

MY WAY
A EUROPEAN COLLABORATIVE AND INNOVATIVE
PARTNERSHIP TO PROMOTE PHYSICAL ACTIVITY AFTER
STROKE EVENT



INTELLECTUAL OUTPUT 2
Identification of good practices
Abstract

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A EUROPEAN COLLABORATIVE AND INNOVATIVE PARTNERSHIP TO PROMOTE PHYSICAL ACTIVITY AFTER STROKE EVENT

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THE CONTEXT

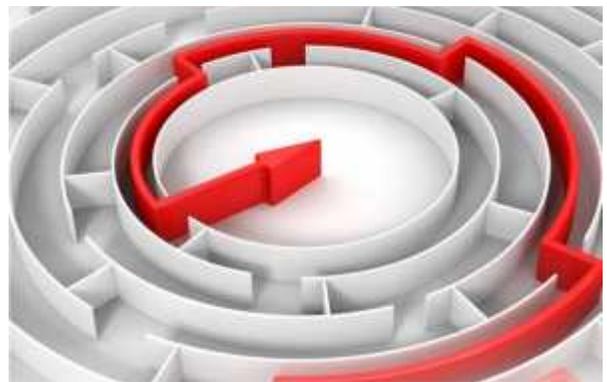
Due to the aging of the population and the increase prevalence of chronic diseases, such as diabetes mellitus, hyperlipidemia and hypertension, there is a significant rise in stroke incidence among European countries during the last decades. Together with the welcome improvement in the survival rates, the number of people who have had a stroke and must live with its consequences needing specialist supportive care and rehabilitation is increased. Stroke survivors can experience a wide range of negative physical and mental consequences that are long-lasting, including problems with mobility, vision, speech, and memory; personality changes; cognitive impairments; fatigue; and depression. Post-stroke problems affect patients' ability to complete daily activities at home and to participate in the community.

Rehabilitation aims to enable people with disabilities to reach and maintain optimal physical, intellectual, psychological and/or social function. European stroke care guidelines make recommendations for the elements of rehabilitation, although there is not enough evidence to ensure the exact content of the recommended therapies and there is no uniform approach in the EU and no common exercise-based stroke rehabilitation protocol suggested among the European countries.

An effective health care planning and adequate resource allocation across Europe is needed to deal with the rising number of

people living with the long-term effects of stroke. In particular, access to rehabilitation therapy, mainly post-acute care, must be improved. The hope is that in Europe everyone gets the long term support they need to regain as much independence as possible. Research suggests that stroke patients may benefit from early exercise training that may enhance their exercise capacity, help prevent further strokes, and may improve quality of life.

The functional level achieved 3- to 6-month poststroke is strongly associated with long-term outcome. Physical activity and exercise are highly recommended in the chronic phase to sustain functions gained in rehabilitation and as part of long-term secondary prevention to reduce the risk of recurrent stroke and other vascular events. Hence, development of new interventions is needed to help stroke survivors achieve a more active lifestyle to maintain the functional levels achieved during stroke unit treatment and early poststroke rehabilitation.



THE PROJECT AND IDENTIFICATION OF GOOD PRACTICES

MY WAY project has been funded by the ERASMUS+ SPORT programme and involves various organizations and actors in and outside sport (rehabilitation centres, health science faculty, social and cultural associations, professional educators' groups) from Croatia, Czech Republic, Greece, Italy, and Lithuania.

MY WAY project has the aim to develop, implement and transfer innovative practices related to physical activity and exercise enhancing health in post-stroke patients. An important activity to achieve these objectives is the identification and analysis of good practices and strategies to encourage participation in sport and physical activity, engage and motivate stroke patients to perform physical activity changing their lifestyle and to maintain a high adherence to physical activity programs and therefore to increased levels of participation in physical activity among the project target groups.

The analysis of good practices explored promoting and inhibiting factors of physical activity and exercise in stroke patients through a literature review of international publication databases and the collection of successful and unsuccessful local experiences.

The local context is fundamental to allow the understanding of the general framework of the topics, taken into consideration the literature review and the evaluation of previous experiences. The conclusion of the analysis of local context could be transferred to other contexts; the analysis of good practices is the basis for the activities in this project and the replication of the project in other countries.

This document represents an abstract of the full report (available in English on the project website <https://www.myway-project.org/>) presenting the results of the "Identification of good practices" implemented by the MYWAY project research team.



METHODS

Each partner identified good practices in the project field, exploring in its country promoting and inhibiting factors of physical activity and exercise in stroke patients, through an analysis of successful and unsuccessful local experiences and based on a wide literature review of international publication databases, to find for the different European local contexts, cost-effective and applicable solutions.

Good practices have been collected through literature review of international publication databases and directly from partner countries through their own research. The collection and analysis of good practices has been performed in three steps:

1. Interventions of international literature database origin have been surveyed through a detailed literature review. As a result of this process, 13 reports have been prepared, each of them presenting an intervention.
2. MY WAY project partners have been asked to assess these interventions along several indicators.
3. MY WAY project partners have been asked to collect recent interventions from their own national context.

As for the first step, toward identifying good practices in long-term exercise-based stroke rehabilitation, MY WAY consortium performed a comprehensive literature review.

The only criterion used was that an intervention would qualify, if enough material could be found about it in English for the preparation of a summary. The search strategy within white literature (PubMed and free internet search) was developed with some “search terms” (stroke +/- country or region name + keyword or combination of keywords; rehabilitation; physical activity; exercise) identified. Approximately 30 programs implemented in developed countries were identified.

In the second stage, the number of interventions was reduced to 13 according to the following criteria.

The chosen interventions needed to:

-) include a comprehensive evaluation system, preferably based on quantifiable results,
-) provide at least some basic information about the following: intervention design, people involved, identified barriers, sustainability and transferability,
-) be designed in a prospective way,
-) contain any new idea or element that has given a positive result in the field of physical activity and exercise in stroke patients,
-) contain outcome data and comparison group.

All MY WAY partners filled out a questionnaire for each intervention. The result was 65 completed questionnaires ready for analysis. The answers collected from the questionnaires together with the above data formed the basis of the analysis. This body of information was assigned to and processed along four dimensions: relevance, quality, effectiveness and sustainability.

An intervention was considered relevant when it was able to satisfy the identified needs of the stakeholders and was also valuable to the said groups.

Quality is the ongoing process of building and sustaining relationships by assessing, anticipating, and fulfilling stated and implied needs.

Effectiveness is the capability of producing a desired result. An intervention is considered effective when it has been evaluated and the final results show to have reached its target for specific indicators with a determined agreed tolerance.

Sustainability refers to the general phenomenon of the continuation of an intervention or its effects.

A weighted scoring system has been introduced to obtain an objective evaluation system, each indicator summing up to 100 points. Moreover, a thorough examination of intervention texts and answers to elaborative questions were the basis of non-quantifiable insights.

Qualitative and quantitative analysis provided a wealth of conclusions from the interventions.

The third step's main goal was to identify interventions that could be effective once introduced in real life, first of all in the partner countries. A questionnaire has been prepared for MY WAY project partners aimed at collecting recent interventions from their own national context.

Each partner was asked to fill in a minimum of two questionnaires. The questionnaire aimed to reveal what initiatives could be useful in each country to increase stroke patients' effective participation in exercise activities.

The aim was to identify good examples, but not to represent the state and development level of a country's stroke management system.

For analysis purposes an objective scoring system has been created, based on the facts provided in the descriptions regardless of the intervention type.



RESULTS

Results of literature review analysis

The selected 13 international interventions covered different kinds of programs that constitute good practices related to physical activity enhancing health in post-stroke patients.

The relevance of the interventions was evaluated by questions inquiring about the potential of the intervention to serve the needs of different target groups and their consequent success in this respect. The place and time of the interventions were also taken into consideration during the calculation of the results. The answers were quantified with a maximum score of 100 available as in each of the indicator categories. The analyzed interventions have scored very well on the relevance scale.

Four of the examined interventions were over 75 points. Only one intervention was slightly below 50 points. The high scores are mainly due to the fact that the examined interventions were well planned and very recent since the 12 out of 13 have been published after 2016. Only three interventions were identified in the EU (plus one in UK).

Many more European well structured studies are needed to create more robust evidence in support of the exercise-based rehabilitation in post-stroke patients.

Furthermore, while it is not unexpected that the interventions serve patient needs better, resulting in a significantly higher average, the small difference in standard deviation also signifies that interventions are more polarized in relation to patients.

In respect of quality, the examined interventions performed rather poorly. The number of participants was below 100 in 9 cases (even below 50 in 6 interventions), only two interventions having more than 300 participants and precisely only one with more than 400 (408 to be exact).

Low participant numbers have a mitigating effect on the strength of the interventions. Well supported evidence for the benefits of long -term post-stroke rehabilitation in general and physical exercise in particular, would make a much stronger case for the importance of exercise not only for patients but also doctors, other health professionals and stakeholders, many of whom are still skeptical and unconvinced.

The small group of participants in the studies provides a weak base for statistical analysis, and again, even more importantly, they may not be enough to grab the attention of the real decision makers, who are in position to act on the results and implement changes in the structure of stroke exercise-based rehabilitation.

The quality perceived by the evaluators of the interventions did not differ from the overall quality score. Finally, concerning the total length of the interventions, only 5 out of the 13 studies spanned a time of at least three months and one of them only lasted for over a year (18 months to be exact).

Regarding sustainability, it has significant correlations with relevance, quality and effectiveness. An interesting finding was a relatively high disagreement of the different 5 evaluators with regards to the same interventions. The results indicate that every country has its own stroke rehabilitation settings and it is difficult to implement new interventions in larger scale. A successful intervention in a particular setting does not guarantee similar results, in case that the stakeholders' perceptions are different. Nevertheless, evaluators agree that the main stakeholders of stroke rehabilitation interventions are patients and healthcare professionals.

As for effectiveness, project partners were in agreement in all interventions. It seems that professional views of effectiveness are much more uniform than that of sustainability.

Finally, at the vertical evaluation of the interventions, it was that many interventions were a healthy mix of good practices and somewhat unrealistic expectations, with plenty of lessons to be learned and used to plan and execute better programs in the future.

Analysis of partner countries interventions

Two long-term stroke rehabilitation related interventions from each partner have been collected. For analysis purposes, a basic scoring system, with a minimum score of 1 and maximum score of 3, was created, based on the objective facts provided in the descriptions.

The examined factors were setting, group size, outreach, timeframe, phase, measurement, exercise/physical activity centered, advanced methods. A total score was calculated by summing all the individual scores. This scoring system was used to examine these interventions in comparison of each country's local context (WP3 Report) to provide a short analysis for every partner country.

The aim of the analysis was to highlight the interesting and forward-looking elements of each intervention and pinpoint the lessons that can be learned from them.

In **Croatia**, there are national stroke rehabilitation guidelines available, but there is a lack of a long-term rehabilitation plan and recommendations about long-term physical activity.

The two Croatian interventions used individualized approaches to minimize barriers and side-effects and to increase patients' motivation. The first Croatian study showed that an individual approach to every stroke patient, with the evaluation of risk factors, comorbidities, socioeconomic situation, age and gender, would enable the most appropriate rehabilitation modality with the best cost-effectiveness.

The second Croatian study showed the efficacy of mirror therapy in the improvement of motor function in the upper limb in post-stroke patients, leading to a greater potential of self-care and activities of daily living.

Czech organization for rehabilitation of stroke victims emphasizes that the need for more physical, sport and creative activities is the issue that needs special attention.

In Czech Republic, the organization for rehabilitation of stroke victims provides counseling and courses, and activates clubs throughout the country, but its reach is by far insufficient.

The two Czech studies concerned the use of novel robotic techniques to improve outcomes and patients' motivation.

The first Czech study concluded that robotic technologies, providing optimal repeated rehabilitation stretching of spastic muscles can be used as supplement or substitution of the stretching techniques.

The second Czech study concluded that the use of novel robotic techniques developed over the last decade provides the perspective of improving results of rehabilitation, as they proved useful for increasing the motor activity output. In addition, the robotic assisted hand treatment of patients in the chronic phase after brain vascular event is evaluated very positively by the patients.

In **Greece**, rehabilitation centers and voluntary organizations support local patients after stroke and there are no national stroke rehabilitation guidelines. Hellenic Alliance/Action for Stroke aims to make an effort both to inform and educate the public about the treatment of a stroke and the health policy makers in order to

achieve improvement of health services for the rehabilitation of the patient with stroke at the national level.

The two Greek studies aimed to detect the effectiveness of different modalities of interventions to improve the quality of rehabilitation interventions.

The first Greek study showed that the use of cervical isometric exercises in hemiparetic stroke patients with dysphagic symptoms was beneficial in helping patients improve their cervical spine alignment and overcome deglutition disorders.

The second Greek study demonstrated that the music-based exercise programs have a positive effect on mood profile in stroke patients and recovery rate is higher when exercise rehabilitation program is accompanied by an enriched sound environment with experiential music.

In **Italy**, rehabilitative long-term care is provided in rehabilitative day-hospital, physiotherapy structures, and at home.

The first Italian study evaluated the effectiveness, in both the short and long period of therapeutic patient education and adapted physical activity intervention in stroke survivors.

The second Italian study addresses the crucial issue of intensity that the rehabilitations programs of stroke patients should have.

It seems that the main factors that positively influence the sustainability and transferability of those interventions are the cooperation between specialist doctors, dedicated professionals, and patients, as well as training of specialized professionals in this field, presence of adequate structures and cooperation between different healthcare centres.

The main aspects that negatively affect sustainability and transferability are the potential difficulty, among different regions, to obtain funds in the public healthcare system to guarantee an adequate delivery of the program, the lack of a structured and organized regional healthcare network and the reduced advertising promotion of relevant projects.

Lithuania has a national rehabilitation program and national stroke rehabilitation guidelines are available.

The two Lithuanian interventions both offered in a rehabilitation hospital and used novel techniques to enhance motivation of the patients.

The first Lithuanian study revealed that the application of a PC virtual reality system enhanced rehabilitation in stroke patients. Specifically, it was shown that patients who spent the most time on virtual reality therapy procedures during their departure from the rehabilitation center significantly improved their independence.

The second Lithuanian study showed that after gait training with novel exercise technologies, patients experience bigger improvement in gait. Sophisticated exercise machines can substantially improve the rehabilitation outcomes of stroke survivors.



CONCLUSIONS

Although collecting evidence supports that secondary and tertiary preventions have the biggest impact on health, apparently few interventions are performed. One main goal of the MY WAY project consortium (WP4 Report) was to identify good practices in the project field, exploring promoting and inhibiting factors of physical activity in stroke patients through an analysis of successful and unsuccessful local experiences and based on a wide literature review of international publication databases to imagine for the different European local contexts cost-effective and applicable solutions.

Indicative strategies and initiatives to increase participation in exercise-based stroke rehabilitation activities and improve the efficiency of a comprehensive long-term post-stroke rehabilitation system are listed below.

- We should create long-term interventions to support the importance of physical exercise and lifelong rehabilitation in stroke patients.
- The clear objective for each country would be to systematically make the necessary steps to enhance overall exercise-based stroke rehabilitation attendance in the long term.
- Enhanced motivation of the stroke patients is necessary to promote adherence to the exercise program, as it can be challenging for individuals with stroke.
- Individualization of exercise modality may minimize barriers, complications or side-effects, and drop-out.
- Patient education is important to ensure adherence and effectiveness of the rehabilitation program. Tailored exercise-based training programs, based on the patient's preferences and goals are suggested.
- Long-term exercise-based rehabilitation is a complex process requiring a multidisciplinary approach for obtaining maximum independence and maximum possible self-reliance. The cooperation between specialized professionals and different healthcare centres and the presence of adequate structures are deemed necessary.
- Although intervention planners should not be blamed for a strong focus on patients, healthcare personnel are also very important stakeholders and have a strong impact on the results of the rehabilitation program.
- To improve the quality of long-term exercise-based interventions, it is important to predict the prognosis for stroke and to stratify for stroke severity before delivery of any intervention. There are many different factors that affect and influence the effects of each intervention in clinical practice.
- Rehabilitation interventions should be safe, cost-effective, easy to implement and using evidence-based methods and easily transferred equipment.
- A structured and organized regional healthcare network of resources, the advertising promotion of stroke rehabilitation projects and overcoming economical barriers could positively affect the transferability of the physical activity interventions.

- Identifying the training variables (intensity, frequency, duration, type of exercise) for standardized training programs, that contribute to efficient exercise-based stroke rehabilitation, is required.
- Walking and balance are important functions to recover after stroke. Besides, independent walking is one of the major objectives of stroke rehabilitation.
- Strengthening the trunk muscles leads to improvement in activities of daily living, including trunk performance and balance.
- The use of novel techniques and VR methods provides the perspective of improving results of stroke rehabilitation, as they proved useful for increasing the motor activity output.

The recommendations above could provide assistance in planning and managing interventions aimed at introducing new or improved long-term stroke rehabilitation practices.

In conclusion, access to long-term exercise-based stroke rehabilitation must be improved.

There are limitations to the current research evidence from the perspective of European stroke survivors.

Further researches should be conducted more widely throughout Europe, and should actively involve stroke survivors and patient organizations.

Different forms of physical activities could contribute to long-term secondary prevention, taking into consideration, in a realistic way, the solutions available.

The hope is that in Europe everyone gets the long term support he/she needs to regain as much independence as possible and to improve his/her quality of life.