based exercise (Moore et al, 2011; Rimmer et al, 2004). The UK Quality Assurance System of exercise referral schemes recommends SSs are referred to EPs by health professionals to ensure appropriate transfer of medical information (UK: Department of Health, 2001). Similarly, the European Region, World Confederation for Physical Therapy Standards of Practice recommend a locally agreed referral system should be in place for physiotherapists to facilitate communication with other professionals (European Region: World Confederation for Physical Therapy, 2008). No exercise referral system where health professionals can refer clients to an EP-run exercise scheme is currently in place in Ireland (Irish College of General Practitioners, 2015). It is unknown if health professionals refer SSs to EPs. The Irish National Exercise Referral Framework (NERF) states REPs Ireland should engage with NERF management to set exercise referral standards (NERF draft, 2014). A well-developed NERF along with appropriate qualified EPs will help EPs safely deliver exercise interventions for SSs, as part of a healthcare policy (REPs Ireland, 2015).

1.5.5 Environment-Related Barriers

EPs’ work environment can facilitate or inhibit them working with SSs as many EPs gain experience and expand their skill set informally through their work environment (de Lyon and Cushion, 2013). Cost and budget restraints especially in smaller or more rural facilities were repeatedly raised as barriers by EPs working with disabilities and managers of exercise facilities that run exercise programmes for SSs (Fullerton et al, 2007; Rimmer et al, 2004). EPs reported difficulty retaining
membership of participants with disability who attended exercise schemes after the
discounted period for the scheme had ended (Moore et al, 2011). This is not
surprising as SSs have cited cost as barriers to exercise (Rimmer et al, 2008). It is
interesting to note, exercise programmes for SSs in the USA were more likely to be
delivered by not-for-profit exercise facilities (Fullerton et al, 2007). Many EP-led
programmes in gyms and leisure centres reported the organisations were municipally
funded (Salbach et al, 2014) or not-for-profit (Cramp et al, 2010, Kilbride et al,
2013, Sims et al, 2009). It can be postulated that programmes for SSs or those with
disabilities require increased resources, such as special equipment, staff training,
staff time, or may be made available at reduced cost to participants. These factors
may decrease profitability and thus their greater prevalence in not-for-profit settings
(Fullerton et al, 2007).
Non-adaptive equipment in exercise facilities and insufficient information on
adaptive equipment created barriers for EPs towards working with people with
disability (Fullerton et al, 2007; Rimmer et al, 2004; Rimmer et al, 2005). A shortage
of suitable equipment may also limit the exercise programmes EPs can provide to the
person with disability. This creates a clear disadvantage compared to prescribing
programmes for able-bodied clients who can access all the equipment (Rimmer et al,
2005). Many exercise facilities may not be able to afford or justify purchasing
adaptive equipment that is only required by a small percentage of their clientele
(Rimmer et al, 2004).

1.5.6 Environment-Related Facilitators
The majority of community exercise interventions run by EPs in Scotland were not
time-limited (Best et al, 2012). These interventions were ran in leisure centres or by
charities may better facilitate long-term exercise needs of SSs than the time-limited
physiotherapy exercise interventions (Best et al, 2012). A sustainable cost-efficient model is required to encourage EPs and exercise facilities to provide exercise interventions for SSs in the longer term. EPs in the USA suggested costs for such adaptive equipment and environmental changes could be potentially supported by government bodies or through tax relief for companies (Rimmer et al, 2004). In an Irish setting, grants are available to assist local clubs/organisations to initiate new initiatives geared at involving older adults or those with disability in physical activity (Cork Sports Partnership, 2016). The National Disability Authority (2016) advocates that grants should only be provided to those projects that are accessible to all. Cork City Council and Corks Sports Partnership funded two fully accessible gyms for people with physical disabilities in Ireland (O’Donoghue et al, 2014). EPs working in the facility received training on neurological conditions from physiotherapists. Physiotherapists provide SSs with an initial exercise programme which is then progressed by a trained EP (O’Donoghue et al, 2014). While SSs pay a small fee for the use of the facility, initial results have shown a 75% adherence rate for those who attended the facility after the initial 12 week programme was completed (O’Donoghue et al, 2014). As SSs are frequent users of the healthcare system, longitudinal data of SSs attending such municipally funded gyms is needed to evaluate if any long-term saving on healthcare costs are associated with attending such exercise programmes. This may encourage further funding of such facilities in Ireland.

Physiotherapists have suggested low cost means of modifying the environment including scheduling clients to come to the gym at quieter times of the day (Moore et al, 2011). Interventions such as task orientated circuits for SSs may also facilitate EPs working with SSs as they require minimal equipment (Kilbride et al, 2013;
Salbach et al, 2014). Group activities such as circuits were also identified by EPs and SSs alike as a convenient way to avoiding dependency as they promote social support between participants (Wiles et al, 2008). Harrington and colleagues (2010) performed an economic evaluation of an EP-led eight week circuit training programme for SSs. The programme was deemed “low cost” at £99 per participant. While the study showed a low cost intervention for SSs, it did not discuss profitability for EPs which is required to encourage them to provide exercise interventions (Rimmer et al, 2004).

1.6 Summary

This review of the literature highlights the paucity of research exploring EPs opinions on working with SSs. Much of the research was conducted with EPs working with other special populations or from the point of view of managers of exercise facilities. EPs are faced with a complex interface when working with special populations leading to a large number of potential barriers and facilitators. While EPs are interested in working with special populations with Multiple Sclerosis and obesity, this research cannot be fully extrapolated to working with SSs. Research studies have illustrated EPs, supported by physiotherapists, may have the necessary skills to run exercise interventions for SSs. Unfortunately, these interventions are not common and it is unlikely many EPs have experience with SSs (Mead and Bernhardt, 2011). More information is needed to explore EPs opinions on working with SSs. This information is critical to better position EPs to work with SSs. Therefore, the aim of the current study was to explore EPs opinions on working with SSs.
CHAPTER 2 METHODOLOGY

2.1 Aim and Objectives

The aim of this study was to investigate Exercise Professionals’ (EPs’) opinions on working with Stroke Survivors (SSs).

The objectives of this study were to:

- Identify EPs’ barriers to working with SSs.
- Identify EPs’ facilitators to working with SSs.
- Investigate EPs’ experience working with SSs.
- Investigate EPs’ interest in working with SSs.
- Investigate EPs’ skills in relation to working with SSs.
- Investigate the relationship between EPs training on stroke and their barriers to working with SSs.
- Investigate the relationship between EPs training on stroke and their facilitators to working with SSs.

2.2 Study Design

A descriptive study using a researcher designed survey was conducted.

2.3 Subjects

EPs were the target population. A purposive sample of EPs registered with the Register of Exercise Professionals (REPs) in Ireland was selected. REPs Ireland members were chosen as membership indicates that an EP meets the European Health and Fitness Association standards (REPs Ireland, 2015). EPs are accepted onto the professional register granted four key criteria are fulfilled:
1. Achievement of qualifications that meet industry standards
2. Maintenance of ongoing continuing professional development (CPD)
3. Maintenance of appropriate insurance cover
4. Adherence to a code of ethical practice

This ensured EPs who completed the survey were appropriately qualified in their profession (REPs Ireland, 2015).

2.3.1 Inclusion Criteria

EPs registered with REPs Ireland

2.3.2 Exclusion Criteria

REPs Ireland members who previously completed the pilot survey (see Section 2.6.1). This was established by the primary researcher providing the REPs Ireland Administrator with the email addresses of those EPs who had previously completed the pilot survey. The Administrator subsequently removed these email addresses from the survey email list.

2.3.3 Sample Size

REPs Ireland had 280 registered EPs. An expected response rate was unknown for this specific population as they are a largely unstudied group. A non-probability based quota with purposive sampling was done. The survey was sent to all eligible REPs Ireland members to obtain the maximum number of responses. It was anticipated that the response rate was likely to be in the range of 20-30%, similar to other studies (Parsons and Mainerre, 2014).

2.4 Ethical Considerations

Ethical approval for the study was sought from the Royal College of Surgeons in Ireland (RCSI) Research Ethics Committee (Appendix 1) in August 2015. The Research Ethics Committee replied seeking clarification regarding the survey, study
descriptors, data protection and other ethical issues (Appendix 2). The relevant explanations and amendments, where necessary, were made. Ethical approval was granted on October 12th 2015 (Appendix 3).

The Registrar of REPs Ireland granted permission to circulate the survey via email. Participation in the survey was voluntary and completion of the survey implied consent. The online survey was anonymous. No personal information about participants was accessed by the researcher and the internet protocol address collector on the survey was disabled. The primary researcher had sole access to the study data and were responsible for data security. Upon study completion, all data was stored on an encrypted file within the primary researcher’s unique project folder located within the RCSI V drive for five to seven years and destroyed thereafter.

2.5 Procedure

As no appropriate research tool was available to meet the aims and objectives of this study, a survey was drafted by the primary researcher for the use of this study. Following ethical approval, the survey was piloted on a convenience sample of three REPs Ireland members in October 2015. The survey was amended based on feedback prior to study commencement (Appendix 4). Further details can be found in Section 2.6.1.

Recruitment was conducted via email. This was chosen as it was the preferred method of contact by REPs Ireland with their members. This reduced the likelihood of email delivery being interrupted by spam-blocking tools (Fan and Yan, 2010).

To commence data collection, initial contact was made by the REPs Ireland Administrator who sent out the primary researcher’s recruitment email (Appendix 5) to all eligible members in October 2015. The email contained a recruitment...
invitation, the participant information sheet (Appendix 6) and a link to openly access the online survey via the SurveyMonkey® website. In an attempt to maximise the response rate, the email clearly identified the task, the reason behind participant selection and provided an estimated time for survey completion (Fan and Yan, 2010). A two week deadline for survey completion was outlined. Researcher’s contact details were documented and an opportunity to obtain survey results was provided to increase participation (Fan and Yan, 2010).

By clicking on the link to the survey in the recruitment email, participants were automatically directed to the survey on the SurveyMonkey® (2015) website. Participants completed the survey online and could review or change their answers through the use of the Back button before submission. Once submitted, their responses were automatically saved as data on the SurveyMonkey® website. Follow up emails were sent two weeks (Appendix 7) and four weeks (Appendix 8) after the original email by the REPS Ireland Administrator. This has also been proven to increase response rates and minimise the nonresponse error (Edwards et al, 2009). Data collection terminated in December 2015 by the primary researcher removing the survey from the SurveyMonkey® website.

2.6 Research Instrument

A survey was drafted for this study by the primary researcher using the SurveyMonkey® website (SurveyMonkey®, 2015). This online software was chosen to develop the research instrument as it provided user-friendly survey creation and high quality data conversion to the Statistical Package for the Social Sciences (SPSS) (SurveyMonkey®, 2015). It allowed for creation of an attractive visual display including progress indicators and facilitated collection of responses in the correct format which can contribute to an increased response rate (Fan and Yan,
An online survey was chosen due to its low delivery cost and fast delivery time to a geographically dispersed population, while being convenient and anonymous for participants (Domholdt, 2005; Greenlaw and Brown-Welty, 2009). Individual survey questions were developed based on a review of current literature, an examination of instruments used in previous studies but were not suitable to adapt (Best et al, 2012; Fullerton et al, 2012; Hare et al, 2000; Kasser et al, 2013; Rimmer et al, 2005) and informal consultations by the primary researcher with five EPs with a wide range of experience. This provided preliminary content validity (Hicks, 2009). The 13 page survey consisted of 32 questions spanning across five sections. The content of each section was as follows:

Section One: Ten questions on EPs’ experience and training in relation to working with SSs.

Section Two: Three questions on EPs’ opinions and confidence in their skills required to work with SSs.

Section Three: Four questions on EPs’ barriers to working with SSs.

Section Four: Six questions on EPs’ facilitators and learning needs in relation to working with SSs.

Section Five: Nine questions on EPs’ demographic information.

Responses to questions in Sections One, Two and Five consisted mostly of closed categorical scales. Sections Three and Four consisted of five point Likert scales to indicate level of agreement in a quantitative manner from strongly disagree to strongly agree. Alternatively participants could have indicated if barriers or facilitators were not applicable to them. Additional open-ended questions were used throughout the survey to probe participants to express further opinions or descriptions. Questions were phrased to accommodate both EPs with and without
experience working with SSs. Adaptive questioning was used whereby certain questions were only displayed based on responses from the previous question. This was used to omit irrelevant questions following question three and question six. If a positive answer was provided to question three, participants were directed to two further questions whereas if negative answers were provided, these questions were bypassed as they were not applicable to the EP. Similarly, if a positive answer was provided to question six, participants were directed to four further questions. Answers to questions positioned in the last section of the survey were faster and shorter to answers than questions positioned near the beginning to increase survey completion rates (Galesic and Bosnjak, 2009). Responses to open and closed answers were not enforced and not applicable options were provided for Likert scales.

2.6.1 Pilot Study

The survey was piloted on a convenience sample of three REPs Ireland members to help minimise the measurement error (Choi and Pak, 2005). Feedback was sought regarding time to complete survey, usability and technical functionality. Respondents were also asked to comment on survey content including any missing or irrelevant information. It was estimated the survey took less than ten minutes to complete. The survey was amended based on feedback from participants. This included amendments to the wording of questions 4, 14, 15, 16, 18, 19 and 20. Questions 23 and 31 were added based on feedback regarding missing information. Feedback was otherwise positive and deemed suitable for REPs Ireland members.

2.7 Statistical Methods

Survey responses generated a data file on the SurveyMonkey® website. This file was downloaded on to SPSS for Windows Version 22.0 (IBM Corporation, 2013)
and Microsoft Excel 2010 (Microsoft, 2010a) for data analysis. Descriptive and summary statistics including percentages and frequencies for categorical variables were reported. Numerical data for age, years’ experience, years’ experience with SSs and number of EPs in exercise facility were assessed for normality and found to be not normally distributed. Median and interquartile ranges were therefore reported (Hicks et al, 2009). The non-parametric, chi-squared ($\chi^2$) test for independence and Fisher’s exact tests (FET), where appropriate, were performed on nominal data to establish if there was a significant relationships between having received training on stroke during EPs pre-qualification training course and EPs’ level of agreement with barriers and facilitators to working with SSs (Hicks, 2009). It was also used to establish if there was a relationship between EPs having completed post-graduate CPD training on stroke and EPs level of agreement with barriers and facilitators to working with SSs. A significance level of $p<0.05$ was set for all statistical tests. Answers from open-ended questions and comment sections were summarised in Microsoft Word (Microsoft, 2010b). All data analysis was carried out by the primary researcher.
CHAPTER 3 RESULTS

3.1 Response Rate

The survey was sent to 277 Exercise Professionals (EPs). A response rate of 31.4% (87/277) was obtained. Analysis was conducted on all surveys submitted. Not all respondents provided responses for each question, thus response rates for each section/question are indicated where appropriate. No imputation of incomplete answers was carried out. Due to rounding of percentages to one decimal place, percentages may not equal 100%.

3.2 Demographics

Respondents’ demographic information is presented in Table 3.1. The majority of respondents were male (67.1%; 47/70) with a median age of 28. The most common qualification among EPs was a Level 7/8 Higher Diploma/Degree qualification (44.3%; 31/70). EPs had a median of five years’ experience. Most EPs were based in a gym (40%; 28/70) in a for-profit exercise facility (35.7%; 25/70) where a median of four EPs were employed. EP’s (10%; 7/70) also reported they were employed in management, research, wellness, exercise promotion and education. When asked about their work description 17.1% of EPs (12/70) commented that their work included working with local sports partnerships, office based work, teaching exercise classes and different combinations of all options listed in the survey.
### Table 3.1 Demographic Information of Respondents

<table>
<thead>
<tr>
<th></th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>47</td>
<td>67.1</td>
</tr>
<tr>
<td>Female</td>
<td>23</td>
<td>32.9</td>
</tr>
<tr>
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<td></td>
</tr>
<tr>
<td>Level 3 Certificate</td>
<td>7</td>
<td>10</td>
</tr>
<tr>
<td>Level 4/5 Certificate</td>
<td>11</td>
<td>15.7</td>
</tr>
<tr>
<td>Level 6 Higher Certificate</td>
<td>11</td>
<td>15.7</td>
</tr>
<tr>
<td>Level 7/8 Degree / Higher Diploma</td>
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<td>44.3</td>
</tr>
<tr>
<td>Level 9 Masters / Post-graduate Diploma</td>
<td>10</td>
<td>14.3</td>
</tr>
<tr>
<td>Level 10 PhD</td>
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<td>0</td>
</tr>
<tr>
<td><strong>Employment Setting</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unemployed</td>
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<td>8.6</td>
</tr>
<tr>
<td>Self-employed</td>
<td>17</td>
<td>24.3</td>
</tr>
<tr>
<td>Mixed self-employed and employee of exercise facility</td>
<td>10</td>
<td>14.3</td>
</tr>
<tr>
<td>For-profit facility employee</td>
<td>25</td>
<td>35.7</td>
</tr>
<tr>
<td>Not-for-profit facility employee</td>
<td>2</td>
<td>2.9</td>
</tr>
<tr>
<td>Government-funded facility employee</td>
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<td>4.3</td>
</tr>
<tr>
<td>Other</td>
<td>7</td>
<td>10</td>
</tr>
<tr>
<td><strong>Work Description</strong></td>
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<td></td>
</tr>
<tr>
<td>Gym based</td>
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<td>40</td>
</tr>
<tr>
<td>Studio based</td>
<td>5</td>
<td>7.1</td>
</tr>
<tr>
<td>Mixed gym and studio based</td>
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<td>32.9</td>
</tr>
<tr>
<td>Swimming pool</td>
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<td>1.4</td>
</tr>
<tr>
<td>Outdoors</td>
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<td>0</td>
</tr>
<tr>
<td>From home/clients home</td>
<td>1</td>
<td>1.4</td>
</tr>
<tr>
<td>Other</td>
<td>12</td>
<td>17.1</td>
</tr>
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<table>
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<tr>
<th></th>
<th>Median</th>
<th>Range</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td>28</td>
<td>7</td>
<td>21-51</td>
</tr>
<tr>
<td><strong>Years’ Experience as Exercise Professional</strong></td>
<td>5</td>
<td>5</td>
<td>1-21</td>
</tr>
<tr>
<td><strong>Number of Exercise Professionals in Employment Setting</strong></td>
<td>4</td>
<td>7</td>
<td>1-50</td>
</tr>
</tbody>
</table>
3.3 Exercise Professionals’ Barriers to working with Stroke Survivors

3.3.1 Training, Education and Information-Related Barriers

EPs’ level of agreement with information-related barriers is presented in Table 3.2. The lack of information/training regarding psychological problems post stroke received the highest level of agreement with 83.5% (61/73) of EPs agreeing or strongly agreeing that this was an obstacle to working with stroke survivors (SSs). This was closely followed by 79.5% (58/73) of EPs agreeing or strongly agreeing that lack of information/training on the physical consequences post stroke was a barrier to working with SSs. Thirteen percent (10/73) of EPs disagreed or strongly disagreed that lack of information/training on dealing with communication difficulties post stroke was a barrier. This was the highest level of disagreement for any information-related barrier. EPs were unsure (32.9%; 24/73) about was whether lack of support from healthcare professionals was a barrier.
Table 3. 2 Exercise Professionals’ Level of Agreement with Information-Related Barriers

<table>
<thead>
<tr>
<th>Barrier: (n=73)</th>
<th>Strongly Disagree (%)</th>
<th>Disagree (%)</th>
<th>Unsure (%)</th>
<th>Agree (%)</th>
<th>Strongly Agree (%)</th>
<th>Not Applicable (N/A) (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insufficient information on psychological problems post stroke</td>
<td>0</td>
<td>6.8</td>
<td>9.6</td>
<td>47.9</td>
<td>35.6</td>
<td>0</td>
</tr>
<tr>
<td>Insufficient information on physical problems post stroke</td>
<td>0</td>
<td>11</td>
<td>9.6</td>
<td>41.4</td>
<td>38.4</td>
<td>0</td>
</tr>
<tr>
<td>Lack of experience with stroke</td>
<td>0</td>
<td>12.3</td>
<td>8.2</td>
<td>39.7</td>
<td>38.4</td>
<td>1.4</td>
</tr>
<tr>
<td>Insufficient information on communication problems post stroke</td>
<td>1.4</td>
<td>12.3</td>
<td>9.6</td>
<td>38.4</td>
<td>38.4</td>
<td>0</td>
</tr>
<tr>
<td>Lack of support from healthcare professionals</td>
<td>0</td>
<td>6.8</td>
<td>32.9</td>
<td>35.6</td>
<td>23.3</td>
<td>1.4</td>
</tr>
<tr>
<td>Insufficient information on adaptive equipment</td>
<td>0</td>
<td>9.6</td>
<td>21.9</td>
<td>41.1</td>
<td>26.0</td>
<td>1.4</td>
</tr>
<tr>
<td>Lack of known demand</td>
<td>0</td>
<td>11</td>
<td>23.3</td>
<td>30.1</td>
<td>32.9</td>
<td>2.7</td>
</tr>
</tbody>
</table>
3.3.2 Safety-Related Barriers

EPs’ level of agreement with safety-related barriers is indicated in Table 3.3. The majority of respondents (56.2%; 41/73) agreed or strongly agreed that the level of supervision SSs require and the lack of a disability-related policy for managing with issues in relation to SSs were barriers to working with this population. A total of 45.2% (33/73) of participants disagreed or strongly disagreed that fear of making the condition worse was a barrier to working with SSs. Responses for fear of liability were equally distributed across the categories whereby 26% (19/73) agreed, 26% (19/73) disagreed and 26% (19/73) were unsure if it was a barrier to working with SSs.

| Table 3.3 Exercise Professionals’ Level of Agreement with Safety-Related Barriers |
|-----------------------------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Barrier: (n=73)                   | Strongly Disagree (%) | Disagree (%) | Unsure (%) | Agree (%) | Strongly Agree (%) | N/A (%) |
| Level of supervision              | 4.1              | 15.1          | 24.7       | 42.5       | 13.7           | 0            |
| Lack of disability-related policy | 1.4              | 12.3          | 30.1       | 38.4       | 17.8           | 0            |
| Fear of making condition worse    | 8.2              | 37            | 15.1       | 27.4       | 12.3           | 0            |
| Fear of liability                 | 2.7              | 26            | 26         | 26         | 17.8           | 1.4          |
| Fear of injury                    | 4.1              | 27.4          | 15.1       | 35.6       | 17.8           | 0            |

3.3.3 Environment-Related Barriers

EPs’ level of agreement with environment-related barriers is presented in Table 3.4. Sixty-eight percent of EPs (50/73) agreed or strongly agreed that lack of suitable equipment was a barrier to working with SSs. This was followed by 57.5% (42/73) of EPs agreeing or strongly agreeing that not having a suitable environment was a
barrier to working with SSs. EPs’ opinions on time as a barrier to working with SSs were varied among the group with 45.2% (33/73) agreeing or strongly agreeing that it was a barrier and 39.7% (29/73) disagreeing or strongly disagreeing. Meanwhile, 34.2% (25/73) of EPs were unsure if cost was a barrier to working with SSs.

Table 3.4 Exercise Professionals’ Level of Agreement with Environment-Related Barriers

<table>
<thead>
<tr>
<th>Barrier:</th>
<th>Strongly Disagree (%)</th>
<th>Disagree (%)</th>
<th>Unsure (%)</th>
<th>Agree (%)</th>
<th>Strongly Agree (%)</th>
<th>N/A (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of suitable equipment</td>
<td>2.7</td>
<td>13.7</td>
<td>15.1</td>
<td>47.9</td>
<td>20.5</td>
<td>0</td>
</tr>
<tr>
<td>Unsuitable environment</td>
<td>4.1</td>
<td>19.2</td>
<td>19.2</td>
<td>43.6</td>
<td>13.7</td>
<td>0</td>
</tr>
<tr>
<td>Lack of time</td>
<td>6.8</td>
<td>32.9</td>
<td>13.7</td>
<td>32.9</td>
<td>12.3</td>
<td>1.4</td>
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<tr>
<td>Cost</td>
<td>6.8</td>
<td>17.8</td>
<td>34.2</td>
<td>30.1</td>
<td>9.6</td>
<td>1.4</td>
</tr>
<tr>
<td>Lack of staff</td>
<td>4.1</td>
<td>17.8</td>
<td>27.4</td>
<td>39.7</td>
<td>9.6</td>
<td>1.4</td>
</tr>
</tbody>
</table>

EPs commented in the free text area that other barriers included that they were unsure if health professionals wanted them to work with SSs, the absence of training courses available for EPs and funding for such training courses. EPs also reported that the level of ability or disability of the SS would influence the obstacles they would encounter. If SSs require considerable assistance this would be very demanding on EPs time and SSs might have to pay for one-to-one EP sessions if they require constant one-to-one assistance. EPs also expressed concerns about the difficulty of managing an exercise class with SSs if participants had varying levels of ability. Finally, EPs expressed family as a barrier to working with SSs if they were overprotective and feared the SS exercising.
3.4 Exercise Professionals’ Facilitators towards working with Stroke Survivors

3.4.1 Training, Education and Information-Related Facilitators

EPs’ level of agreement with information-related facilitators is presented in Table 3.5. Most EPs agreed or strongly agreed externally-run courses (93%; 66/71), SSs providing EP with their physiotherapy exercise programme (92.9%; 66/71) and physiotherapists providing EPs with informal training on stroke (85.9%; 61/71) would facilitate them working with SSs. EPs were unsure (35.2%, 25/71) if self-directed learning would facilitate them working with SSs. The facilitator which EPs indicated the most disagreement with was the availability of online courses on stroke (9.9%; 7/71).

Table 3.5 Exercise Professionals’ Level of Agreement with Information-Related Facilitators

<table>
<thead>
<tr>
<th>Facilitator</th>
<th>Strongly Disagree (%)</th>
<th>Disagree (%)</th>
<th>Unsure (%)</th>
<th>Agree (%)</th>
<th>Strongly Agree (%)</th>
<th>N/A (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Availability of training courses on stroke</td>
<td>0</td>
<td>2.8</td>
<td>4.2</td>
<td>42.3</td>
<td>30.7</td>
<td>0</td>
</tr>
<tr>
<td>Stroke survivors providing exercise professionals with their physiotherapy exercise programme</td>
<td>0</td>
<td>2.8</td>
<td>4.2</td>
<td>40.8</td>
<td>52.1</td>
<td>0</td>
</tr>
<tr>
<td>Physiotherapists providing informal training on stroke</td>
<td>4.2</td>
<td>1.4</td>
<td>8.5</td>
<td>52.1</td>
<td>33.8</td>
<td>1.4</td>
</tr>
<tr>
<td>Self-directed learning on stroke</td>
<td>2.8</td>
<td>5.6</td>
<td>35.2</td>
<td>45.1</td>
<td>11.3</td>
<td>0</td>
</tr>
<tr>
<td>Availability of online courses on stroke</td>
<td>0</td>
<td>9.9</td>
<td>12.7</td>
<td>46.5</td>
<td>31</td>
<td>0</td>
</tr>
<tr>
<td>Client-based learning</td>
<td>1.4</td>
<td>1.4</td>
<td>14.1</td>
<td>54.9</td>
<td>28.2</td>
<td>0</td>
</tr>
</tbody>
</table>
3.4.2 Safety-Related Facilitators

EPs’ level of agreement with safety-related facilitators is presented in Table 3.6. EPs agreed or strongly agreed that practical training on stroke (100%; 71/71) and theoretical training on stroke (94.4%; 67/71) would facilitate them working with SSs. While 87.3% (62/71) of EPs provided a positive response to a physiotherapist attending a SSs first exercise session with an EP, views on family members attending exercise sessions were spread across categories. Eighteen percent (13/71) were unsure if a family member attending exercise sessions would assist them working with SSs while 11.3% (8/71) disagreed.

Table 3.6 Exercise Professionals’ Level of Agreement with Safety-Related Facilitators

<table>
<thead>
<tr>
<th>Facilitator: (n=72)</th>
<th>Strongly Disagree (%)</th>
<th>Disagree (%)</th>
<th>Unsure (%)</th>
<th>Agree (%)</th>
<th>Strongly Agree (%)</th>
<th>N/A (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Practical training on stroke</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>29.6</td>
<td>70.4</td>
<td>0</td>
</tr>
<tr>
<td>Theoretical training on stroke</td>
<td>0</td>
<td>1.4</td>
<td>4.2</td>
<td>49.3</td>
<td>45.1</td>
<td>0</td>
</tr>
<tr>
<td>Physiotherapist attending first exercise session with stroke survivor</td>
<td>0</td>
<td>5.6</td>
<td>5.6</td>
<td>33.8</td>
<td>53.5</td>
<td>1.4</td>
</tr>
<tr>
<td>Family member or carer attending exercise session with stroke survivor</td>
<td>2.8</td>
<td>8.5</td>
<td>18.3</td>
<td>43.7</td>
<td>26.8</td>
<td>0</td>
</tr>
<tr>
<td>Developing a disability policy</td>
<td>0</td>
<td>0</td>
<td>11.3</td>
<td>62</td>
<td>26.8</td>
<td>0</td>
</tr>
<tr>
<td>Dedicated staff for clients with disability</td>
<td>2.8</td>
<td>4.2</td>
<td>15.5</td>
<td>43.7</td>
<td>32.4</td>
<td>1.4</td>
</tr>
</tbody>
</table>
3.4.3 Environment-Related Facilitators

EPs’ level of agreement with environment-related facilitators is presented in Figure 3.7. The vast majority (97.2%; 67/71) of EPs agreed or strongly agreed that having suitable equipment and a suitable environment would facilitate them working with SSs. Similarly, 94.3% (67/71) agreed or strongly agreed that funding to purchase adaptive equipment and improve the environment would help them working with SSs. The facilitator that EPs were most unsure (35.2%; 25/71) about was whether more staff would assist them working with SSs.

Table 3.7 Exercise Professionals’ Level of Agreement with Environment-Related Facilitators

<table>
<thead>
<tr>
<th>Facilitator</th>
<th>Strongly Disagree (%)</th>
<th>Disagree (%)</th>
<th>Unsure (%)</th>
<th>Agree (%)</th>
<th>Strongly Agree (%)</th>
<th>N/A (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suitable equipment</td>
<td>0</td>
<td>0</td>
<td>2.8</td>
<td>43.7</td>
<td>53.5</td>
<td>0</td>
</tr>
<tr>
<td>Suitable environment</td>
<td>0</td>
<td>0</td>
<td>2.8</td>
<td>53.5</td>
<td>43.7</td>
<td>0</td>
</tr>
<tr>
<td>Funding for adaptive equipment</td>
<td>0</td>
<td>1.4</td>
<td>4.2</td>
<td>39.4</td>
<td>54.9</td>
<td>0</td>
</tr>
<tr>
<td>Funding to improve environment</td>
<td>0</td>
<td>1.4</td>
<td>4.2</td>
<td>53.5</td>
<td>40.8</td>
<td>0</td>
</tr>
<tr>
<td>More staff</td>
<td>1.4</td>
<td>8.5</td>
<td>35.2</td>
<td>29.6</td>
<td>23.9</td>
<td>1.4</td>
</tr>
</tbody>
</table>

EPs’ commented in the free text area that other facilitators included funding for training on stroke and more associated modules as part of their pre-qualification training. EPs also commented that training courses should be appropriately accredited and provide EPs with a certificate upon completion. This would offer an incentive for EPs and provide confidence for SSs in their abilities. The involvement of other health professionals including general practitioners and occupational
therapists helped EPs working with SSs in the past. EPs also reported having dedicated time in the gym for people with disability or scheduling SSs to attend during quieter times of the day would facilitate them to working with this population.

The majority of EPs (59.2%; 42/71) reported government-funded agencies should provide training programmes for EPs on stroke (Figure 3.1). EPs were asked to choose one of the options presented on the figure below but EPs also reported in the comments section that the provision of training for EPs on stroke should be a collaboration between government bodies, private training companies and health professionals. EPs also commented that training should be at least part-funded by government bodies.

Figure 3. 1 Exercise Professionals Responses to Organisations who should provide Training on Stroke
3.5 Exercise Professionals’ Experience with Stroke Survivors

A summary of EPs’ experience with stroke can be found in Table 3.8. Of the respondents, only 25.3% (22/87) had received training or education on stroke as part of their pre-qualification EP training course. EPs commented that this training was predominantly completed as part of a module including Exercise in Special Populations, Clinical Exercise and Adapted Physical Activity. The duration of the training varied from a one hour lecture to five hours. Since qualifying as an EP, 17.2% (15/87) of respondents had completed continuing professional development (CPD) on stroke. This CPD was completed as part of a part-time qualification (41.7%; 5/12) while 25% (3/12) of EPs completed it through self-directed learning or as part of a full-time qualification. Sixteen percent of EPs attended a conference/seminar/workshop/study day related to stroke (2/12) or performed online learning (2/12). One respondent undertook in-house training (8%; 1/12), informal discussions with colleagues (8%; 1/12) and health professionals (8%; 1/12). One respondent completed blended (online and face to face) learning (8%; 1/12). EPs description of the CPD activities they completed on stroke included part of an Honours Degree, a Masters Degree, attending courses ran by the British Association for Cardiovascular Prevention and Rehabilitation (five hours), Pilates with special populations (eight weekends). EPs also reported having discussions with health professionals and using online resources to complete CPD on stroke. Only 22.1% (19/86) of respondents had experience with SSs. This is not surprising considering 51.4% (36/70) had never received a referral from a health professional. Forty-five percent of EPs (32/70) indicated they accept referrals from health professionals. Only 2.9% (2/70) of EPs indicated that they do not accept referrals from health professionals. EPs’ experience with SSs was predominantly gained through one-to-
one sessions (62.5%, 10/16) while 37.5% (6/16) of EPs had provided in both one-to-one and group exercise interventions that SSs were involved in. When asked to rate the quality of their experience, 25% (4/16) rated it as good, 18.8% (3/16) rated it as very good while 12.5% (2/16) rated it as poor. EPs commented that reasons behind a positive rating for the quality of experience was due to positive outcomes with the SSs, SSs’ hardworking attitude, liaising with SSs’ doctor and physiotherapist and having suitable facilities. EPs commented that their poor quality of experience was due to their lack of knowledge about stroke.

**Table 3. 8 Exercise Professionals’ Experience with Stroke**

<table>
<thead>
<tr>
<th></th>
<th>Yes (%)</th>
<th>No (%)</th>
<th>Unsure (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-qualification training on stroke</td>
<td>25.3</td>
<td>74.7</td>
<td>0</td>
</tr>
<tr>
<td>Adequate training to work with stroke survivors</td>
<td>9.2</td>
<td>65.5</td>
<td>25.3</td>
</tr>
<tr>
<td>Post-qualification CPD on stroke</td>
<td>17.2</td>
<td>82.8</td>
<td>0</td>
</tr>
<tr>
<td>Experience with stroke survivors (n=86)</td>
<td>22.1</td>
<td>77.9</td>
<td>0</td>
</tr>
</tbody>
</table>

3.6 Exercise Professionals’ Interest in Working with Stroke Survivors

EPs’ interest in working with SSs is presented in Figure 3.2. The majority of EPs (84.3%; 64/76) agreed or strongly agreed to having a positive attitude towards working with SSs while only 5.2% (4/76) disagreed or strongly disagreed. The
The majority of respondents (76.3%; 58/76) agreed or strongly agreed that they were interested in working with SSs with only 5.3% (4/76) of EPs disagreeing or strongly disagreeing. Interestingly, 36.8% (28/76) of EPs were unsure if they were interested in providing group exercise for SSs. When asked if they had sufficient knowledge to work with SSs, 31.6% (24/76) of participants were unsure and 50% (38/76) disagreed or strongly disagreed. Only 36.8% (28/76) of EPs agreed or strongly agreed that they had the necessary skills to work with SSs while 28.9% (22/76) were unsure.

Figure 3.2 Exercise Professionals’ Interest in Working with Stroke Survivors

EPs’ learning interests in relation to stroke are reported in Figure 3.3. The majority of EPs agreed or strongly agreed that they would be interested in learning about
client safety (95.8%; 68/71) and adaptive exercise and equipment (95.8%; 68/71). This was closely followed by 94.4% (67/71) of EPs agreeing or strongly agreeing that they were interested in learning about physical and communication problems post stroke and physical activity recommendations for SSs. EPs commented that they would also be interested in learning about the different types and severity of strokes and the rehabilitation covered by the physiotherapist.

Figure 3. 3 Exercise Professionals’ Interest in Learning about the Stroke-Related Topics
3.7 Exercise Professionals’ Skills in Relation to Working with Stroke Survivors

Participants were asked to rate their level of skill when dealing with SSs and results are presented in Figures 3.4 and 3.5. Regarding communication, the majority of EPs (68.4%; 52/76) reported having good or very good skills in this area. EPs were most positive about their motivation skills with 81.5% (62/76) reporting good or very good motivation skills to work with SSs. A large number of EPs (68.4%; 52/76) also reported having good or very good goal setting skills with SSs. The majority of EPs (43.4%, 33/76) reported having an acceptable level of skill necessary to deal with clients with cognitive impairment post stroke while 32.9% (25/76) of EPs reported having poor or very poor skills in this area. Again the majority of EPs (42.1%; 32/76) reported having an acceptable level of skill necessary for dealing with psychological issues with SSs while 31.6% (24/76) reported having poor or very poor skills in this area.
Figure 3.4 Exercise Professionals’ Level of Skill in relation to Working with Stroke Survivors

With reference to working with SSs, the majority of EPs indicated having good or very good assessment skills (47.3%; 36/76). When asked about their level of skill in relation to providing individual exercise sessions for SSs, over half of the respondents (52.6%; 40/76) indicated having good or very good skills in this area. Respondents appeared to be less confident in their skills when providing group exercise sessions with SSs where 40.7% (31/76) reported having poor or very poor skills and 38.2% (29/76) reported having acceptable skills in the area. EPs were most confident about client safety where 68.4% (52/76) indicated having good or very good skills in this area.
3.8 Relationship between exercise professionals’ training on stroke and their level of agreement with barriers and facilitators towards working with stroke survivors

Due to the small sample size, Likert categories agree and strongly agree were combined to form an agree category and categories disagree and strongly disagree were combined to form one disagree category when calculating inferential statistics. EPs who received training on stroke as part of their EP qualification
training course were statistically significantly more likely to disagree that fear of making the condition worse was a barrier to working with SSs (FET \( p=0.02 \) (two-tailed)). EPs who have undertaken CPD on stroke were also more likely to disagree fear of making the condition worse was a barrier to working with SSs (FET \( p=0.029 \) (two-tailed)).

EPs who had no education on stroke were more likely to agree that not having a disability-related policy for dealing with clients with disability was a barrier to working with SSs (FET \( p=0.007 \) (two-tailed)). EPs who had not completed post-qualification CPD on stroke were also statistically significantly more likely to agree with the barriers of lack of knowledge/training on psychological problems post stroke (FET \( p=0.011 \) (two-tailed)) and lack of experience with SSs (FET \( p=0.001 \) (two-tailed)). Finally EPs who had no CPD on stroke were more likely to agree with the facilitator of a SSs’ family member or carer attending the exercise sessions with them (FET \( p=0.048 \) (two-tailed)).
CHAPTER 4 DISCUSSION

4.1 Introduction
The purpose of this research study was to explore Exercise Professionals’ (EPs’) opinions towards working with stroke survivors (SSs). An online survey was conducted with a purposive sample of EPs registered with the Register of Exercise Professionals (REPs) Ireland. The survey explored EPs’ barriers and facilitators to working with SSs as well as EPs’ interest, experience and level of skill in relation to work with SSs. Further analysis was completed to determine if EPs’ level of agreement with barriers and facilitators was related to having completed pre-qualification training or post-qualification training/continuing professional development (CPD) on stroke. Exploring EPs’ barriers and facilitators to working with SSs is an important step in directing professional development efforts to better position EPs to support the exercise needs of SSs. This survey of EPs has a number of noteworthy findings which will be discussed with reference to current literature.

4.3 Exercise Professionals’ Barriers to Working with Stroke Survivors

4.3.1 Training, Education and Information-Related Barrier
EPs have highlighted that the availability of suitable training courses as a barrier to working with people with disabilities (Rimmer et al, 2004). The National Exercise Referral Framework (NERF) states EPs need to be appropriately qualified to work with special populations. The NERF, however, does not outline what training EPs must complete to become appropriately qualified (NERF Draft, 2014). This ambiguity may prevent EPs engaging with special populations. EPs’ in this current study indicated that lack of experience with SSs was a barrier to working with this population. Furthermore, EPs who had not completed post-qualification CPD on stroke were more likely to agree that lack of experience was a barrier to working
with SSs (FET \( p=0.001 \)). This barrier is intensified by the absence of suitable training programme for EPs in Ireland. If EPs do not have access to the appropriate training to become qualified to work with SSs they cannot gain the relevant experience with SSs. Similarly, managers of exercise facilities have identified lack of qualified personnel as one of the main barriers to implementing stroke exercise programmes (Fullerton et al, 2007).

EPs in this study agreed that insufficient information/training on psychological problems (83.5%) post stroke was a barrier to working with SSs. Up to 40% of SSs experience post stroke depression which indicates the significance of this finding (Robinson and Jorge, 2015). EPs who had not completed post-qualification training/CPD on stroke were more likely to agree that it was a barrier to working with SSs (FET \( p=0.011 \)). It can be speculated that undertaking CPD on stroke may partially reduce the barrier of lack of information/training on psychological problems post stroke. CPD opportunities for EPs, therefore, need to ensure they include adequate training on psychological problems post stroke. EPs working with clients with stroke, obesity and juvenile idiopathic arthritis have also indicated lack of information on psychological problems was a barrier to working with these populations (Hare et al, 2000; Hutzal et al, 2009; Wiles et al, 2008). Not surprising, only 26.3% of EPs in this study rated their skills as good in relation to dealing with psychological problems post stroke. Psychological problems post stroke can also contribute to greater disability which could create further barriers for EPs if not adequately addressed (Robinson and Jorge, 2015).

4.3.2 Safety-Related Barriers

EPs (56.2%) indicated that the absence of a policy in relation to working with clients with disability was a barrier to working with SSs. EPs in the USA also indicated that
the absence of a policy in relation to clients with disability was a barrier but direct comparisons cannot be made due to limited demographic information provided (Rimmer et al, 2004). Policies can guide decision-making in certain work situations while promoting best practice and safety (Kokemuller et al, 2016). Policies, however, may not cover all aspects of dealing with SSs. For example, caregivers can facilitate SSs with their exercise regime but policies may not define how much responsibility should be given to the caregiver by the EP (Pellerin et al, 2011). Interestingly, EPs who did not receive training on stroke as part of their EP qualification training course were more likely to agree or strongly agree that lack of policy was a barrier to working with SSs (FET p=0.007). The reason behind this is unclear but it can be speculated that EPs may be more reliant on policies to guide their practice in the absence of training on stroke.

Over half of the EPs in this study (56.2%) agreed that the level of supervision SSs require is a barrier to working with this population. Exercise interventions such as treadmill training have been found to be safe and effective in improving SSs gait parameters (Mehrholz et al, 2014). Most trials involved SSs being supervised on a one-to-one basis while using the treadmills. SSs may need supervision for a wide variety of reasons including sensory or cognitive impairment, falls risk or limited upper limb function (Ashburn et al, 2008). EPs may have considerable safety concerns when working with SSs. EPs, should not however, discriminate against SSs because of the supervision they may require (REPs Ireland, 2015). The benefit of supervision must also be considered as it may play a supportive role for SSs. SSs who took part in a ten week supervised exercise programme reported greater self-reported improvements in physical activity than SSs who participated in an
unsupervised programme and results were retained at one year follow up (Olney et al, 2006).

Difficulty supervising SSs was seen in the literature by one EP running a task-orientated group exercise programme (Salbach et al, 2014). Despite having over five years’ experience and having attended a two day training course on stroke, the EP had to be removed from running the exercise programme due to difficulty supervising SSs creating safety concerns (Salbach et al, 2014). Difficulty supervising groups of SSs may be one of the reasons why more EPs in this study indicated they were interested in providing one-to-one exercise sessions with SSs than group exercise. EPs in Wales, working on an exercise referral scheme devised SSs with individual gym-based exercise programmes (Wiles et al, 2008). The qualified EPs underwent a five day training programme to be involved in this exercise referral scheme but it was not specific to stroke. Physiotherapists and SSs raised sizeable safety concerns regarding the exercise programmes EPs prescribed the SSs including the difficulty of exercises (Wiles et al, 2008). In an effort to overcome these concerns, physiotherapists provided training for EPs specific to stroke but the outcome of this training on safety was not reported (Wiles et al, 2008). EPs are likely to require extensive training on safety with SSs and the outcome of such training on safety needs to be adequately assessed.

EPs in this study were more likely to disagree that fear of making the SSs condition worse was a barrier to working with SSs if they had completed training on stroke either through their pre-qualification training (FET p=0.02) or post-qualification CPD (FET p=0.029). Such results are not surprising that training on stroke would overcome this barrier as it is likely training on stroke highlights the benefits of exercise for SSs (Saunders et al, 2014). Focus group findings with EPs determined
that fear of liability was a major obstacle to working with people with disability (Rimmer et al, 2004). Working with vulnerable clients such as SSs may bring greater legal and ethical responsibilities due to cognitive or communication impairments affecting consent and decision making capacity (Mathes, 2015). Results from this current study illustrated 26% of EPs agreed, 26% disagreed and 26% were unsure if fear of liability was a barrier. EPs who responded were REPs Ireland members and hold adequate professional insurance (REPs Ireland, 2015). Professional registration and insurance may contribute to EPs in this study being less fearful of liability along with 68.4% of EPs reporting good or very good skills in relation to client safety. To minimise the risk of liability, health professionals have been encouraged to work within their scope of practice based on their education and experience (Mathes, 2015). EPs scope of practice in relation to working with SSs is unclear along with what education and experience they require to do so (REPs Ireland, 2015). The NERF fails to address this issues (NERF Draft, 2014).

4.3.3 Environment-Related Barriers

Cost has been indicated as a barrier to EPs participating in stroke-related training as many exercise facilities do not have budgets to pay for continuing professional development and training for the EPs they employ (Wiles et al, 2008). However, EPs pay to attend training courses on cardiac rehabilitation and they subsequently charge clients to attend the classes which may surpass the cost of the course (Irish Association of Cardiac Rehabilitation, 2016). EPs in this study (34.2%) were largely unsure if cost was a barrier to working with SSs. EPs also commented that if SSs require more assistance they would have to pay for one-to-one sessions with an EP. This resonated with findings from a survey of SSs, where they identified cost as a barrier to community based exercise (Rimmer et al, 2008). Cost was the highest
rated barrier by managers of exercise facilities offering stroke specific exercise
programmes (Fullerton et al, 2007). It can be postulated that managers of exercise
facilities may be more aware of the high cost of adaptive equipment or that their staff
may not be able to supervise a large number of SSs compared to an able-bodied
population which may indirectly increase costs and reduce profitability. EPs and
managers of exercise facilities, therefore, may have different environment-related
considerations. Furthermore, the exercise industry is predominantly a private
industry, driven by profit.

EPs’ work environment can impact their participation with SSs (Hoyle et al, 2012).
Understanding environmental factors is therefore essential in facilitating EPs to work
with SSs. The majority of EPs were in agreement that lack of suitable equipment and
environment were barriers to working with SSs. This corresponds with previous
research whereby lack of adaptive equipment was raised as a barrier by SSs, EPs and
managers of exercise facilities (Fullerton et al, 2007; Rimmer et al, 2004; Rimmer et
al, 2005; Urimubenshi and Rhoda, 2011). It is not surprising considering surveys
have found exercise facilities to have limited access for people with mobility
problems (Arbour-Nicitopoulos and Ginis, 2011; Rimmer et al, 2005). Standard gym
equipment such as treadmills and exercise bikes challenge balance, co-ordination
and cognitive abilities (Wiles et al, 2008). Furthermore, the space between
equipment in exercise facilities has been reported to be insufficient to allow the use
of ambulatory assistive devices which may deem them unsuitable for SSs or they
may require assistance to operate them (Rimmer et al, 2005).
4.4 Exercise Professionals’ Facilitators to Working with Stroke Survivors

4.4.1 Training, Education and Information-Related Facilitators

Information-related barriers highlighted by EPs in this study may be overcome with the necessary facilitators put in place to inform and educate them on stroke. Education for EPs was critical for successful outcomes with clients with juvenile arthritis and EPs indicated it should be a prerequisite to working with special populations (Hutzal et al, 2009). Likewise, EPs in this study were in favour of both theory and practical training on stroke to facilitate them working with SSs. Respondents indicated they were interested in learning about many aspects of stroke including physical activity recommendations, adaptive exercise and equipment, physical, communication and psychological problems and safety considerations in this population. Training and education in relation to working with special populations had been recommended to be integrated into undergraduate education and online learning for EP graduates (NERF Draft, 2014). Clinical placements similar to allied health professionals have also been suggested to adequately prepare EPs to work with special populations (Franklin et al, 2009).

The information-related facilitator that the most EPs disagreed with was an online training course while all respondents agreed that an externally-run training course would facilitate them working with SSs. Considering the practical nature of an EPs job, online training alone may not adequately address their barriers to working with SSs. Training courses for EPs on stroke in the United Kingdom and Australia are blended (online and face to face) training programmes (HeartMoves, 2015; Later Life Training, 2015). No information is available on EPs’ views on these programmes and if this blended approach adequately facilitates their learning needs. Both courses are accredited and EPs in this study commented that course
accreditation would entice them to undertake such courses. Training courses available internationally are provided by private training companies (Later Life Training, 2015) and charity run foundations (HeartMoves, 2015). Similarly, cardiac rehabilitation instructor training courses in Ireland are provided by voluntary agencies (Irish Association of Cardiac Rehabilitation, 2016). EPs (59.2%) in this study indicated government-funded bodies such as the Health Service Executive (HSE) should provide training for EPs on stroke. The National Physical Activity Plan places a lead responsibility on the HSE to develop exercise programmes for people with disability which would require adequately trained staff (Department of Health, 2016). HSE investment in training EPs may save money in the long-term as exercise reduces SSs reliance on the health system (Lowensteyn et al, 2000). According to best practice recommendations, physicians, health professionals and EPs should have open lines of communication to optimise patient centred care for special populations (Waburton et al, 2013). EPs in this study agreed improved information sharing such as physiotherapists training EPs and SSs bringing their physiotherapy exercise programme with them to their exercise sessions would facilitate them working with SSs. Clear communication between involved parties may help SSs transition from rehabilitation to community based exercise (Rimmer and Henely, 2013). This would require rehabilitation facilities and community physiotherapists partnering with local EPs and exercise facilities (Morris and Williams, 2009). It is unlikely this is common practice at present as 51.4% of respondents have never received a referral from a health professional. Welsh EPs have also highlighted robust links with physiotherapists are required to ensure safety and appropriate transfer of medical information (Wiles et al, 2008). For such partnerships to be successful, both professionals need to be aware of their roles and
locally agreed policies need to be put in place to ensure confidential and accurate communication (ISCP, 2012). Further research is needed to provide robust evidence of the most effective interventions EPs could provide for SSs including outcomes and performance indicators to enable effective monitoring of a service performance and ideally a framework should be put in place to formalise the relationship between health professionals and EPs. Unfortunately no such framework is formally in place in Ireland and there are very limited community services available for SSs (Hickey et al, 2012).

4.4.2 Safety-Related Facilitators

Eighty-nine percent of EPs in this study indicated that development of a policy for dealing with clients with disability would facilitate them working with SSs. Managers of exercise facilities (n=35) surveyed in the USA stated that they had formal procedures for handling accessibility-related complaints in place and a designated staff member to supervised disability act compliance (Rimmer et al, 2005). It is unclear if such practice is conducted in Ireland. Policies should be underpinned by evidence based research as well as consultation with people with disabilities (National Disability Authority, 2016). EPs who are employees of facilities need to engage with facility management and customers with disability to review accessibility issues and develop suitable policies (Rimmer et al, 2004).

EPs in this study (87.3%) agreed it would be beneficial if the SSs physiotherapist attended the SSs first exercise session with the EP. Focus groups with EPs working with SSs on a one-to-one basis also conveyed this facilitator (Wiles et al, 2008). Wiles et al (2008) did not evaluate the safety standards of a physiotherapist attending the first session and it must be highlighted, this may not be enough to fully overcome some of the safety barriers such as level of supervision SSs require. As discussed
earlier, EPs may have difficulty supervising SSs even if they attended a training course by a physiotherapist and the physiotherapist attended the first exercise class (Salbach et al, 2014). Respondents who had not completed CPD on stroke were more likely to agree that family or carers attending exercise sessions with SSs would improve safety (FET p=0.048). While the reason behind this is unknown, it can be speculated that EPs without adequate training on stroke may be more reliant on family members to assist them. Safety facilitators need to be fully evaluated to ensure they adequately overcome barriers for all involved parties.

4.4.3 Environment-Related Facilitators

Ninety-seven percent of respondents in this study agreed access to suitable equipment would facilitate them working with SSs and 95.7% wanted to learn more about adaptive equipment and exercise. Suitable exercise areas and equipment was also seen as a facilitator for people with mobility problems (Arbour-Nicitopoulos and Ginis, 2011). Researchers found modest correlation between accessible exercise areas and the availability of exercise programmes for people with mobility problems (Arbour-Nicitopoulos and Ginis, 2011). Equipment such as slow speed treadmills and exercise bicycles with back support can often be used by SSs while still being suitable for the able-bodies population (Fullerton et al, 2007). Unfortunately specialised or adaptable equipment can be more expensive than generic gym equipment (Dolbow, 2015).

Results from focus groups with EPs outlined that the availability of funding to adapt their work environment or purchase suitable equipment would facilitate them working with SSs (Rimmer et al, 2004). Likewise 94.3% of EPs in this current study agreed the availability of such funding would facilitate them working with this population. The National Disability Authority (2016) advocates for a universal
design which focuses on making environments equally accessible to all regardless of
disability. Modifying environments can also be a costly endeavour (Rimmer et al,
2004). Designing universally accessible gyms and purchasing equipment suitable for
all potential clients from the outset would be a practical solution (Rimmer et al,
2005). In keeping with the Healthy Ireland Framework aiming to reduce health
inequalities, government and council funding schemes need to support accessibility-
related projects in exercise facilities to reduce barriers for EPs and SSs alike
(Department of Health, 2016). There may be an opportunity for public-private
partnerships to be formed to provide such accessible gyms.

4.2 Exercise Professionals’ Experience and Interest in Stroke

Only 22.1% of EPs had experience with SSs. This is not a surprising finding
considering the barriers highlighted earlier and the lack of community-based services
available nationally that EPs can be involved in (Hickey et al, 2012). In addition, the
estimated low number of SSs attending exercise facilities may also be a factor
(Rimmer and Henley, 2013). Research has shown that not-for-profit exercise
facilities are more likely to run exercise classes for SSs (Fullerton et al, 2007). The
popularity in not-for-profit exercise facilities may be due to SSs requiring increased
resources such as staff or specialised equipment which would reduce profitability
(Fullerton et al, 2007). The majority of EPs in this current study worked in for-profit
exercise facilities or were self-employed which may have influenced respondents’
experience with SSs. EPs (76.4%) indicated they would be interested in providing
one-to-one exercise sessions with SSs. This is in agreement with previous research
findings that indicated that EPs are interested in working with special populations
(Hare et al, 2000; Kasser et al, 2013). Interestingly, only 52.6% of EPs agreed that
they were interested in providing group exercise. Broadly similar, a survey of
managers of exercise facilities found 61% would be interested in providing group exercise programmes for SSs (Fullerton et al, 2007). As the percentage of EPs interested in working with SSs was higher than the percentage of EPs that had experience with stroke, EPs’ lack of experience with SSs may not be due to lack of interest.

As previously discussed, EPs should possess advanced certification and education to work with special populations such as stroke (Warburton et al, 2013). Unfortunately pre-qualification education/training on stroke was not commonplace among EPs in this study. Curricula of exercise-related degree courses in Ireland include modules on Adapted Physical Activity and Exercise in Special Populations (Qualifax, 2016). Despite 44.3% of respondents having a degree/higher diploma qualification as an EP, only 25.3% had experience of education/training on stroke and only 9.2% felt they were adequately prepared to work with SSs. Considerable deficiencies, therefore, still exist in EPs’ training on stroke. Internationally, accredited CPD courses provide an opportunity for EPs to obtain certificates in the area of stroke (Later Life Training, 2015). Best et al (2012) reported most EPs in Scotland running exercise interventions for SSs had completed informal CPD on stroke in the form of training by physiotherapists but they did not quantify the percentage. Only 17.2% of respondents of this study had undertaken CPD in the area of stroke which may be due to the absence of courses available for EPs in Ireland. This requires further attention in curriculum planning for EPs.

4.3 Exercise Professionals’ Skills in relation to working with Stroke Survivors

Only 18.4% of respondents indicated that they had good or very good knowledge in relation to working with SSs but 36.8% indicated they had good or very good skills to work with this population. The discrepancies between EPs’ knowledge and skills
raise interesting questions. EPs generic goal setting, motivational and communication skills are arguably transferrable to working with SSs. Problems can however occur when skills are not backed by specific knowledge. This again highlights the need for further training or CPD opportunities on stroke for EPs.

A review of exercise programmes supplemented by motivational strategies which included those run by EPs, physiotherapists and nurses can results in long-term physical activity among SSs (Morris et al, 2014). Eighty-one percent of EPs indicated good or very good motivational skills. In contrast managers of exercise facilities surveyed indicated EPs do not have the necessary skills to provide the necessary motivational support (Central YMCA, 2014). Motivational strategies need to be based on sound behavioural theories, however exploring this was not in the remit of this study (Morris et al, 2014). EPs working with SSs have reported a variety of views of what SSs could achieve through exercise programmes which could affect realistic goal setting with SSs (Wiles et al, 2008). It is therefore, unclear if EPs’ skills are adequate to communicate, motivate and goal set with SSs if they do not have the necessary background knowledge. It must be noted only 22.1% of respondents in this study had experience working with SSs. Those EPs without experience were asked about their perceived level of skill. It can be speculated that the responses from EPs in this study without experience with SSs, may change their views of their skills when working with SSs in practice.

4.4 Limitations

- Firstly, by only surveying members of REPs Ireland, a sampling bias exists as EPs that are eligible to be REPs members but are not registered, were not surveyed.
• The survey targeted EPs with and without experience with SSs. EPs were asked to indicate what barriers and facilitators they encountered or perceived. The survey did not differentiate which were encountered and which were perceived. The barriers and facilitators EPs perceived may not actually act as barriers or facilitators in practice.

• While the survey had free text boxes for EPs to expand on responses or add comments, the lack of qualitative data was a limitation. It was not possible to ascertain the reason behind responses.

• With all self-reported data, there is a risk of response bias such as social desirability. This can result in a more positive and less realistic representation of current practice (van de Mortel, 2008). Participants’ confidentiality was ensured in an effort to lessen this effect.

• Statements EPs were asked to rate their level of agreement were all written from a positive standpoint. This may have been leading (Choi and Pak, 2005). Positive and negative statements should have been used to avoid this (Choi and Pak, 2005).

• SSs level of abilities and disabilities can vary hugely. The survey did not specify a level of ability of a SS for EPs to consider when answering this survey. Attitudes towards people with disability can vary according to the level of disability (Kozub et al, 2003). EPs replies may have diverged if they were asked to answer based on a SS with mild disability compared to severe disability.

• The response rate was relatively low (31.4%) despite efforts to minimise the non-response bias. This limits the representativeness of the population and external validity of the results (Halbesleben and Whitman, 2013). A low
response rate is not unusual however with surveys of groups whom the author has no personalised contact with (Cook et al, 2000). As interest levels can influence survey responses, those interested in working with SSs have a greater likelihood of responding to surveys (Halbesleben and Whitman, 2013).

- The survey instrument used in this study was developed by the principal researcher who was a novice in the area of survey development. Researcher bias whereby the researchers views could have inadvertently been introduced during the drafting of the survey (van de Mortel, 2008). No information on psychometric properties such as reliability or validity were established.

- Not all respondents completed all questions. Incomplete survey questionnaire may be due to the length of the survey despite more routine questions being placed at the end of the survey.

4.5 Recommendations

- The inclusion of a qualitative methodology such as focus groups would allow for more in-depth analysis of EPs interest and barriers and facilitators to working with SSs.

- The study focused on EPs. A similar study is needed to explore managers of exercise facilities opinions of SSs attending their facilities and managers opinions of their employees working with SSs. EPs and managers of exercise facilities need to work together to put in place policies to facilitate EPs working with SSs and consider those with disability when purchasing gym equipment.

- Educational opportunities for EPs in the area of stroke need to be enhanced. Undergraduate curricula of exercise-related courses need to adequately
prepare EPs to work with SSs. For qualified EPs, accredited CPD courses need to be developed taking into account the areas of interest to EPs. Discussions between third level institutes, private training companies, accreditation bodies and health professionals need to take place to decide who is best placed to design and deliver such training course. Such courses will then needs to be evaluated to ensure they adequately prepare EPs to work with SSs.

- Further research is needed to determine the optimum intervention for EPs to deliver for SSs including benefits in activity and participation for the SSs, their carers and SSs usage of the healthcare system.

- A framework outlining communication links between health professionals and EPs needs to be established to ensure EPs have access to adequate information to safely engage SSs in community based exercise.
4.6 Conclusion

This is the first study to examine EPs’ opinions on working with SSs in Ireland. While exploratory in nature, this study had some interesting findings. EPs were predominantly interested in working with SSs, despite only a small percentage had experience with SSs. EPs scarcity of experience with SSs was not surprising considering the large number of barriers they highlighted. Barriers to working with SSs included not having policies in place to deal with such clients, unsuitable work environment, unsuitable equipment and the level of supervision SSs require. There was a significant relationship between EPs who had not completed training on stroke and EPs agreeing more barriers including lack of experience and lack of information on psychological problems post stroke. EPs indicated good and very good skills in client safety when deal with SSs along with their communication, motivation and goal setting skills. EPs indicated poor skills in the area of psychological problems along with cognitive problems post stroke. Both theory and practical training opportunities are needed to overcome EPs’ barriers and facilitate EPs working with SSs. Training needs to include client safety, exercise recommendations and information on dealing with physical, communication and psychological problems post stroke. EPs also need access to suitable equipment and environments to work with SSs. Finally, appropriate communication links with health professionals need to be established to assist with the transfer of appropriate information to the EP to assist them working with SSs.

Word Count: 13,817
REFERENCES


the council on cardiovascular nursing; the council on nutrition, physical activity, and metabolism; and the stroke council. *Stroke*, 35(5), 1230-1240.


Microsoft (2010b) Microsoft Word [computer software], Redmond, Washington: Microsoft.


Appendix 1  Ethics Application

SECTION A GENERAL INFORMATION

1. Title of Study
   Exercise Professionals: Barriers and Facilitators towards Working with Stroke Survivors

2. Application Version No
   1

3. Application Date
   30/06/2015

4. Title of the Research Study
   Exercise Professionals: Barriers and Facilitators towards Working with Stroke Survivors

5. (a) Is this a multi-site study?
   No

6. (a) If no, please name the principal investigator with overall responsibility for the conduct of this single-site study.
   Title: Ms.
   Name: Marie Condon
   Qualifications: BSc Physiotherapy
   Position: MSc Student in Neurology and Gerontology
   Department: Physiotherapy Department
   Organisation: Royal College of Surgeons in Ireland
   Address: Springfield House, Tamar, Belview, Clonee, Co. Meath
   Telephone: 01 4023997
   Email: mariecondon@rcsi.ie

7. (b) For single-site studies, please name the only site where this study will take place.
   Site Name: Royal College of Surgeons in Ireland

8. Details of Co-investigators:
   Co-Investigator
   Name of site (if applicable): Royal College of Surgeons in Ireland
   Title: Mrs.
   Name: Marie Condon
   Qualifications: BSc Physiotherapy
   Position: Head of School of Physiotherapy
   Department: Physiotherapy Department
   Organisation: Royal College of Surgeons in Ireland
   Address: 123 St Stephens Green, Dublin 2
   Telephone: 01 4023997
   Email: mariecondon@rcsi.ie
   Role in research: Statistical analysis

9. Lead contact person who is to receive correspondence in relation to this application or be contacted with queries about this application,
   Name: Marie Condon
   Position: Principal Investigator

https://research.rcsi.ie/REC/HumanApplication2.aspx?SEC=A

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6/18/2015

Organisation: Royal College of Surgeons in Ireland
Address for Correspondence: Springfield House, Farrants, Mallardcarthy, Cloyne, Co.Cork
Tel. (Work): 021 924434
Tel. (Mob): 087 9489952
Email: markcondon@rcsi.ie

Is this study being undertaken as part of an academic qualification: Yes

Signature(s) of Relevant Personnel:

Please click on the link to download the file. Give it a PDF and upload within the document list with all the other documentation. Can you please send in a hard copy to the Research Office.

If yes, please complete the following:

Student
Student Name: Name Condon
Academic Course: MSc UroLOGY and GEnEROLOGY
Academic Institution: Royal College of Surgeons in Ireland

Academic Supervisor(s):
Academic Supervisor
Name: Professor Maria Guilian
Qualifications: Dip. Physio, MSc, PhD
Position: Head of School of Physiotherapy
Department: Physiotherapy
Organization: Royal College of Surgeons in Ireland
Address: 133 St. Stephen's Green, Dublin 2
Telephone: 01 402 2297
Email: markcondon@rcsi.ie

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Academic Disability and Equality | Statement of Commitment | Freedom of Information | Privacy Statement | Disclaimer | Site Map

https://research.rcsi.ie/REC/HumanApplication.aspx?SEC=A
## SECTION B STUDY DESCRIPTORS

<table>
<thead>
<tr>
<th>Study Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1.</strong> What is the anticipated start date of this study?</td>
<td>12/10/2015</td>
</tr>
<tr>
<td><strong>2.</strong> What is the anticipated duration of this study?</td>
<td>7 months</td>
</tr>
<tr>
<td><strong>3.</strong> Please provide a brief (no more than 250 words) description of your study.</td>
<td>A stroke is a &quot;brain attack&quot;. It can affect part of the brain that controls movement. This can cause difficulty moving your arms and/or legs. Exercise is an essential part of recovery and rehabilitation after a stroke. Exercise provides the potential to help people who have suffered a stroke to continue and progress their exercise program and prevent decline after discharge from rehabilitation. This study is being planned to gather information regarding exercise professionals' perspectives on working with people who have had a stroke. To do this, the researcher has designed an online survey using the website SurveyMonkey®. The survey comprises seven sections, including personal, confidence and barriers and facilitators towards working with adults who have had a stroke as well as general demographic information. The survey is targeted at exercise professionals who work with people who have had a stroke. Exercise professionals registered with the Register of Exercise Professionals (REPs) in Ireland are chosen to be surveyed as members have to adhere to standards developed by the Royal College of Surgeons in Ireland (RCSI). The survey for REPs in Ireland includes questions relating to the study, with questions related to the study. The survey for non-REPs in Ireland includes questions related to the study, with questions related to the study. The survey is targeted at all members and it is about the members who will be given to the researcher. The first email will invite exercise professionals to fill out the online survey and will include a link to access the survey on the SurveyMonkey® website and an information sheet with details of the study. REPS Ireland will also display messages on the REPs Ireland website (<a href="http://www.repsireland.ie">www.repsireland.ie</a>) and the REPS Ireland social media accounts (Twitter and Facebook) to inform participants a survey has been sent to their email and they will be encouraged to complete the survey. The survey includes demographic information and questions related to the study. This will try to get as many responses as possible. Results will be analysed by the researcher using computer software and will be written up as a report and research paper. Hopefully, results will help direct ways to help exercise professionals work with people who have had a stroke.</td>
</tr>
<tr>
<td><strong>4.</strong> Provide brief information on the study background</td>
<td>Despite evidence showing the benefits of exercise and fitness training for stroke survivors, many stroke survivors and their families are not aware of these benefits, or do not have access to such programmes. The REPS Ireland research project aims to address this gap in knowledge by developing and delivering a comprehensive exercise and fitness programme for stroke survivors. The project will involve researchers from the Royal College of Surgeons in Ireland (RCSI) and the University of Limerick (UL), as well as local community organisations and stroke support groups. The project will build on the existing knowledge base and expertise in the field of exercise and fitness for stroke survivors, and will be delivered in collaboration with the REPS Ireland organisation. The project will be evaluated to assess its impact and to inform future research and practice.</td>
</tr>
<tr>
<td><strong>5.</strong> List the study aims and objectives</td>
<td>Aim: The aim of this study is to investigate exercise professionals' perspectives on working with stroke survivors. Objectives: To identify what barriers are perceived or experienced by exercise professionals towards working with stroke survivors; and to identify what facilitators would enable exercise professionals to work successfully with stroke survivors.</td>
</tr>
<tr>
<td><strong>6.</strong> List the study endpoints/measurable outcomes (if applicable)</td>
<td>To establish exercise professionals' views, opinions including interest, confidence, barriers and facilitators towards working with stroke survivors through a researcher-designed survey. Results will provide valuable information as the identification of barriers and facilitators will direct professional development efforts to support exercise professionals' working safely and effectively with stroke survivors.</td>
</tr>
<tr>
<td><strong>7.</strong> Provide information on the study design</td>
<td>A cross-sectional study using an online survey will be carried out.</td>
</tr>
<tr>
<td><strong>8.</strong> Provide information on the study methodology</td>
<td>The target population is exercise professionals. Inclusion criteria require subjects to be registered with the Register of Exercise Professionals (REPs) in Ireland. This group was chosen as a purposeful sample, as membership of a professional organisation is mandatory. The survey was designed to collect data on the experiences of exercise professionals working with stroke survivors. The survey was distributed to exercise professionals through email, social media and professional networks. The survey was anonymous and confidentiality was ensured. The survey was distributed to exercise professionals through email, social media and professional networks. The survey was anonymous and confidentiality was ensured. The survey was distributed to exercise professionals through email, social media and professional networks. The survey was anonymous and confidentiality was ensured. The survey was distributed to exercise professionals through email, social media and professional networks. The survey was anonymous and confidentiality was ensured. The survey was distributed to exercise professionals through email, social media and professional networks. The survey was anonymous and confidentiality was ensured.</td>
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https://research1.rcsi.ie/REC/HumanApplication2.aspx?REC=B

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Provide information on the statistical approach to be used in the analysis of your results (if appropriate) / source of any statistical advice

Data collected via SurveyMonkey will be predominantly ordinal and nominal data. Qualitative data will be collected through comment sections. Only answers in English will be included for qualitative data analysis. The Statistical Package for the Social Sciences (SPSS) version 22 and Microsoft Office Excel 2010 will be used for data analysis. Descriptive and summary statistics including percentages, frequencies, means and standard deviations for continuous variables and percentages for categorical variables (Hicks, 2002). The non-parametric chi-squared and oriented chi-squared tests will be performed on nominal data to establish relationships two groups of categorical data e.g. place of employment and experience with stroke survivors. Significant levels for all statistical tests will be set at p<0.05. A table will be created in a Microsoft Excel (2010) spreadsheet and answers from comments will be entered. These will be examined for relevant themes. Themes will be verified by a second examiner who is a postgraduate researcher and physiotherapist. All data analysis will be carried out by the researcher.

Please justfify the proposed sample size and provide details of its calculation (including minimum clinically important difference)

The sample size will be approximately 400 people as 400 are currently registered with the Register of Exercise Professionals in Ireland. This may increase or decrease based on membership between now and starting the data collection in November.

Where sample size calculation is impossible (e.g. it is a pilot study and previous studies cannot be used to provide the required estimates) then please explain why the sample size to be used has been chosen

An expected response rate is unknown for this population as they are a largely undetected population and little is known about survey responses when a physiotherapist surveys exercise professionals. A sample size calculation will therefore not be carried out. A non-randomized based quota with purposive sampling will be done. The survey will be sent to all 400 members of RPE Ireland to get the maximum number of responses

How many research participants are to be recruited in total?

400

How many research participants are to be recruited in each study group (where applicable)? Please provide the following table (where applicable).

<table>
<thead>
<tr>
<th>Name of Study Group</th>
<th>Register of Exercise Professionals in Ireland</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Participants in this Study Group</td>
<td>400</td>
</tr>
</tbody>
</table>

Please provide details on the method of randomisation (where applicable)

A non-randomized approach will be taken.

How many research participants are to be recruited at each study site (where applicable)? Please complete the following table

<table>
<thead>
<tr>
<th>Site</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Research Participants at this site</td>
<td>400</td>
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</tbody>
</table>
SUBMIT AN APPLICATION: Human Research - Section C

Select a section: [SECTION C STUDY PARTICIPANTS]

<table>
<thead>
<tr>
<th>C1 PARTICIPANTS – SELECTION AND RECRUITMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>C1.3</strong> How will the participants in the study be selected?</td>
</tr>
<tr>
<td>Participant will be selected if they are registered with the Register of Exercise Professionals in Ireland.</td>
</tr>
<tr>
<td><strong>C1.2</strong> How will the participants in the study be recruited?</td>
</tr>
<tr>
<td>Participants will be recruited via email. The Register of Exercise Professionals in Ireland will forward an email including participant information sheet to inviting all members to complete an entire survey through the SurveyMonkey website.</td>
</tr>
<tr>
<td><strong>C1.1</strong> What are the inclusion criteria for research participants? (Please justify, where necessary.)</td>
</tr>
<tr>
<td>Inclusion criteria is for exercise professionals to be registered with the Register of Exercise Professionals in Ireland. This group accepts exercise professionals into the professional register when they fulfill four key criteria: 1. Achieve qualifications and meet the necessary qualification standards &amp; have been independently quality assured; 2. Maintain professional standing by ongoing CPD; 3. Maintain appropriate insurance cover; 4. Adhere to a code of ethical practice. This research will investigate all professionals that meet these criteria.</td>
</tr>
</tbody>
</table>

| C1.4 What are the exclusion criteria for research participants? (Please justify, where necessary.) |
| Not being a registered member of REPs Ireland |

| C1.5 Will any participants recruited to the research study be simultaneously involved in any other research project? |
| No |

<table>
<thead>
<tr>
<th>C2 PARTICIPANTS – INFORMED CONSENT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>C2.2.1</strong> Will informed consent be obtained?</td>
</tr>
<tr>
<td>Yes</td>
</tr>
<tr>
<td><strong>C2.2.2</strong> If no, please justify. You must provide a full and detailed explanation as to why informed consent will not be obtained.</td>
</tr>
<tr>
<td>The survey is anonymous and participants are not identified in any way, so informed consent is not required.</td>
</tr>
</tbody>
</table>

| C2.3.1 Will participants be informed of their right to refuse to participate and their right to withdraw from this research study? |
| Yes |
| **C2.3.2** If no, please justify. |
| The survey is anonymous and this information is not necessary. |
| **C2.3.3** Will there be a time interval between giving information and seeking consent? |
| Yes |
| **C2.3.4** If yes, please elaborate. |
| Participants are free to complete the survey at a time suitable to them. Participants will be encouraged to complete the survey within two weeks from when the email was sent and if they wish to participate in the survey. |

<table>
<thead>
<tr>
<th>C3 ADULT PARTICIPANTS (AGED 18 OR OVER) - CAPACITY</th>
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<tr>
<td><strong>C3.4.1</strong> Will all adult research participants have the capacity to give informed consent?</td>
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<td>Yes</td>
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<table>
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<tr>
<th>C4 PARTICIPANTS UNDER THE AGE OF 18</th>
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<tbody>
<tr>
<td><strong>C4.1.1</strong> Will any research participants be under the age of 18 i.e. Children</td>
</tr>
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<td>No</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>C5 PARTICIPANTS - CHECKLIST</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>C5.1</strong> Please confirm if persons from any of the following groups will participate in this study. This is a quick checklist to assist research ethics committee members and to identify whether study participants include persons from vulnerable groups and to establish what protection is needed.</td>
</tr>
<tr>
<td>It is recognised that not all groups in this listing will automatically be vulnerable or lacking in capacity. Please refer to the REPs National Consent Policy, particularly Part 3, Section 6.</td>
</tr>
<tr>
<td>Committees are particularly interested to know if persons in any of these groups are being targeted for inclusion, as part of the inclusion criteria.</td>
</tr>
</tbody>
</table>


80
6/18/2015

C.3.1.1 Healthy Volunteers
Yes

C.3.1.2 Patients
- Unconscious patients
  No
- Currently psychiatric in-patients
  No
- Patients in an emergency medical setting
  No

C.3.1.3 Relatives/Carers of patients
No

C.3.1.4 Persons in dependent or unequal relationships
- Students
  No
- Employees/staff members
  No
- Persons in residential care
  No
- Persons highly dependent on medical care
  No

C.3.1.5 Intellectually impaired persons
No

C.3.1.6 Persons with a life-limiting condition
(Refer to guidance manual for definition)
No

C.3.1.7 Persons with an acquired brain injury
No

C.3.2 If you see any of the above, please comment on the vulnerability of the research participants, and outline the special arrangements in recognition of this vulnerability (if any)

C.3.3 Please comment on whether women of child-bearing potential, breastfeeding mothers, or pregnant women will be included or excluded in this research study

The healthy volunteers who are exercise professionals are invited to participate in this study. As fitness professionals work in a country where English is an official language, a substantial level of proficiency in the English language would be a requirement for their employment. Therefore, these participants would have no difficulty understanding the information sheet and completing the survey. No alternative or specific amendments are necessary. Statements in the survey were worded in a positive direction to ensure non-manipulation and to avoid stigma as the researcher is a physiotherapists surveying fitness professionals.

No women of child-bearing potential will be included in this study. However, participating in this study by completing a survey will not pose any risk to the pregnancy.


Checklist Info
SECTION D RESEARCH PROCEDURES

01. What activities, procedures or interventions (if any) are research participants asked to undertake or engage in for the purposes of this research study?

02. What other activities (if any) are taking place for the purposes of this research study? e.g. chart review, sample analysis etc?

03. Please provide details below of any potential harm that may result from any of the activities, procedures, interventions or other activities listed above.

04. What is the potential benefit that may occur as a result of this study?

05. Will the study involve the withholding of treatment?

06. How will the health of participants be monitored during the study, and who will be responsible for this?

07. How will the health of participants be monitored after the study, and who will be responsible for this?

08. Will the interventions provided during the study be available if needed after the termination of the study? Yes / No / Non-applicable

09. If yes, please state the intervention you are referring to and state who will bear the cost of provision of this intervention.

10. Please comment on how individual results will be managed

11. Please comment on how aggregated study results will be made available

12. Will the research participant’s general practitioner be informed that the research participant is taking part in this study (if appropriate)?

13. Will the research participant’s hospital consultant be informed that the research participant is taking part in this study (if appropriate)?
### SECTION E DATA PROTECTION

**E1 DATA PROCESSING - CONTENT**

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1(a) Will consent be sought for the processing of data</td>
<td>Yes</td>
</tr>
<tr>
<td>F1(b) If no, please elaborate</td>
<td></td>
</tr>
</tbody>
</table>

**E2 DATA PROCESSING - GENERAL**

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>G2.1 Who will have access to the data which is collected</td>
<td>Only the research team will have access to the collected data.</td>
</tr>
<tr>
<td>G2.2 What media of data will be collected</td>
<td>Survey data will be anonymously collected electronically online via the [SurveyMonkey]® website.</td>
</tr>
<tr>
<td>G2.3(a) Would you class the data collected in this study as anonymous, irreversibly anonymized, pseudonymized, coded or otherwise?</td>
<td>Anonymous</td>
</tr>
<tr>
<td>G2.3(b) 'Codify', please confirm who will retain the 'key' to re-identify the data</td>
<td></td>
</tr>
<tr>
<td>G2.4 Where will data which is collected be stored</td>
<td>Collected data will be stored securely on the researcher's laptop.</td>
</tr>
<tr>
<td>G2.5 Please comment on security measures which have been put in place to ensure the security of collected data</td>
<td>All study data will be stored on encrypted files on a password protected computer files. Only the research team have access to these files and will be responsible for data security.</td>
</tr>
<tr>
<td>G2.6(a) Will data collected be at any stage leaving the site(s) of origin</td>
<td>Yes</td>
</tr>
<tr>
<td>G2.6(b) 'Yes, please elaborate'</td>
<td></td>
</tr>
<tr>
<td>G2.7 Where will data analysis take place and who will perform data analysis (if known)</td>
<td>Data analysis will take place on the researcher's laptop using the Statistical Package for the Social Sciences (SPSS) for Windows Version 12 and Microsoft Excel (2003). The principal investigator will perform all data analysis.</td>
</tr>
<tr>
<td>G2.8(a) After data analysis has taken place, will data be destroyed or retained</td>
<td>Retained</td>
</tr>
<tr>
<td>G2.8(b) 'Please elaborate'</td>
<td></td>
</tr>
<tr>
<td>G2.9(a) If destroyed, how, when and by whom will it be destroyed</td>
<td></td>
</tr>
<tr>
<td>G2.9(b) 'Yes, for how long, for what purpose, and whom will it be retained'</td>
<td></td>
</tr>
<tr>
<td>G2.9(c) Please comment on the confidentiality of collected data</td>
<td>Data will be retained for 5-7 years in the applicant's unique project folder located within the RCSi V: drive and destroyed thereafter.</td>
</tr>
<tr>
<td>G2.10(a) Will any of the interview data collected consist of audio recordings / video recordings</td>
<td>No</td>
</tr>
<tr>
<td>G2.10(b) 'Yes, will participants be given the opportunity to review and amend transcriptions of the tapes</td>
<td></td>
</tr>
<tr>
<td>G2.11(a) Will any of the study data collected consist of photographs/ video recordings</td>
<td>No</td>
</tr>
<tr>
<td>G2.11(b) 'Yes, please elaborate'</td>
<td></td>
</tr>
</tbody>
</table>

**E3 ACCESS TO HEALTHCARE RECORDS**

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>G3.1(c) Does the study involve access to healthcare records (hard copy / electronic)</td>
<td>No</td>
</tr>
</tbody>
</table>

---

SUBMIT AN APPLICATION: Human Research - Section F

Select a section: SECTION F HUMAN BIOLOGICAL MATERIAL

SECTION F HUMAN BIOLOGICAL MATERIAL

F1 BODILY TISSUE / BODILY FLUID SAMPLES - GENERAL

F1 Does this study involve human biological material: No

Checklist Info

https://research1.rcsi.ie/RECHumanApplication2.aspx?SEC=F
SUBMIT AN APPLICATION: Human Research - Section G

Select a section | SECTION G RADIATION

SECTION G RADIATION

G1 RADIATION - GENERAL

G1.1(a) Does this study/total involve exposure to radiation

No
SUBMIT AN APPLICATION: Human Research - Section H

Select a section: SECTION H MEDICAL DEVICES

SECTION H MEDICAL DEVICES

Is the focus of this study/trial to investigate/evaluate a medical device?

No

Checklist Info

Checklist Info
Submit an Application: Human Research - Section I

Select a section: SECTION I MEDICINAL PRODUCTS / COSMETICS / FOOD AND FOODSTUFFS

SECTION I MEDICINAL PRODUCTS / COSMETICS / FOOD AND FOODSTUFFS

3.1 Non-Interventional Trials of Medicinal Products

3.1.1(a) Does this study involve a medicinal product?

No
### SECTION 3 INDEMNITY AND INSURANCE

1. Please confirm and provide evidence that appropriate insurance/indemnity is in place for this research study at each site.

2. Please confirm and provide evidence that appropriate insurance/indemnity is in place for the research study for each investigator.

3. Please give the name and address of the organisation / or individual legally responsible for this research study.

<table>
<thead>
<tr>
<th>Organisation/Individual</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Royal College of Surgeons in Ireland</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

If yes, please specify:

- Royal College of Surgeons in Ireland
### SECTION K COST AND RESOURCE IMPLICATIONS, FUNDING AND PAYMENTS

<table>
<thead>
<tr>
<th>K1.1</th>
<th>Please provide details of all cost / resource implications related to this study (e.g., staff wages, office use, telephone / printing costs etc.).</th>
<th>Cost of the study include the researchers time and the cost of online survey tool SurveyMonkey® €400 for an annual subscription.</th>
</tr>
</thead>
<tbody>
<tr>
<td>K2.1(a)</td>
<td>Is funding in place to conduct this study?</td>
<td>Yes</td>
</tr>
<tr>
<td>K2.1(b)</td>
<td>If no, has funding been sought to conduct this study? From where? Please elaborate.</td>
<td></td>
</tr>
<tr>
<td>K2.1(c)</td>
<td>If yes, please state the source of funding (industry, grant or other), the name of the funder, the amount of funding and duration of funding.</td>
<td></td>
</tr>
<tr>
<td>Source of funding (industry, grant or other)</td>
<td>Research bursary</td>
<td></td>
</tr>
<tr>
<td>Name of Funder</td>
<td>Irish Society of Chartered Physiotherapists Southern Branch</td>
<td></td>
</tr>
<tr>
<td>Amount of Funding</td>
<td>€1000</td>
<td></td>
</tr>
<tr>
<td>Duration of Funding</td>
<td>1 year</td>
<td></td>
</tr>
<tr>
<td>K2.1(d)</td>
<td>Please provide additional details in relation to management of funds.</td>
<td>C750 has been received by the researcher. A subsequent C100 will be received after presenting the research results at the Irish Society of Chartered Physiotherapists Southern Branch Annual General Meeting in May 2023. C400 has been spent to subscribe to SurveyMonkey® and the remainder of the funds will go towards the researchers PhD registration fees of approximately C1500.</td>
</tr>
<tr>
<td>K2.2(a)</td>
<td>Is the study funded by a 'for profit' organisation?</td>
<td>No</td>
</tr>
<tr>
<td>K2.2(b)</td>
<td>Do any conflicts of interest exist in relation to funding or potential funding?</td>
<td>No</td>
</tr>
<tr>
<td>K2.2(c)</td>
<td>If yes, please elaborate.</td>
<td></td>
</tr>
<tr>
<td>K3.1(a)</td>
<td>Will any payments (monetary or otherwise) be made to investigators?</td>
<td>No</td>
</tr>
<tr>
<td>K3.1(b)</td>
<td>If yes, please provide details of payments (including amount)</td>
<td></td>
</tr>
<tr>
<td>K4.1(a)</td>
<td>Will any payments / reimbursements (monetary or otherwise) be made to participants?</td>
<td>No</td>
</tr>
<tr>
<td>K4.1(b)</td>
<td>If yes, please provide details of payments (including amount)</td>
<td></td>
</tr>
</tbody>
</table>
**SECTION L ADDITIONAL ETHICAL ISSUES**

1. Do this project raise any additional ethical issues?
   - Yes
   - No

2. If yes, please identify any particular additional ethical issues that this project raises and discuss how you have addressed them.
Appendix 2  Recommendations from RCSI Research Ethics Committee

Royal College of Surgeons in Ireland
The Research Ethics Committee
121 St. Stephens Green, Dublin 2, Ireland.
Tel: +353 1 402 2205  Email: recadmin@rcsi.ie
Dr David Smith, Acting Chair
Dr Niamh Clarke, Convener

30th September 2015

Ms Marie Condon
C/o Prof Marie Guldon,
RCSI School of Physiotherapy,
123 St Stephen’s green,
Dublin 2

RE: REC1105 “Exercise Professionals: Barriers and Facilitators to Working with Stroke Survivors.”

Dear Ms Condon,

Thank you for your Research Ethics Committee (REC) application. This has been reviewed by members of the REC and they ask for clarification on the following points:

- **Questionnaire/Survey:**
  - Q9 the tick boxes are missing.
  - The REC suggests that all study participants should be provided with a copy of the final results not just those who email requesting same (last line of survey).

- **Section B Study Descriptors:**
  - B3: Lay Description: It is not clear whether the email is coming from the Researcher or the Professional body. Please clarify.
  - The sample size will be smaller than the stated 400. The usual response rate for this kind of project is approximately 20-30%. It was difficult to judge survey based on PDF but minor suggestions include:
    1. Logic jumps (if not already doing so) should be used to skip irrelevant questions.
    2. Demographic items should be at the end so that respondents who fail to complete survey may still submit the important information rather than just their age / gender etc.
    3. Items 16-23 suggest that a forced ranking scale with a separate NA checkbox is being used. The REC would suggest using an independent ordinal scale here (e.g. Important, Not Important, Not Applicable etc.) This will simplify the cognitive task for the respondent and allow for joint rankings.

- **Section E Data Protection:**
  - E2.8 Study data should be securely stored and encrypted (as opposed to password protected) within the applicants unique project folder located within the RCSI V: drive.

- **Section I Ethical Issues:**
  - Please clarify whether an anonymous link or targeted email invitations will be used. If it is the former, IP address collection should be disabled. Clarify also within the relevant section of the application.

The REC thanks you in advance for the attention to these details.

Please note that until this time, approval is withheld.

All revisions should be submitted in a word document to recadmin@rcsi.ie with highlighted changes and the REC number recorded. (See above).

Revisions must also be made to the online application form. To create an application revision, please ensure that you click on edit in the REC Database (not amendment). Thank you.

Yours sincerely,

[Signature]

P/P Dr Niamh Clarke (Convener)
Dr David Smith (Acting Chair)
Appendix 3 Ethical Approval

Royal College of Surgeons in Ireland
The Research Ethics Committee
121 St. Stephens Green, Dublin 2, Ireland.
Tel: +353 1 4022205 Email: recadmin@rcsi.ie

Dr David Smith, Acting Chair
Dr Niamh Clarke, Convenor

12th October 2015

Ms Marie Condon
C/o Prof Marie Guidon
RCSI School of Physiotherapy,
123 St. Stephens Green,
Dublin 2

<table>
<thead>
<tr>
<th>Ethics Reference No:</th>
<th>REC 1105</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Title:</td>
<td>Exercise Professionals: Barriers and Facilitators to Working with Stroke Survivors</td>
</tr>
<tr>
<td>Researchers Name (lead applicant):</td>
<td>Ms Marie Condon (RCSI School of Physiotherapy)</td>
</tr>
<tr>
<td>Principal Investigator on the project (PI):</td>
<td>Prof Marie Guidon (RCSI School of Physiotherapy, academic supervisor)</td>
</tr>
</tbody>
</table>

Dear Ms Condon,

Thank you for your Research Ethics Committee (REC) application. We are pleased to advise that ethical approval has been granted by the committee for this study.

This letter provides approval for data collection for the time requested in your application and for an additional 6 months. This is to allow for any unexpected delays in proceeding with data collection. Therefore this research ethics approval will expire on 12th November 2016.

Where data collection is necessary beyond this point, approval for an extension must be sought from the Research Ethics Committee.

This ethical approval is given on the understanding that:

- All personnel listed in the approved application have read, understand and are thoroughly familiar with all aspects of the study.
- Any significant change which occurs in connection with this study and/or which may alter its ethical consideration must be reported immediately to the REC, and an ethical amendment submitted where appropriate.
- Please submit a final report to the REC upon completion of your project.

We wish you all the best with your research.

Yours sincerely,

[Signature]

PP Dr Niamh Clarke (Convenor)
Dr David Smith (Acting Chair)
Appendix 4  Survey Instrument

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Working with Adults who have had a Stroke</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>A stroke can cause brain damage which effects a person’s ability to move their face, arm and/or leg. A stroke can also affect other processes such as how people feel, think, see, communicate and learn.</td>
<td></td>
</tr>
<tr>
<td>In this section, we want to explore your experience and view towards working with adults who have had a stroke.</td>
<td></td>
</tr>
<tr>
<td>* 1. During your education/training to become an exercise professional did you receive education/training regarding exercise prescription for adults who have had a stroke?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>If yes, please describe content and number of hours/days/weeks of stroke education that was provided</td>
<td></td>
</tr>
<tr>
<td>* 2. Do you think your education / training adequately prepared you to work with adults who have had a stroke?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>* 3. Since qualifying as an exercise professional, have you undertaken any professional development regarding prescribing exercise for adults who have had a stroke?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Yes</td>
</tr>
</tbody>
</table>
4. How was this professional development undertaken? Please tick all that apply.

- [ ] Full time qualification
- [ ] Part time qualification
- [ ] Conference/seminar/workshop/study day
- [ ] In-house training
- [ ] Self directed learning
- [ ] Informal discussion with colleagues
- [ ] Informal discussion with health professionals e.g. GP/physiotherapist
- [ ] Online learning
- [ ] Blended (online and face-to-face)

Other (Please specify):

5. Please describe the professional development undertaken based on your answer above including the duration and content of the learning activity:


* 6. As an exercise professional, do you have experience working with adults post stroke?

- [ ] Yes
- [ ] No
7. How many years experience do you have working with adults who have had a stroke?

8. Please estimate what percentage of your client caseload is made up of adults who have had a stroke

9. What setting was this experience predominantly gained?
   - One to one
   - Group exercise
   - Both group and one to one exercise

10. How would you rate the quality of your experience working with adults who have suffered a stroke
    - Very Poor
    - Poor
    - Satisfactory
    - Good
    - Very Good

Please give reason for your answer chosen above regarding what contributed to the quality of the experience?
**11. Please tick the appropriate box that best represents your level of agreement or disagreement with each of the following statements.**

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Unsure</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I am interested in working with adults who have had a stroke</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I have a positive attitude towards working with adults who have had a stroke</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I have sufficient knowledge to work with adults who have had a stroke</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I have sufficient skills to work with adults who have had a stroke</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I would be interested running an exercise class for adults who have had a stroke</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**12. Please tick the appropriate box that best represents your level of skill dealing with the following aspects when working with adults who have had a stroke.**

<table>
<thead>
<tr>
<th>Very poor</th>
<th>Poor</th>
<th>Acceptable</th>
<th>Good</th>
<th>Very Good</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motivation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Goal setting</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cognitive impairments</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Psychological issues</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
13. Please tick the appropriate box that best represents your level of skill dealing with the following aspects when working with adults who have had a stroke

<table>
<thead>
<tr>
<th></th>
<th>Very poor</th>
<th>Poor</th>
<th>Acceptable</th>
<th>Good</th>
<th>Very Good</th>
</tr>
</thead>
<tbody>
<tr>
<td>Client assessment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Individual exercise sessions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>including adaptive exercises</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group exercise sessions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>for adults post stroke</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Client safety</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
4. Barriers towards working with adults who have had a stroke

In this section, we want to explore barriers for exercise professionals working with adults who have had a stroke. Questions are suitable for those with or without experience working with people after a stroke. Even if you have no experience in working with adults who have suffered a stroke, you can still identify what you might perceive to be a barrier.

* 14. Please indicate if the following safety related factors would reduce your participation working with adults who have had a stroke.

<table>
<thead>
<tr>
<th>Fear of liability</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Unsure</th>
<th>Agree</th>
<th>Strongly Agree</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fear of injury or fall</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fear of making condition worse</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level of supervision required for stroke survivors</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack of policy on dealing with people with disabilities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* 15. Please indicate if the following environment related factors would reduce your participation working with adults who have had a stroke.

<table>
<thead>
<tr>
<th>Unsuitable environment</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Unsure</th>
<th>Agree</th>
<th>Strongly Agree</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of suitable equipment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack of staff</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack of time</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost implications</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
16. Please indicate if the following information related factors would reduce your participation working with adults who have had a stroke.

<table>
<thead>
<tr>
<th>Factor</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Unsure</th>
<th>Agree</th>
<th>Strongly Agree</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of information on adaptive equipment</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Lack of knowledge/training on stroke and the physical consequences</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Lack of knowledge/training on how to deal with people with psychological problems after a stroke</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Lack of knowledge/training on how to deal with people with communication problems after a stroke</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Lack of experience working with adults post stroke</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Lack of support and information from health professionals</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Lack of known demand</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

17. Please indicate any other barriers for exercise professionals working with or who may wish to work with adults who have had a stroke.
5. Facilitators towards working with adults who have had a stroke

In this section, we want to explore what facilitators would help you when working with adults who have had a stroke. Questions are suitable for exercise professionals with or without experience working with adults after a stroke. Even if you have no experience in working with adults who have had a stroke, you can still identify what you might perceive to help you or other fitness professionals in the future.

* 18. Please indicate if the following safety factors would facilitate your participation working with adults who have had a stroke.

<table>
<thead>
<tr>
<th>Safety Factor</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Unsure</th>
<th>Agree</th>
<th>Strongly Agree</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physiotherapist attending first exercise session</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Family member or carer attending exercise session</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Development of a disability policy including working with stroke survivors</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Having a dedicated staff member for disability clients</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Having theoretical training on stroke</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Having practical training on working with stroke survivors</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>
19. Please indicate if the following environment-related factors would facilitate your participation working with adults who have had a stroke.

<table>
<thead>
<tr>
<th>Factor</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Unsure</th>
<th>Agree</th>
<th>Strongly Agree</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suitable environment</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Adaptive equipment</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Availability of funding to make environment</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>suitable</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Availability of funding for adaptive equipment</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>More staffing</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

20. Please indicate if the following information and education-related factors would facilitate your participation working with adults who have had a stroke.

<table>
<thead>
<tr>
<th>Factor</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Unsure</th>
<th>Agree</th>
<th>Strongly Agree</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Online training on stroke e.g. podcasts/videos/presentations</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>External training course on stroke</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Informal learning from physiotherapists</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Stroke survivor bringing information regarding their current exercise program from physiotherapist</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Self-directed learning</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Learning through client-based cases</td>
<td>○</td>
<td>○</td>
<td>○</td>
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</tr>
</tbody>
</table>

21. Please indicate any other facilitators which may help exercise professionals work with adults who have had a stroke.
**22. I would be interested in learning about the following topics:**

<table>
<thead>
<tr>
<th><strong>Strongly Disagree</strong></th>
<th><strong>Disagree</strong></th>
<th><strong>Unsure</strong></th>
<th><strong>Agree</strong></th>
<th><strong>Strongly Agree</strong></th>
<th><strong>N/A</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk factors for stroke</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Diagnosis, medical management and treatment for stroke</td>
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<tr>
<td>Medication management including side effects</td>
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<tr>
<td>Physical problems after stroke</td>
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<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Communication and cognitive problems after stroke</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Psychological problems after stroke</td>
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</tr>
<tr>
<td>Fatigue management for adults who have had a stroke</td>
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<tr>
<td>Exercise testing and prescription for adults who have had a stroke</td>
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</tr>
<tr>
<td>Adoptive exercise and equipment</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Safety and injury prevention post stroke</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical activity recommendations post stroke</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Please specify any other areas of stroke you would like to learn about.

**23. Who do you think should provide training for exercise professionals on stroke?**

- [ ] Third level institutes
- [ ] Private training companies
- [ ] Government funded organisations e.g HSE
- [ ] Charity run organisations e.g Irish Heart Foundation
- [ ] Local health professionals
- [ ] Other (please specify)
6. Demographic Information

In this final section we want to find out about your background. This will help us later when analysing the data.

* 24. Are you male or female?
   - Male
   - Female

* 25. What is your age?

* 26. Based on the Irish National Framework for Qualifications, what is the highest level of qualification you have completed as an exercise professional?
   - Level 3 Certificate
   - Level 4/5 Certificate
   - Level 6 Higher Certificate
   - Level 7/8 Degree / Higher Diploma
   - Level 9 Masters / Post-graduate Diploma
   - Level 10 PhD
   - Other (please specify)

* 27. How many years experience do you have working as an exercise professional?
* 28. Which best describes your current work setting as an exercise professional?
  - Unemployed
  - Self-employed exercise professional
  - Mixed self-employed and employee of exercise facility
  - Employed in a for profit exercise facility
  - Employed in a not for profit exercise facility
  - Employed in a government funded exercise facility
  - Other (please specify)

* 29. What job role do you perform the majority of your work?
  - Gym/equipment based exercise
  - Studio based exercise
  - Mixed gym and studio
  - Swimming pool
  - Outdoors
  - From home/clients home
  - Other (please specify)

* 30. How many exercise professionals currently work in your place of work? Please include full time and part time staff.

* 31. Do you accept exercise referrals from your local healthcare professionals e.g. GP/physiotherapist
  - Yes
  - No
  - I have never received a referral from a healthcare professional

32. Please comment on how you think exercise professionals and health professionals can work together to improve the exercise opportunities for stroke survivors.
This survey will be complete by clicking the submit button. By submitting this page your response will be added to the database and may not be removed.

Thank you for your time it is greatly appreciated. Results will be sent to all participants upon study completion.

Please contact the postgraduate researcher on the email address mariecondon@tcd.ie if you have any queries.
Appendix 5 Recruitment Email

Dear REPs Ireland Member,

My name is Marie Condon. I am a student on the MSc in Neurology and Gerontology programme at the Royal College of Surgeons in Ireland. I would like to invite you to take part in an anonymous survey on exercise professionals barriers and facilitators to working with adults who have had a stroke. This survey is suitable for anyone with or without experience working with people after a stroke.

A stroke is a devastating brain attack that can affect a person’s ability to move an arm and/or leg. After a stroke, exercise is a large part of recovery. Exercise professionals have the potential to play a key role in helping stroke survivors becoming more physically active through their expertise in exercise instruction and personal motivation. Your help is needed to progress the research in this area by completing this survey. Results could help exercise professionals and stroke survivor’s work together to positively influence stroke survivor’s quality of life. I have attached an information leaflet to provide some further information.

The online survey can be accessed by clicking on the following link: https://www.surveymonkey.com/r/C6R8PLG You are asked to complete this survey at your earliest convenience or by November 16th 2015 if possible. It should take less than 10 minutes to complete.

Do not hesitate to contact me or my supervisor Professor Guidon if you require any additional information. Results will be sent to all participants upon study completion. Many thanks for taking the time to read this email and for considering our request.

Yours sincerely,

Marie Condon
MSc Student
Royal College of Surgeons in Ireland
Email: mariecondon@rcsi.ie
Telephone: 027 53434

Prof Marie Guidon
Head of School of Physiotherapy
Royal College of Surgeons in Ireland
Email: mguidon@rcsi.ie
Appendix 6  Participant Information Sheet

Title: Exercise Professionals: Barriers and Facilitators to Working with Stroke Survivors

Principal Researcher: Marie Condon, MSc student, Royal College of Surgeons in Ireland / Physiotherapist, Bantry General Hospital, Co Cork. 027 53434 mariecondon@rcsi.ie

Research Supervisor: Professor Marie Guidon, Head of School of Physiotherapy, Royal College of Surgeons in Ireland mguidon@rcsi.ie

You are being invited to participate in a research study carried out by researchers at the Royal College of Surgeons in Ireland (RCSI). Before you decide whether or not you wish to take part, you should read the information provided below carefully.

Why is this study being done?
Exercise is an essential element of recovery after a stroke. Exercise professionals have the potential to help stroke survivors continue and progress their exercise programs and prevent decline after discharge from physiotherapy. This study is being done to gather information regarding exercise professional’s experience, views, barriers and facilitators to working with stroke survivors. Results from this study may assist professional development opportunities for exercise professionals interested in working with stroke survivors.

Why am I being asked to take part?
The Register of Exercise Professionals (REPs) in Ireland granted permission to circulate this questionnaire to all members on behalf of the researchers. You have been selected because your email address is listed on this register. The survey is aimed at exercise professionals with and without experience working with adults who have had a stroke.

Procedure
The study is carried out by clicking on webpage link in the email sent to you and completing an online survey on the SurveyMonkey® website. The survey covers experience, interest, confidence and barriers and facilitators towards working with adults who have had a stroke as well as general demographic information. The survey will take less than ten minutes to complete. You are asked to complete this
survey at your earliest convenience but no later than November 16th 2015. Completion of the survey implies consent.

Benefits and Risks

While there are no direct benefits or risks to study participation, your response will provide valuable information on this research topic. Results will be sent to all participants upon study completion.

Confidentiality and withdrawal

All data will be anonymous and there will be no way of linking your identity to your responses. Only the research team will have access to the data. Your participation is voluntary; you are free to withdraw without reason at any time and without personal consequence by exiting the survey webpage. Data completed up to this point will not be saved. Survey results will be written up as a thesis and research will be disseminated through a research paper and conference presentations. Upon study completion, data will be stored securely in an encrypted file within the researcher’s unique project folder on the V: drive in the Royal College of Surgeons in Ireland for 5-7 years and destroyed thereafter.

Please contact the researcher on the contact details above if you have any questions or concerns.

Kind Regards,

Marie Condon
Appendix 7  Recruitment Email 2: 1\textsuperscript{st} reminder email

Dear REPs Ireland Member,

Two weeks ago you received an email from me inviting you to complete a survey regarding barriers and facilitators for exercise professionals towards working with adults who have had a stroke.

As participation in the survey is anonymous I am unable to identify whether or not you have completed the survey. If you have already completed the survey, I would like to thank you sincerely. Your participation will contribute significantly to the research in this area.

If you have decided to participate in the study but have not yet had a chance to complete the survey, I would really appreciate you doing so at your earliest convenience within the next two weeks. Again we would like to hear from those of you  \textbf{with and without experience} working with adults who have suffered a stroke.

Here is another link to the online survey: [https://www.surveymonkey.com/s/C6R8PLG](https://www.surveymonkey.com/s/C6R8PLG) and again I have attached an information leaflet to provide some further information.

Do not hesitate to contact me or my supervisor Professor Guidon if you require any additional information. Results will be sent to all participants upon study completion.

Many thanks for taking the time to read this email and for considering our request.

Yours sincerely,

Marie Condon  
MSc Student  
Royal College of Surgeons in Ireland  
Email: mariecondon@rcsi.ie  
Telephone: 027 53434

Prof Marie Guidon  
Head of School of Physiotherapy  
Royal College of Surgeons in Ireland  
Email: mguidon@rcsi.ie
Appendix 8 Recruitment Email 3: 2nd Reminder Email

Dear REPs Ireland Member,

Four weeks ago you would have received an email from me inviting you to complete an online survey regarding barriers and facilitators for exercise professionals towards working with stroke survivors. As participation in the survey is anonymous I am unable to identify whether or not you have completed the survey. If you have already completed the survey, I would like to thank you sincerely. Your participation will contribute significantly to the research in this area.

Exercise professionals have huge expertise in fitness training and personal motivation. Your response will provide valuable information in directing professional development efforts to facilitate exercise professionals and stroke survivors in working together.

If you have decided to participate in the study, I would really appreciate you completing the survey within the next two weeks. The collection of survey results will stop on **December 14th 2015**. Here is another link to the online survey [https://www.surveymonkey.com/s/C6R8PLG](https://www.surveymonkey.com/s/C6R8PLG) and I have attached an information leaflet to provide some further information.

Do not hesitate to contact me or my supervisor Professor Guidon if you require any additional information. Results will be sent to all participants upon study completion.

Many thanks for taking the time to read this email and for considering our request.

Yours sincerely,

Marie Condon
MSc Student
Royal College of Surgeons in Ireland
Email: mariecondon@rcsi.ie
Telephone: 027 53434

Prof Marie Guidon
Head of School of Physiotherapy
Royal College of Surgeons in Ireland
Email: mguidon@rcsi.ie