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**World Confederation
for Physical Therapy**

Promoting Research in Physiotherapy in the European Region of the WCPT Briefing Paper

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**PROMOTING RESEARCH IN PHYSIOTHERAPY
IN THE EUROPEAN REGION OF THE WCPT BRIEFING PAPER**

**European Region of the WCPT
Education Matters WG (EDU WG)**

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Summary

- This briefing paper on research in physiotherapy in the European Region (ER) presents an overview of the current situation, policy dimensions and implications, and provides recommendations for the Member Organisation (MOs).
- Specifically, the paper highlights the importance of research for professional development and aims to 1) give background to and stimulate high quality research initiatives in physiotherapy in Europe, and 2) encourage MOs of the European Region to promote research for the benefit of professional development.
- It reflects the research strategies of the WCPT and emphasises the aim of the profession to base clinical work on evidence based practice prioritising patient safety, ethics and societal changes.
- Informed by health policies and European Frameworks, this paper strives to identify important and relevant research areas without being specific or exclusive to particular research topics, which is beyond the scope of this document.
- The paper emphasises the strong links between education, research, development and innovation in the European Higher Education Area (EHEA) and European Research Area (ERA).

Purpose

The purpose of this briefing paper is to promote and support research initiatives and efforts in physiotherapy in order to contribute to the development of the profession and high quality of physiotherapy in the European Region. It aims to highlight the importance of an evidence-based profession in line with patient safety and to inform the Member Organisations (MOs) and others about relevant key issues. Promoting research also alludes to the development of research career pathways and relevant such positions for physiotherapists, contributing to an on-going discourse about up-to-date research priorities of relevance for the professional field. A “briefing paper” within the context of the World Confederation of Physical Therapy (WCPT) provides a description and analysis of the current situation, policy dimensions and implications, and provides recommendations for action by ER-WCPT and MOs.

The specific purpose of the document is:

1. To promote and reach a common awareness in the European Region about the importance of conducting and disseminating research in physiotherapy; the strong links between high quality physiotherapy research, education and clinical practice; and the current state of the physiotherapy evidence base in the international arena. This is in line with the WCPT’s policy statement on research and evidence based practice.
 2. To promote a research culture in physiotherapy across the European Region.
 3. To present recommendations regarding the role of the ER and the MOs in promoting and supporting research including facilitating research career pathways within physiotherapy.
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4. To provide a source of information for policy makers, budget holders and other relevant national and international stakeholders interested in physiotherapy and research related to physiotherapy.

Introduction

Physiotherapy* is both an academic and a vocational discipline. The WCPT has adopted the "Description of Physical Therapy" [1] to have a common international platform for the profession. In Europe the classifications and competences of the profession is formulated in the European Skills/Competences, qualifications and Occupations (ESCO) [2]. WCPTs description states that physiotherapy should be based on academic education, specific knowledge and autonomous professional responsibility aimed at the best possible service for the individual and society. Physiotherapists work with people to identify and maximise their ability to move and function. Physiotherapists provide services to individuals and populations to develop, maintain, restore and enhance health and prevent disease throughout the lifespan. This includes providing services in circumstances where movement, ability and function are threatened by, for example, ageing, injury, disease or environmental factors. Functional movement is central to what it means to be healthy and independent. Physiotherapy plays a key role in enabling people to maximise their quality of life and movement potential within the spheres of promotion, prevention, treatment/intervention and rehabilitation. This encompasses physical, psychological, emotional, and social wellbeing. Physiotherapy involves the interaction between physiotherapist, patients/clients, other health professionals, families, caregivers, and communities in a process where movement potential is assessed and goals are agreed upon, using knowledge and skills unique to physiotherapists. The foundation for this process should rest on evidence based physiotherapy/evidence based practice (EBP), which constitutes the combined result of research, clinical experience and the opinion of the patient/client as well as cost-benefits [3]. Further, according to ESCO, physiotherapists should undertake different levels of engagement in research activities to improve the quality of, and evidence base for physiotherapy ESCO [4].

Research as defined in this document

Research may be defined as a scientific systematic search of knowledge, which best generates new knowledge that might be transferred into practice (cf. [5]). Scientific research relies on the application of scientific methods and therefore requires education and training. A researcher in physiotherapy, as in any other profession, is defined as a person with recognised academic qualifications from a higher educational institute/university, and who is affiliated to a university/institution/centre/organisation that is conducive to research. This institution should ensure that ethical approval is obtained, where it is required and often provided by a national legal entity or by committees at the higher educational institution. Research undertaken by

physiotherapists should comply with the ethical and governance requirements of the country in which the research is conducted. Physiotherapy researchers follow research ethical standards such as The Declaration of Helsinki [6]. The Declaration was developed by the World Medical Association, as a set of ethical principles for the medical community regarding human experimentation, and is widely regarded as the cornerstone of human research ethics. There are, also, other relevant international organisations and tools to consider, such as those provided by the Council for International Organisations of Medical Sciences (CIOMS) and others (cf. WCPT's website, [7]).

Physiotherapists should be mindful of the need to depend on research and evidence to achieve and maintain their registration/professional membership, to reflect on their procedures and evaluate their own work. There is an abundance of physiotherapy related courses offered by various organisations across Europe, which require careful consideration and selection of what to implement in clinical practice. In addition to reading research reports to inform clinical practice, the physiotherapist should also be able to generate new ideas from clinical experience and observations that could be transformed into new knowledge and eventually may become evidence-based practice. It is in the best interest of MOs to support this by stimulating collaboration and facilitating communication between physiotherapists, in order to engage all physiotherapists in quality assurance and research matters, and to implement new research findings.

WCPT Policy Statements on Research and on Evidence Based Practice

The MOs of the ER have adopted the WCPT Policy Statement on Research [8] and the Policy Statement on Evidence Based Practice [9]. The Research Policy emphasises the importance of conducting systematic research as it is essential for the development of evidence based physiotherapy. The document also states that the physiotherapist shall “advance the science of physiotherapy by conducting and/or supporting research activities or by assisting those engaged in research”, and that “the physiotherapist recognises research as an integral part in the continuing growth and development of the profession”. The policy emphasises that “the physiotherapist conducting a research project has sufficient knowledge of research principles and methodology and adheres to international standards for performing research on human subjects”. The WCPT policy statement on evidence based practice [9] states that physiotherapists have a responsibility to use evidence to inform practice and to ensure that the management of patients/clients, their carers and communities is based on the best available evidence. Evidence is scientific knowledge integrated with clinical experience and patient opinion, taking into consideration beliefs and values and the cultural context of the local environment [10]. In addition, physiotherapists have a responsibility to avoid the use of methodologies, techniques and technologies that have been shown to be ineffective or unsafe.

Education Research, Development and Innovation in the European Higher Education Area (EHEA) and European Research Area (ERA)

The Bologna Declaration [11] recognises that the relationship between higher education, research and innovation has an impact on creativity in society. Higher education in Europe should be based on basic and applied science [12]. High quality undergraduate physiotherapy education is a prerequisite for the development of further high quality education at master level and for research. This is highlighted in “*The Education Policy Statement of ER-WCPT*” [13], and in the WCPT Guideline on entry level education [14] and WCPT Policy statement on education [15]. Research methodology and research knowledge should be included and are important at all levels of education (Bachelors, Masters and Doctorate Fig 1).

Physiotherapy education needs to be within Higher Education Institutes (HEIs) for opportunities for research training and career pathways progressing to professorial levels. In most countries in Europe, physiotherapy is part of higher education and the programmes are provided at university level. Nevertheless, there is heterogeneity of the educational systems across Europe. Some countries are still striving for full transition of all of their educational programmes in physiotherapy into the Higher Education institutes. Therefore, there are different opportunities for physiotherapists to pursue an education in research and to carry out research. An important role for the ER is to work with the MO's to support the process of incorporating physiotherapy education into the university level and to strengthen this position in academia. An established academic position of physiotherapy in all European countries is in line with promoting inclusion and mobility across nations in order to develop research and stimulate research career pathways as recommended by the European Union and emphasised by the Ministers responsible for Higher Education [12]. The university as the base for physiotherapy education ensures the potential for master/doctoral programmes in physiotherapy, which are fundamental for a research career. Furthermore, it is important that there are full professors/established researchers in physiotherapy in the universities in order to develop research environments so that research questions central to the practice of the profession can be addressed. Through independent research in physiotherapy in a wide range of topics, the profession is able to demonstrate and improve what clinical practice in physiotherapy can not only offer patients but can also serve at different levels of society to promote health and wellbeing.

WCPT recommends that the minimum entry-level for physiotherapy education should be university level studies of a minimum of four years, independently validated and accredited as being at a standard that affords graduates full statutory and professional recognition [13-15]. As outlined above, there may however be variations across Europe in programme delivery and in entry-level qualifications, including

Bachelors/Baccalaureate/Licensed or equivalent, Masters and Doctorate entry qualifications. Separate courses at master's level should be an option and for physiotherapists with qualifications from previous educational systems, and who would like to upgrade their qualifications. Effort is required throughout the European countries for alignment with regard to quality and quantity of the education in physiotherapy according to the intention of the Bologna declaration. An important goal is to incorporate all the competencies that are needed to achieve a state-of-the-art physiotherapy qualification, underpinned by research to meet the needs of the population. Entry-level educational programmes ensuring minimum competencies¹ across the ER also facilitate employability and mobility. A range of post-graduate education programmes should be available to support the development of clinical, academic and research career pathways as well as combined pathways such as clinical academic roles.



Fig 1. Schematic overview of levels of education and corresponding qualifications which may vary across nations. Levels indicated according to the European Qualification Framework (EQF).

A way to facilitate an early research career may be to promote post-graduate programmes that are more focused on developing research methodology. Strengthening the relationship between research, teaching and innovation is also important from a lifelong learning perspective. The research and innovation missions of universities may be strengthened by having lifelong learning strategies, and the specific contribution of the universities to lifelong learning should be underpinned by research. Researchers should also be recognised as examples of lifelong learners whose own educational needs are continually evolving, and taking account of the changing skills required by the labour market. Lifelong learning can also be a source of new research methodologies and topics [16]; See also Advanced Physiotherapy Practice in the European Region, which outlines such pathways².

¹ Expected Minimum Competencies for an entry level Physiotherapist in the European Region of the WCPT Guidance document – 2018 GM

² Advanced Practice Physiotherapy in the European Region of the WCPT Position Statement – 2018GM

The concept of the PhD degree, with research training under supervision is referenced in the third cycle in the Bologna process. However, the core component of the third cycle is the advancement of learning *through* original research, which differentiates the cycle from the previous two. The possibility for physiotherapists to obtain a PhD degree is linked to the level of basic training, and therefore it is important that the quality of physiotherapy education is high and transparent in the first two cycles. It also facilitates mobility of students and teachers between universities [17].

Increased internationalisation and interaction within higher education and research environments supports global collaboration. This is important for sustainable development and for consensus of physiotherapy actions across different cultural and social contexts. Exchange of international researchers, educators and students between institutions is therefore encouraged. The European goal states that 20% of students would pursue part of their education outside their own country [12]. A number of EU programmes exist to support teacher and student exchange between Higher Education /research institutes across Europe, which may facilitate working towards common goals. The European Guidelines promoted by the Guidelines International Network (GIN) are a good example of action points that have a major impact on clinical treatment [18].

Health policies and European frameworks in relation to physiotherapy research priorities

Research in physiotherapy in Europe should be conducted with reference to national strategies for research and development in each country but also to the “EU's Research and Innovation Strategy for Europe” and in line with the “EU Health Strategy and Health Programme” [19] (see Appendix 1). The latter focuses on the major societal challenges such as climate change, energy efficiency, migration, health and ageing or resource efficiency. The ambition of the Common Strategic Framework (CSF) for European Research and Innovative Funding [20] to bring research and innovation closer together, aims to enhance the impact of EU funding, and relate it specifically to these societal challenges. The EU and the WHO have identified the worldwide health problems related to lifestyle and/or lack of physical activity i.e. the Non-Communicable Diseases are global research priorities [21, 22]. Current development trends that influence the science of physiotherapy and the profession are its globalisation, the demand for EBP including the cost effectiveness and the changing view of health, disease and impairment of function. These issues together with the changes in the panorama of the public health, cf. [23],[24] and an ageing society create a need for increased physiotherapy research. Moreover, it will lead to interventions to maintain health, to treat and rehabilitate patients/clients with impairment, activity limitations or participation restrictions (See International Classification of Function Disability and Health; ICF, [25] and with respect to gender, ethnicity and innovation [24]. An

important challenge for the profession and one in which physiotherapists have a particular role and responsibility (based on professional competence) is to promote physical activity for all clients and thus prevent a sedentary lifestyle, i.e. primary prevention. Physiotherapists also have a role to play in the broader public health agenda, and within occupational health. Keeping the workforce healthy and getting people back to work as early as possible following incapacity are essential to improve the overall quality of health, reduce both health care costs and the economic burden of days lost from work.

Physical inactivity is a global health issue which is associated with the development of many major Non-Communicable Diseases and therefore is a major concern for all societies [22]. Health enhancing physical activity is an area where physiotherapists are well equipped to engage in interventions, policy planning and research. Interventions should be planned at population level and for clinical cohorts. Physiotherapists do not appear so far to have been so involved in policy making, even though they possess the specific knowledge about human movement, physical activity and exercise prescription. Research on promotive and preventive physical activity involves a wide range of methods and includes possibilities for collaboration with other professions, such as in the area of disability and rehabilitation, complex interventions and human resource planning [26, 27].

Identifying research priorities may also be fundamental in trying to influence research funders. MOs may play an active role in this context. The Chartered Society of Physiotherapy (UK) recently (Feb 2018) [28] prioritised research topics based not on traditional clinical areas but on the following statements of change in the society: “People are living longer often with more than one long-term condition • Care is delivered in a greater range of ways and closer to home • A greater emphasis is on helping people manage their condition(s) themselves and promoting healthy lifestyles • Technology is advancing.” The process involved patients, carers and physiotherapists across UK and led to the identification of top ten questions that reflect such changes. Among the highest priority was to address the following questions: “When health problems are developing, at what point is physiotherapy most/least effective for improving patient results compared to no physiotherapy? What factors affect this? Other questions regarded for instance what methods are effective to help patients make health changes or which treatments are effective, Research priority work have also been conducted in other countries such as Switzerland [29] and Ireland [30]. The range of prioritised topics and procedures illustrate how the evidence base for physiotherapy has developed and continues to develop. In addition to clinical effectiveness, other key priorities relate to how services are delivered, e.g. seven-day services, cost effectiveness and value of physiotherapy, public health including physical activity and behaviour change, facilitation of return to work, outcome measurement and immigration and other societal aspects.

Finally, implementation of research and especially translating current scientific evidence into clinical practice is of particular importance [31]. With regard to several of the above research areas, current focuses for the future are for instance on individualised treatments (what works for the individual), self-management, use of so called big data in the public health domain, and new technology for communication, clinical assessment and treatment, often referred to as eHealth.

Progress of research in physiotherapy

The early scientific publications related to physiotherapy emerged in the first part of the 20th century and the first scientific randomised controlled trial (RCT) was reported in the year 1929 (cf. [32]). Physiotherapy research has grown exponentially over the last four decades (Fig 2.). The rapid development in the scientific knowledge base of the profession has emerged largely through increased access to research education in physiotherapy. Increased professional competence has also increased funding possibilities. Systematic reviews and evidence-based clinical practice guidelines of relevance to physiotherapy have rapidly increased since the 1990s [32]. Of particular importance are so called Meta analyses, which use systematic methods to summarise and evaluate treatment effects across many studies while appraising the evidence. Electronic retrieval of health information may certainly assist in improving the clinical practice [33] and four comprehensive databases of trial reports evaluating physiotherapy interventions are CENTRAL, PEDro, PubMed, and EMBASE [34]. There is also an ongoing discussion on how, and by which means, individuals interpret the results presented in systematic reviews and implement them into practice [35]. The number of randomised controlled trials (RCTs) within physiotherapy has increased substantially over the last few years as indicated in the PEDro data base (Fig 2; and cf. [32, 36]). High quality RCTs, but also other types of studies such as well-designed clinical case reports, cross sectional and longitudinal studies etc., (see below) are important in order to provide evidence and thus provide bases for appropriate recommendations for physiotherapeutic treatment presented in national and international clinical guidelines. There are to date more than 7,526 reviews and 637 guidelines posted on PEDro. Various study designs offer different kinds of information in the ambition for better understanding of how to improve physiotherapy and what works for whom.

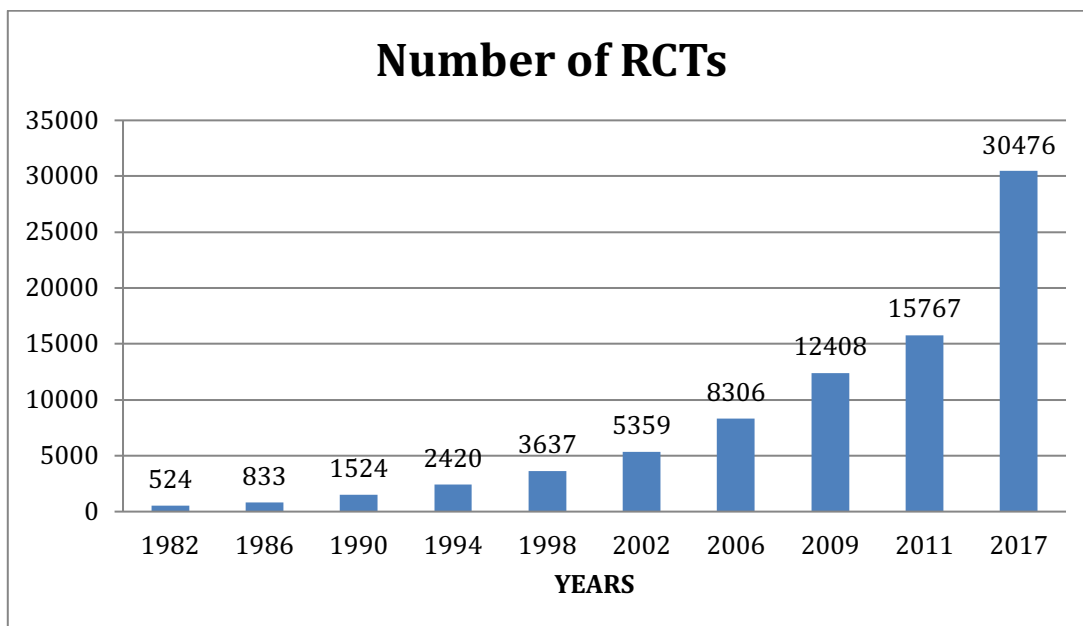


Fig 2. Number of RCT studies of relevance to physiotherapy over the recent years, taken from PEDro, Physiotherapy Evidence Database; as of 30 Jan 2018.

Thus, an increasing number of physiotherapists worldwide have engaged in research during the last decades and their research projects have addressed areas ranging from basic research to specific clinical questions in different fields. In order to obtain research competence, physiotherapists sometimes pursue their PhD-training within other academic disciplines and with supervisors who are not physiotherapists. This is important but there is also a strong need, where it is not already implemented, to further develop physiotherapy research areas closely related to relevant professional clinical questions and implementation practices, and where supervisors with physiotherapy expertise and projects emerging from a physiotherapy research environment.

Dissemination and implementing the research knowledge

It is a challenge and a continuing process to implement research evidence into daily practice. There is no single factor to facilitate change in clinical practice but multiple practice change strategies are needed [37]. The necessity for all physiotherapists to be critical consumers of research is recognised together with the responsibility of the organisation and management to develop conditions favourable for an evidence-based profession. These are important stepping stones to reach high quality clinical research that require further development. For instance, there is still a shortage of positions for physiotherapists with research knowledge in clinical settings as well as in public health. This is also true for positions where clinical and research work is combined to create a research culture involving instead the majority of colleagues in different settings.

The development in research in physiotherapy is also reflected in the content and quality of the scientific international congress of WCPT. This has been held every

fourth year since 1953 and every two years since 2015. In 1951 there were 11 founding Member Organisations of WCPT, which has now grown to 113 MOs. WCPT established an international scientific committee prior to the 2003 Congress to improve the scientific quality and peer-review process of the congress and the standards have continuously been raised. In 2011, when the congress was held in Europe (Amsterdam), there were nearly 4,900 delegates (including volunteers), a 44,8 % increase compared to 2007 and 2883 abstracts were submitted (a 30 % increase on 2007). There were delegates from 113 countries. There were 3500 delegates in Singapore and 2000 in Cape Town. From the European perspective, there were delegates from 39 European countries in 2011, 21 in Singapore, 2015 and 32 in Cape Town, 2017. European delegates comprised 33% and 39 % of the presentations in Singapore and Cape Town, respectively. The number of scientific sessions in these three last congresses has increased from 154 in 2011, to 172 in 2015 and 176 in 2017. There are several reasons that might explain the participation, e.g. congress location and intervals, research activity in the profession, increased status associated with presenting at a WCPT congress or a combined congress with a WCPT General Meeting etc. An increased engagement and quality of the congress content demonstrates that research dissemination and exchange are really important and that peer-review, networking and collaboration are all vital to sustaining research efforts and EBP. While scientific presentations at international meetings are part of the scientific process of publishing papers, there is a debate on the value of congresses in terms of bringing about change in clinical practice. The majority of participants nevertheless are clinicians and the congress aims to provide state-of-the art knowledge and clinical take-home messages.

The ER organises a scientific congress in physiotherapy every four years and with a particular focus on education every second time. It has had an ever increasing number of participants not only from within Europe but also outside. This constitutes an important European meeting point for educators, clinicians, stakeholders and researchers dedicated to professional development. The congress has so far taken place in:

- Estoril, Portugal 2004
- Stockholm, Sweden 2008
- Vienna, Austria 2012
- Liverpool, UK 2016 and is planned to be held in Leuven, Belgium 2020

Research methodology and study designs

Utilising research methods to evaluate the cost of physiotherapy service, how they are delivered, outcome measurements and collection of data in routine practice is increasingly important. While RCTs are still considered a higher standard for evidence of efficacy of treatments, it is important to promote a wide range of research studies and methodologies, both qualitative and quantitative in order to achieve evidence

based physiotherapy [36]. For example, clinical case studies and various types of studies that target individualised/tailored treatment are crucial in increasing efforts to understand what treatment works for whom and under which conditions. Thus, very useful information for EBP may be provided by observational studies and descriptive studies, which seem to be most common in physiotherapy [36 and of special use may be well carried out case reports or case-control studies in medicine in general {Concato, 2004 #575, 38}. There is also a need for more meta analyses in physiotherapy and research regarding specific and sensitive outcome measures customised for different conditions of reduced health, and of evaluation of measurement properties of various outcome measures including how they are used and interpreted in specific patient groups. It is therefore essential that physiotherapy is positioned within the research contexts for different scientific approaches: applied, natural and social inquiries. Physiotherapy research is not only about which treatment is effective, but also about education, social issues, management, patient experiences, professional interaction, service delivery, ethics, health in relation to cultural and religious aspects etc. The recent increase in migration and refugees in Europe also calls for a readiness of physiotherapy treatment and research initiatives. Further, strategies to implement research findings are crucial in order to transfer clinical guidelines into factual clinical practice [39].

The importance of clinical research

The particular relevance of clinical research should be emphasised. As the evidence base develops, more studies that directly answer clinical questions and facilitate clinical implementation can be undertaken. Only around 40-50 % of the publications in the physiotherapy journals *Physical Therapy*, *the Australian Journal of Physical Therapy*, *Physiotherapy* and *Physiotherapy Canada*, *Journal of Orthopaedic and Sports Physical Therapy* were related to clinical research and patient care before 2012 [40, 41].

There is a strong positive trend of conducting high quality research in physiotherapy in Europe and worldwide, and there is a substantial body of evidence about the effects of physiotherapy. However, there still remains scope for improvement in the quality of the conduct and the reporting of clinical trials [42] and related research in order to promote the continuous development of evidence that can be applied in clinical practice.

The role of Member Organisations (MOs) and Higher Education Institutions in supporting clinical academic and research careers

Quality research with high standards of education in close combination with clinical competence is crucial, especially considering the present health care systems and the economic difficulties experienced in many countries. Therefore, MOs should support a range of research training and career pathways, which include clinical academic

pathways. The MOs have a crucial role working with government and health care organisations/authorities and research funders to establish training schemes and research positions. The CSP, as part of a Research Forum of Allied Health Professionals, has worked collaboratively with nurses and the UK Clinical Research Collaboration to produce a report *Developing the best Research Professionals*. The report contains recommendations to facilitate the development of a clinical academic training pathway and career framework. This report has been very influential and contributed to the launch of four research training schemes with funding from the Department of Health and Higher Education Research Councils. The four levels of the clinical academic training pathway are: Masters in Research or Clinical Research; Clinical Doctoral Research Fellowship, Clinical Lectureship and Senior Clinical Lectureship [43].

MOs should also strive for initiatives that lead to increased clinical research (see above), and to facilitate career pathways, that is to work towards differentiated clinical positions related to competence in research (Masters, PhD). This is a necessary step towards creating strong clinical environments that work in collaboration with academic centres involved in education as well. Patients and users of physiotherapy services should preferably be involved in all aspects of physiotherapy research, including the prioritisation of research questions.

The European Region has recently established a European Foundation for Physiotherapy and Physical Activity (EFPPA) with the goal of tendering and securing of funding for EU-related projects and the overall management/overseeing/co-ordinating of the same to ensure that the highest standards of research and best physiotherapy practice be integrated to any EU project in which physiotherapists are involved. A further aim is the promotion and enhancement of physiotherapy research at European level in the countries of the MOs by means of acquiring support for research activities/projects relevant to the profession, as approved by the ER. This Foundation may have an important proactive role in supporting the research development in physiotherapy.

Several MOs provide examples of how to finance and stimulate research efforts, and have also documented the significance of these contributions. In the UK as an example, the CSP has dedicated much effort to developing an overall strategy for research, including previously mentioned research priority setting exercises, staffing structure to provide support and guidance to members, networks and support hubs. In many countries the MOs have implemented strategic campaigns to increase research and support education in research. This has resulted in for instance financial support to expand the numbers of professors (Denmark, the Netherlands) with a chair in physiotherapy or guest professors (Sweden). Several MOs (e.g. Denmark, Netherlands, Sweden, UK) have established funds to support research in physiotherapy. In addition, in some countries there is an annual award for the best

academic thesis in undergraduate physiotherapy programmes (e.g., the Netherlands and Ireland). Some MOs have their own research strategic programmes. In Sweden, funding has been available from the MO to support an initial research career including a contribution to present at scientific conferences, mainly supporting physiotherapists involved in master studies or PhD programmes. There is also an initiative to support research efforts by private practitioners. Quite a few MOs have also established scientific professional councils for research policies and support of research networks. These councils serve as advisory boards for research questions.

Scientific journals in physiotherapy or related fields

Disseminating research is of course essential. There is an ever growing number of scientific journals that publish research relevant to physiotherapy (see WCPT list), and with different quality indicators (impact factors, Web of Science, FRIDA ranking of journal level, Norwegian system for ranking [44]). Some MOs collaborate with/support a specific physiotherapy journal which publishes in the proper language to make the research more accessible for the individual member (e.g. Poland, Spain) and “Physiotherapy” is the official journal of the CSP in the UK and indexed in MEDLINE. The MOs in the Nordic countries supported the launch of the “European Journal of Physiotherapy”. The Swedish MO subscribes to the journal providing electronic access to all its individual members in Sweden. Open access is an important principle where there should be no fees for the user to be able to download articles. There is also often a publication fee and awareness should be encouraged also of the researcher and reader of financial interests of publishers [45]. SHERPA RoMEO is an online resource that aggregates and analyses publisher open access policies from around the world and provides summaries of self-archiving permissions and conditions of rights given to authors on a journal-by-journal basis [46]. For dissemination of research, social media can nowadays be used to communicate information about ongoing research or research results.

Conclusions

This paper focuses on making recommendations to the MOs regarding the role of the European Region to highlight principles and encourage processes that promote research in physiotherapy in Europe. Research in physiotherapy is essential for the legitimacy of the profession and in order to develop and to remain an independent, autonomous profession with its own knowledge base. This will lay the foundation for professional practice. Research should be conducted in close connection with education and clinical practice, to ensure the relevant development of knowledge in physiotherapy, which will result in the highest quality health care for the patient.

Activities by the European Region of the WCPT

The European Region shall continue to promote research and evidence based physiotherapy by:

- Providing information on the website related to these topics including links to relevant stakeholders and sites, and in particular to the WCPTs website dedicated to EBP: <http://www.wcpt.org/ebp> This includes a section on databases, journals, EBP learning resources, guidelines, research methodology and ethics. The ER should encourage use of such data bases (for example PEDro, Cochrane, Allied Health Evidence and others) and to follow established clinical international guidelines as well as in participating in building new ones;
- Organising an European Scientific Congress every 4 years where a peer-review process in line with WCPT standards is applied and where the topic of promoting, delivering and implementing evidence based physiotherapy/evidence based practice will always be recurrent;
- Taking initiatives in other professional or multi-professional contexts to discuss opportunities and trends of research in physiotherapy including European perspectives; and
- Supporting research activities through the ER Foundation for Physiotherapy and Physical Activity (EFPPA)

Recommendations for actions by the European Region and the MOs

- 1. Promote networks for physiotherapy research.** Research projects should be undertaken by experienced researchers and in established research environments across the European Region. The ER should promote the establishment of networks or collaborative groups of efforts in physiotherapy research with appropriate channels. The ER could also encourage and support such networks to apply for established EU sources like the Framework Programmes in accordance with the goal of the ER-WCPT Foundation for Physiotherapy and Physical Activity (EFPPA.).

- 2. Increase the number of people with research competencies,** (i.e., PhD and higher levels), both specific to the discipline and interdisciplinary in each member country. The ER and the MOs should **facilitate research careers**, by encouraging, stimulating and rewarding people to go for Masters or PhD exams. This may include offering support and resources or funding/stipends to initiate early stage research careers, or other initiatives for such progress. It is important to advocate the value to the clinical work place of time out or alongside clinical roles to pursue these opportunities. Further, it is equally important to invest in post-doctoral opportunities as well as experienced scientist initiatives to stimulate research development.

- 3. Intra- and interdisciplinary cooperation should be encouraged** around promotion, prevention and treatment for various diagnoses and endorsement of interdisciplinary collaboration is strongly recommended throughout all stages of research development and implementation where appropriate.

- 4. ER-WCPT and MOs would be aware of the priorities of relevant bodies** such as national government departments, funding bodies, WHO and EU that might guide the choice of research or topics for research.

- 5. ER-WCPT, through its Foundation (EFPPA), should work to stimulate areas of research relevant for physiotherapy.**

On a Member Organisation level, it is recommended that:

- 6. Each individual MO has a committee** (or similar depending on internal structures) **that has responsibility for strategy and priorities for research** and to provide advice on issues related to research and development. Such a committee may for example act as primary instance for the health authorities for referrals, submissions for comments and/or general advice on various matters of importance to physiotherapy in a societal context.

- 7. MOs encourage participation in WCPT congress** (e.g. <http://wcpt.org/congress>) **and ER-WCPT congress** (http://www.ercpt.eu/events_and_news/ER-WCPT_congresses) which promote knowledge dissemination based on research and evidence based practice.
 - 8. MOs ensure that the programme for their national congresses is based on the principles of EBP**, that this is highlighted and that networking opportunities are provided in relation to clinical based research. MOs should require that their clinical interest groups/sections raise the profile of implementing research activities as a key tenant of their agenda.
 - 9. MOs should support publication in peer-reviewed journals.** The MOs could consider supporting national journals in physiotherapy to stimulate research development, especially in early phases of expansion. Such efforts have played an important role in the initial development of research initiatives in physiotherapy and offers support to individuals in their development by publishing bachelor's and master's reports for instance.
 - 10. MOs should consider establishing awards and funding to stimulate quality research initiatives in physiotherapy.**
 - 11. MOs encourage the development and use of clinical guidelines** and initiatives to conduct systematic reviews of the literature, with standard criteria scrutinising the reliability and validity of method and moreover, support rigorous process of quality assurance. It is important that professional representatives for physiotherapy take part in the national processes of development of national multi-professional clinical guidelines for best available medical care for various diagnosis or disorders.
 - 12. MOs make use of the Guidelines International Network (GIN;** <http://www.g-i-n.net/>) which has a multi-professional approach to health care, and likewise that the MOs encourage and support participation in conferences arranged by GIN.
 - 13. MOs encourage conducting research that is in accordance with ethical and research standards.** There are several databases, checklists and accepted standards for quality research, several of these are on the ER website. Physiotherapy research should likewise be conducted according to good research governance, which is incorporated in national law procedures in most European countries. The ER and MOs should encourage and advocate for national legal procedures that facilitate international collaboration and research involving students at undergraduate level.
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- 14. MOs work with existing national or international multi-professional registers, or for the establishment of national and international databases of researchers within physiotherapy as well as national registers of relevance for physiotherapy research. Such databases for professions within the health care sector are valuable resources to investigate what kind of research is being conducted and to readily find research experts in different fields when required.**
- 15. MOs support and participate in initiatives and discussions regarding research priorities in physiotherapy at a national level.**
- 16. MOs encourage collaboration with other stakeholders and organisations on both national and international level for research development and implementation of evidence based physiotherapy/evidence based practice by emphasising the need for education programmes to meet the WCPT guidelines of entry-level education. This includes efforts for high quality research based curricula in physiotherapy in the higher education institutes and should equip physiotherapists for research and EBP. Initiatives to support Continuous Professional Development opportunities should also be taken.**

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Appendix 1 – EU Health Research Priorities and Challenges as identified in strategic documents

<p>Advice for 2018–2020 of the Horizon 2020 Advisory Group for Societal Challenge 1, "Health, Demographic Change and Well-being", https://ec.europa.eu/research/health/pdf/ag_advice_report_2018-2020.pdf</p>	<p>THE THIRD HEALTH PROGRAMME 2014-2020 FUNDING HEALTH INITIATIVES https://ec.europa.eu/health/programme/policy/2014-2020_en</p>		<p>EU's Research and Innovation Strategy for Europe (HEALTH) https://ec.europa.eu/research/health/index.cfm</p>
<p>Research priorities</p>	<p>Specific objectives</p>	<p>Thematic Priorities</p>	<p>Key Research Areas</p>
<ol style="list-style-type: none"> 1. Personalised medicine 2. Rare diseases 3. Infectious diseases 4. Non-communicable diseases 5. Paediatrics 6. Public health and prevention including migration 7. Active and healthy ageing 	<p><i>Promote health, prevent diseases and foster supportive environments for healthy lifestyles</i></p>	<ul style="list-style-type: none"> • Risk factors such as use of tobacco and passive smoking, harmful use of alcohol, unhealthy dietary habits and physical inactivity • Drugs-related health damage, including information and prevention • HIV/AIDS, tuberculosis and hepatitis • Chronic diseases including cancer, age-related diseases and neurodegenerative diseases • Tobacco legislation • Health information and knowledge system to contribute to evidence-based decision-making 	<ul style="list-style-type: none"> • Health promotion • Disease prevention • Health services • Health policies • Human development and ageing • Chronic diseases • Brain research • Cardiovascular diseases • HIV/AIDS • Cancer • Diabetes • Rare diseases

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<p>8. Big data 9. eHealth, mHealth, ICT 10. Integration of care 11. Environment and health, green solutions and sustainability including climate change</p>	<p>Protect Union citizens from serious cross-border health threats</p>	<ul style="list-style-type: none"> • Additional capacities of scientific expertise for risk assessment • Capacity-building against health threats in Member States, including, where appropriate, cooperation with neighbouring countries • Implementation of Union legislation on communicable diseases and other health threats, including those caused by biological and chemical incidents, environment and climate change • Health information and knowledge system to contribute to evidence-based decision-making 	
<p>12. Social Sciences and Humanities, integration, inequalities, migration and ethics 13. Sex and gender differences in medicine 14. Commercialisation within “Health, Demographic Change and Well-being” 15. Encouraging stronger and successful involvement of EU-13</p>	<p>Contribute to innovative, efficient and sustainable health systems</p>	<ul style="list-style-type: none"> • Health Technology Assessment • Innovation and e-health • Health workforce forecasting and planning • Setting up a mechanism for pooling expertise at Union level • European Innovation Partnership on Active and Healthy Ageing • Implementation of Union legislation in the field of 	

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		<p>medical devices, medicinal products and cross-border healthcare</p> <ul style="list-style-type: none"> • Health information and knowledge system including support to the Scientific Committees set up in accordance with Commission Decision 2008/721/EC 	
	<p><i>Facilitate access to better and safer healthcare for Union citizens</i></p>	<ul style="list-style-type: none"> • European Reference Networks • Rare diseases • Patient safety and quality of healthcare • Measures to prevent antimicrobial resistance and control healthcare-associated infections • Implementation of Union legislation in the fields of tissues and cells, blood, organs • Health information and knowledge system to contribute to evidence-based decision-making 	