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PHYSIOTHERAPY UPDATES

EVIDENCE-BASED PHYSIOTHERAPY AND TRANSLATIONAL RESEARCH

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ABSTRACT

Healthcare professionals must offer the best clinical care based on the most appropriate scientific knowledge for each individual case, combining the healthcare provider's clinical expertise and experience and the preferences expressed by the informed patient (evidence-based practice). This process prevents the persistence of medical paternalism and increases healthcare quality and outcomes. Evidence-based physiotherapy adapts clinical interventions to the development of scientific knowledge resulting from clinical research and adjusts the application of this knowledge to the healthcare provider's clinical experience and the patient's values and preferences.

As a result of the evolution of evidence-based science, a translational perspective of science and research foresees the direct clinical application of outcomes and acquired knowledge as part of the initial approach to research projects. Therefore, the development of scientific knowledge fosters the improvement of procedures and outcomes in healthcare processes. Taking into account individual biomarkers for predicting disease, evolution and response, it is possible to predict those individuals who have a higher risk of getting a disease or of reacting positively or negatively to a given treatment (predictive healthcare) and predict the most appropriate treatment option for each individual patient (personal healthcare).

Physiotherapy professionals must develop competences that allow them to go through the evidence-based process in their clinical practice: formulate an adequate clinical question, find and assess published scientific evidence and integrate it into their clinical experience, make decisions together with their patients and assess the clinical outcomes of the process. Clinical guidelines and action plans can help in this process related to their everyday clinical practice.

KEYWORDS: Physical Therapy Specialty, Evidence-Based Practice, Patient-Centred Care.

INTRODUCTION

We would like to start this collection of articles on methodology and physiotherapy emphasizing the importance and application of scientific knowledge in clinical practice. Healthcare professionals are committed to and are responsible for offering their patients the best possible diagnostic and treatment options since the highest standard of health is a fundamental human right (World Health Organisation, New York, 1946). In any healthcare intervention, scientific knowledge must be adapted to each specific case and be adjusted to the healthcare provider's expertise and the patient's own preferences. From this central concept derive: evidence-based practice, outcomes research, clinical reasoning, principles of bioethics, patient-centred care, and shared clinical decision-taking, which prevent medical paternalism so deeply entrenched until the end of the 20th century.

Healthcare based on scientific knowledge has existed for, at least, 180 years: healthcare must not only be based on the healthcare provider's experience, so given to speculation, but also on experimental findings that show the effects of clinical interventions in quantifiable or numerical terms (Pierre Alexander Louis, "An Essay on Clinical Instruction", Paris, 1830). But it is not until the 80s and 90s in the 20th century that this concept spreads among medical sciences starting with the concept of evidence-based medicine, which is defined as "the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients" (David Sackett *et al*, 1996), both in clinical practice and in public health policies and programmes.

Evidence Based Practice

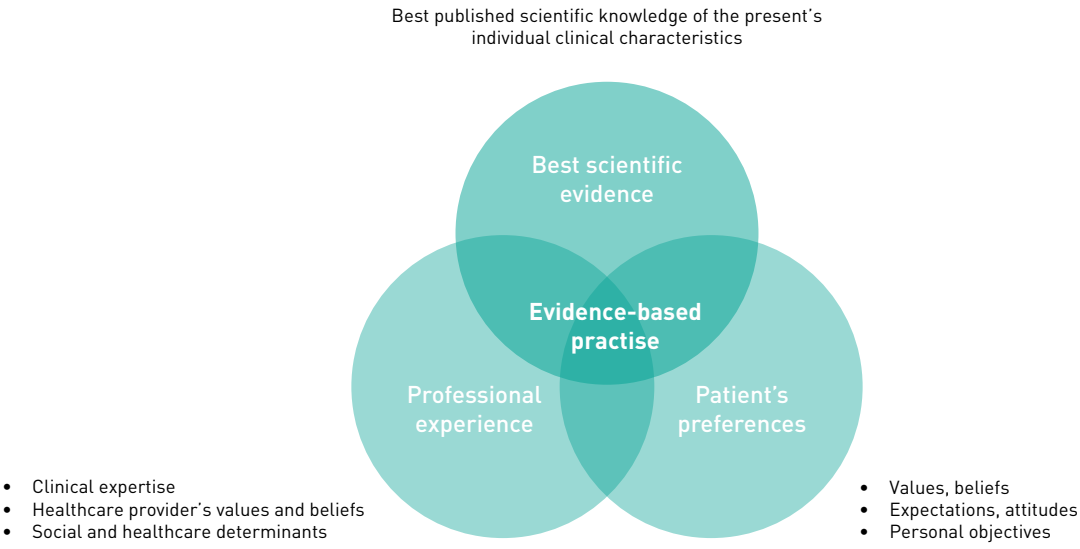
The aim of any healthcare process is to positively affect the patient's health and well-being. The practice of healthcare professions requires that, when making any clinical decision, the best available scientific information is taken into account and adapted to the patient's personal conditions and environment. This is then how the triad of Evidence Based Practice (EBP) is seen as the integration of (Fig. 1):

- the best available evidence applicable to each specific case,
- the clinical experience of the healthcare provider,
- and the informed patient's expectations and preferences.

EBP involves the process of systematic search, critical assessment and application of research findings to clinical practice, in contrast with the old paternalistic approach based on opinions (empiricism) and on the subjective, personal experience of each healthcare professional. Treatment is no longer prescribed according to the doctor's opinion and experience (or fallible memory), allowing therapeutic outcomes not to depend on the opinion, memory or experience of one or another professional. Clinical interventions should be based on the adaptation of scientific knowledge to each individual patient, and so reduce unwanted clinical variability and uncertainty of therapeutic outcomes and increase healthcare quality. Treatments are prescribed because they have proven to be useful in analogous cases

Figure 1

Triad of Evidence Based Practice.



(and they have proven to be more efficient than other alternative options) and because they agree with the patient's expectations and values and the healthcare provider's clinical competence. Clinical interventions are not prescribed based on personal opinions but on knowledge obtained through scientific research.

EBP does not mean treating all patients based on clinical trial results, systematic reviews or clinical practice guidelines; it does not intend to diminish the importance of clinical experience or of knowledge and experience acquired throughout the years; it does not limit the freedom of healthcare professionals at decision-taking. EBP aims to integrate personal clinical experience with systematic and revised experiences of researchers all over the world (published evidence) in order to adapt clinical decisions and increase the efficiency of medical interventions by offering the patient the right to "enjoy the highest standard of health".

When facing the claim that a particular treatment "works" or that it is "the best treatment", what must be asked is "Is it the 'best'? Why and who for?". The biospsychosocial approach to healthcare is based on the correct application of scientific evidence adapted to each specific circumstance taking into account the informed patient's environment, expectations and preferences.

Evidence Based Physiotherapy (EBP)

In 1999 the Evidence Based Physiotherapy Centre (EBPC) was founded, shortly after the appearance of Evidence Based Medicine (EBM) and Evidence Based Nursing (EBN). The 2001 congress of the World Confederation for Physical Therapy (WCPT) focused monographically on the implementation of EBP in physical therapy, shaping and putting EBP on the same level as other healthcare sciences. The WCPT defines physiotherapy as a "science-based healthcare profession that emphasises the use of physical means in the promotion, maintenance, and restoration of our physical, psychological, and social well-being taking account of individual variations in health" and the EBCP stresses that "effective physiotherapy focuses on the patient and on safe and technically expert prevention based on the best available evidence and efficiently managed":

EBP means adapting clinical interventions to the progress of knowledge and technology, requiring a regular review of new scientific evidence. Clinical research uses the experimental scientific method to reach conclusions that can provide new data about the clinical usefulness of a procedure or theory and, this way, improve diagnostic capacity, assessment reliability, and effectiveness of treatment or prevention approaches, allowing physiotherapy practice to move forward. This places major importance on basic and applied research as the core of healthcare-related activities and the dissemination of new knowledge (publication of results).

Translational research

Basic research allows the development of scientific knowledge but applied research is fundamental in order to obtain useful evidence for clinical practice. Translational research proposes that any investigation effort translates into direct benefits so that, from the very early stages of project design, the direct application to clinical practice is anticipated (from bench to bedside). Translational research is the most advanced stage of evidence based science, which aims to hasten the transference (translation) of new knowledge into innovations for clinical practice. Conversely, it also intends clinical practice to stimulate research in the most practical sense for the community. Therefore, a translational scientific approach is the bridge between research and clinical practice.

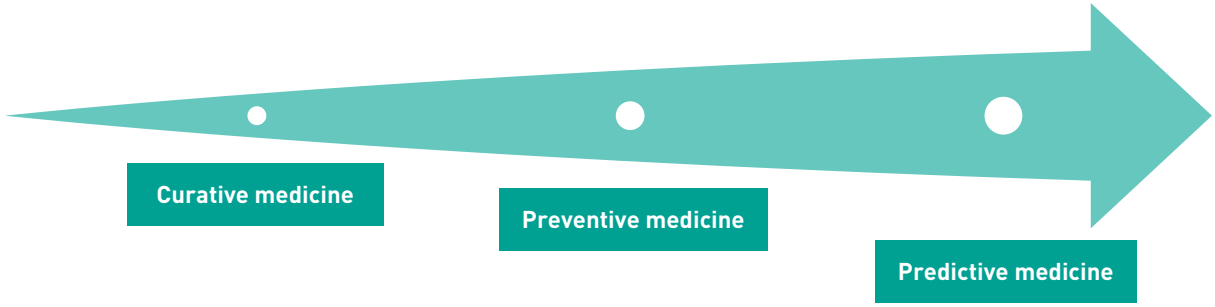
From translational research come predictive healthcare and personalised healthcare, more specifically from the concept of health biomarkers that can predict the patient's response in a clinical intervention. A biomarker is any kind of quantifiable biological measure of a process correlated with a physiological, pathological or clinical observation: a characteristic that is recognised as an indicator of the relationship between the patient and his/her disease, the medical technology and procedures available or the patient's response to treatment. Biomarkers are useful to define a diagnosis, prognosis or therapeutic indication as well as to measure treatment response and monitor the patient's evolution.

The development of predictive healthcare is changing traditional disease-based systems (curative medicine), which in Western Europe have already evolved into health-based systems (preventive medicine), to positively defined systems predicting the probability of disease in each individual person (predictive medicine), allowing individualised preventive measures adapted to each person (illustration 2), preventing the appearance of disease or minimising its impact, acting on each individual instead of dealing with prevention from the point of view of populations.

Personalised medicine (from which precision medicine derives) manages healthcare interventions based on the study of each patient and his/her biomarkers, offering the right treatment to the right patient with the right condition, at the right moment and with the right intensity and duration. Biomarkers allow planning "tailor-made treatments" beforehand (individualisation), taking into account the patient's background and therapeutic response prediction.

Figure 2

Evolution of health systems, from disease-based systems to prevention-based and disease prediction systems.



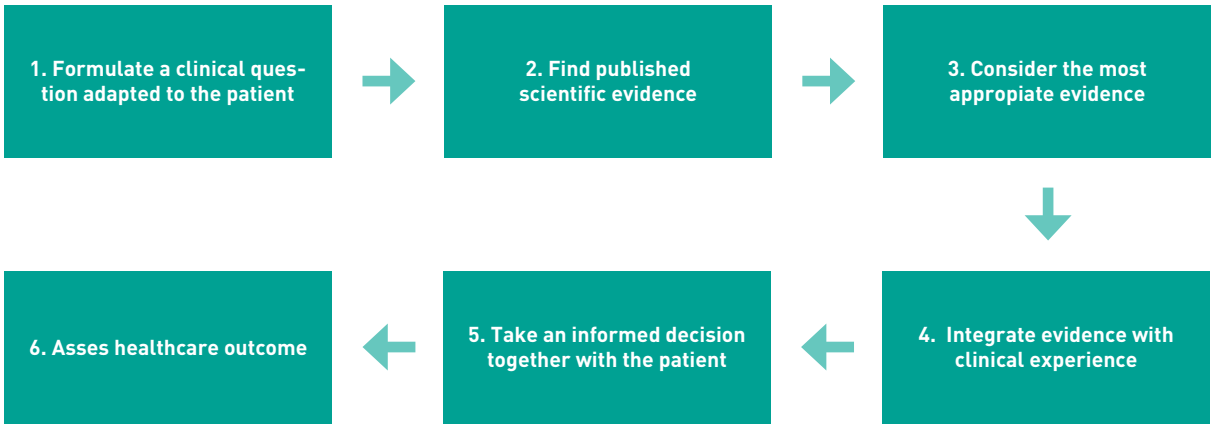
As in any other healthcare discipline, physiotherapy professionals need to develop competences and abilities that allow them to follow all the necessary steps to apply EBP in their clinical practice (illustration 3):

1. Formulate a clinical question adapted to the patient's reality (clinical reasoning: identifying the problem).
2. Find scientific evidence regarding a topic (searching for the best evidence in the scientific literature).
3. Consider the most appropriate evidence for the medical case at hand (critical reading of the selected scientific literature).
4. Integrate the evidence with clinical experience (designing diagnostic or therapeutic plans and clinical guidelines).
5. Take a clinical decision together with the informed patient (patient-centred care and shared decision making).
6. Assess the outcomes and compare them to reference values (outcomes analysis and clinical research).

Tools like clinical guidelines and intervention plans are of great help to EBP since they help physiotherapy professionals to simplify this process. Each of these steps will be further developed in the next articles to be published in this series about methodology.

Figure 3

6-step sequence of Evidence Based Practice.



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