Physical therapy: past, present and future- a paradigm shift

Senthil P Kumar PT, (PhD)*

ABSTRACT

Physical therapy as a profession has its roots to earliest of time, when the techniques were used for treatment much earlier than that of origin of the very term “physiotherapy” itself. This professional discussion paper is a review of the past, present and future of physical therapy as a profession in its three roles- educator, clinician and researcher. The ensuing paradigm shift in favor of advanced teaching methodologies and pedagogies evolved the present situation of physical therapy education. The shift from evidence-based practice to an evidence-informed one witnessed clinical therapists to pursue continuing educational programmes and professional development. The growing evidence in terms of increasing randomized controlled trials in physical therapy indicated development of quality clinical practice guidelines to translate evidence into practice. Professionalization in physical therapy needs a shift towards professionalism to move physical therapy forward in all three core areas of the profession.

Key words: Professionalism, physical therapy, history, paradigm shift

Author’s information:

* Corresponding author. Associate professor, Dept of Physiotherapy, Kasturba Medical College (Manipal University), Mangalore, India. senthil.kumar@manipal.edu

INTRODUCTION

“Learn from yesterday; live for today; hope for tomorrow; the important thing is not to stop questioning.”

- Albert Einstein.

Welcome to the second issue of Journal of Physical Therapy. The aim of this editorial in this issue of Journal of Physical Therapy is to enlighten our readers about history of our profession, its development from past to the present whilst presenting global challenges and rising opportunities for the future. The description of editorial will include the historical note on origin of the term “Physiotherapy” and then the paradigm shift that ensued along the three well-recognized roles of a Physical Therapist; as an educator, a clinician and a researcher.

Historical perspective- Physiotherapy/ Physical Therapy?

Development of a discipline owes to its ability for a clear vision to “look back to its roots” and to answer simple questions directed on the very name of the discipline. Questions such as, “how did the name originate?”, “who invented the term?” and “when was it first used?” etc would facilitate though-provoking efforts, the answers of which indicate high levels of professional integrity and professionalism.

The word “physiotherapy” in English owes its origin to Dr Edward Playter (1834-1909), way back in 1894, when he reported in Montreal Medical Journal, on page 816; (figure-1). A military physician Dr Lorenz Gleich (1798–1865) from Bavaria was the first to use the term physiotherapy in its earlier German language version, “physiotherapie” in his article in the year 1851. As we step into 160th year of our profession, the original French term “physiotherapie” got changed in English into “physiotherapy” and then to physical therapy.

Key points and pre-publication history of this article is available at the end of the paper.

Distributed in Open Access Policy under Creative Commons® Attribution License 3.0
The application of these natural remedies, the essentials of life, as above named, may be termed natural therapeutics. Or, if I may be permitted to coin from the Greek a new term, for I have never observed it in print, a term more in accordance with medical nomenclature than the words hygienic treatment commonly used, I would suggest the term, Physiotherapy.

There are a number of definitions of the physiotherapy profession. The definitions vary across the globe with associations and professional bodies adopting their own way of describing what WCPT defined below in a comprehensive manner.

Definition of Physiotherapy/Physical Therapy:

The World Confederation for Physical Therapy (WCPT), the renowned global organization for physical therapy for instance, defines physiotherapy as:... providing services to people and populations to develop, maintain and restore maximum movement and functional ability throughout the life-span. Physiotherapy involves the interaction between physiotherapist, patients or clients, families and care-givers, in a process of assessing movement potential and in establishing agreed upon goals and objectives using knowledge and skills unique to physiotherapists.¹

The WCPT definition emphasizes the “action-orientedness” in the definition of the very term itself. For a successful transformation and progressive growth, enhanced understanding of the profession and its basis is thus a need-of-the-hour in Physical Therapy. The solution lies in studying the professional dimensions along lines of a paradigm.

A paradigm is defined a model that directs actions; that is, an action-strategy or approach that guides activities in a specific field. A professional paradigm means that a person within a particular profession has adopted a certain way of thinking. Physical Therapy professional paradigm includes four inherent components through which the identity of physiotherapy can be defined: interest (what one desires), competence (what one knows/one can do-cultural, communicative, sociocultural, linguistic, socio-ethical), world view (understanding of the field of practice), and view of science (comprehension of particular strategies, methodologies and ideals).²

Physical Therapists have three basic functions as professionals in the professional paradigm—educator, clinician and researcher. The three roles coincidentally develop in accordance with continuous and progressive wholistic development of knowledge, experience and skill.³ Now we take a look at each of them in detail, to observe and analyze the trend through the years so that we can learn from the past and aptly apply them for use in the future. As one paradigm shifts backwards to the past improving our present understanding, there are the other paradigms that shift forwards into the future.

Physical Therapist as an Educator—past, present and future:

Fundamental to growth of profession and its physical therapy past, present and future

Figure 1- Cut out from the article by Dr Edward Playter in 1894.²
Physiotherapy - past, present and future

Kumar SP

Presently, the World Confederation of Physical Therapy (WCPT) recognizes there is considerable diversity in the social, economic, cultural, and political environments in which physical therapist education is conducted throughout the world. WCPT recommends physical therapist entry-level educational programs be based on university or university-level studies, of a minimum of four years, independently validated and accredited as being at a standard that accords graduates full statutory and professional recognition. WCPT acknowledges there is innovation and variation in program delivery and in entry-level qualifications, including first university degrees (Bachelors/ Baccalaureate/ Licensed or equivalent), Masters and Doctorate entry qualifications.

Clinical practice - past, present and future:

Greek physicians including Hippocrates (460-370 BCE) are believed to have been the first practitioners of physical therapy, advocating massage, manual therapy techniques and hydrotherapy to treat people.

During the second half of the 19th century, a period of increasing specialization in the field of medicine, terms like “physical medicine,” “physical therapy,” “physiotherapy,” and the like came into use to categorize the various healing methods of exercise, manipulation, and massage (also collectively known as mechanotherapy), hydrotherapy, balneotherapy, electrotherapy, light therapy, air therapy, and heat and cold associated with number of full-time faculty in those academic institutions. One of the highly acclaimed education models in the present day Physical Therapy curriculum is problem-based learning. The future would be a witness to curricular developments and application of an integrated curricular model such as Client-Oriented Research and Evaluation (CORxE) best practice model and CORxE clinical decision-making model. The model was formed by integrating Hypothesis-Oriented Algorithm for Clinicians (HOAC); collaborative clinical reasoning; inter-relationships of theory, clinical models and research; and the Evidence-Based Practice circle.

To present knowledge, the first documented development of a professional school for Physical Therapy education (as was required to be entry-level program) was seen in 1913, with the School of Physical Therapy at University of Otago, New Zealand and in 1914 at Reed College at Portland, Oregon, USA. Now there are approximately schools in 80 countries teaching Physical Therapy at various entry-level programmes recognized and approved by their regional governing bodies/associations around the world. Wide variation in the number of Physical Therapy schools-per-country ratio exists where Slovenia has only one Physical Therapy school and USA having 202 schools whereas a country like India has 171 schools.
therapy (thermotherapy) under one heading.\textsuperscript{12}

Historically documented description of practice and development of physical therapy did date not earlier than late 19\textsuperscript{th} century. The techniques though were used through the ages- some of them were hydrotherapy, massage, mobilization, assisted functional training- they were not recognized as apart of the field till the term “physiotherapie” was coined in 1851.

In 1894, The Society was founded by four young nurses: Lucy Marianne Robinson, Rosalind Paget, Elizabeth Anne Manley and Margaret Dora Palmer. They set up the Society of Trained Masseuses to protect their profession from falling into disrepute as a result of media stories warning young nurses and the public of unscrupulous people offering massage as a euphemism for other services. By 1900, the Society acquired the legal and public status of a professional organization and became the Incorporated Society of Trained Masseuses. In 1920, the Society was granted a Royal Charter. It amalgamated with the Institute of Massage and Remedial Gymnastics. As the Chartered Society grew in strength, branches and local boards were established all over the country and in 1944 the Society adopted its present name, the Chartered Society of Physiotherapy (CSP), being more representative of the field of work it covered.\textsuperscript{13}

In 1916, there was an epidemic of poliomyelitis or most popularly known as polio in New York and New England. Many cases of poliomyelitis can lead to temporary paralysis, but without proper treatment the paralysis can be lifetime effect. During this period, there were documentation of young women treating patients of the “polio” epidemic using passive movements and this was also the period when manual muscle testing was established in its use by physiotherapists.

It was during this time that Mary McMillan, the first physical therapy aide, established the American Women's Physical Therapeutic Association. The organization's name was later on changed to the American Physical Therapy Association (APTA). Due to her significant contribution in the reconstruction aide services, Mary McMillan came to be known as the 'Mother of Physical Therapy'.

World War II prompted another historical period where physical therapy became widely used to care for patients. Physical therapy was used and showed impressive results in veterans who have been injured in the Korean and Vietnam wars. This signaled the start of using physical therapy in hospital and medical programs. Physical therapists were getting recognized as reconstruction aides and rehabilitation specialists for the victims of war.\textsuperscript{14}

Treatments in this decade were mostly exercise, massage and traction. During 1950s, physical therapists started learning and doing procedures in the spine and other joints. These manipulative procedures improved through continuous research and studies. The so- happened adoption of manual therapy techniques into Physical Therapy thus forming a specialty of Orthopaedic Manual Physical Therapy revolutionized the development of the field itself. Until the early 1950s, physical therapy was performed only in hospitals. It was only in the late 1950s that physical therapists started treating the patients beyond hospitals. Public schools, universities, skilled nursing facilities, medical centers and rehabilitation centers were chosen by the physiotherapists to treat their patients.

Eventually in 1974, the International Federation of Orthopaedic Manipulative Therapists (IFOMT) was formed. This organization has then played and is continuously playing a major role in the advancement and development of physical therapy. The history of IFOMT is inevitably intertwined with the development and rise of physical therapy. The growth of physical therapy over the last fifty years has been phenomenal. Paralleling that growth has been the rise of manual and manipulative therapy. Indeed much of the vigor and ideas for growth
Professional discussion

have come from this group. In each country there have been leaders who have seen the future and striven for it. Manual therapists have been foremost in that leadership and whether pushing for physical therapy or for manual therapy they have elevated the standing and maturity of both. Today, therefore, physical therapy can look with pride on the accomplishments of manual and manipulative therapists. Several physical therapists who made notable contributions through manual therapy in the field of physiotherapy were members of the IFOMT organization are detailed in historical paper by Peter Huijbregts in our first issue of Journal of Physical Therapy. Three macro-paradigms exist in Physical Therapy clinical profession. They are science (actions aimed at describing and explaining functions), art (aesthetic factors) and religion (ideology, values and ethical factors). The American Physical Therapy Association emphasized this in its National Physical Therapy month for October 2007 in its logo-Physical Therapy: science of healing and art of caring. Physiotherapy has been subject to considerable criticism for its lack of research and its sparse evidence-base. It has often been perceived as a profession that bases its practice largely on anecdotal evidence, and uses treatment techniques that have little scientific support.

Clinical decision-making in Physical Therapy was considered synonymous to patient’s problem solving. Earliest report of problem-solving model in clinical patient management dated back to 1980s. The therapeutic decisions though initially relied on anecdotal evidence of personal experience and expert opinion, later realized the importance of hypothesis-generation by application of hypothesis-oriented algorithm for clinicians. This model was modified and organized with a much better and globally recognized clinical reasoning model. Recent amassment of research findings and publications witnessed application of evidence-based practice model and the ICF (International Classification of Functioning, Disability and Health) model. The future would definitely support an integrated problem-solving model for successful clinical management and patient-centered clinical outcomes.

In clinical Physical Therapy practice, though documentation is widely practised, an audit revealed 86% cases lacked other aspects of documentation except of initial day of assessment, lacked objectivity, limited range of measurement parameters used, and absence of functional assessments. The above issue also raises serious questions about both critical aspects of the professionalism of physiotherapists in the hospital environment, and the effectiveness of their treatments. Art is testing the limits and leaving a thorough, logical, and reproducible trail for others to view and follow and that is the basis of science. Therefore, the art and science of medicine are inextricably intertwined and you do not have art without science nor science without art. Reproducibility is difficult in both art and science. Documentation is the only direct path to appreciate “art” and to understand “science.” Changes in health policies, prioritization and funding continue to influence a great deal, on the practice issues and patterns, if not therapists’ attitudes and decisions. There are two proposed solutions to this issue- the need for improved methodology in workforce development research to explore patient outcomes as much as outputs; and the potential for physical interventions (including physiotherapy) to be enhanced by a better understanding and response to how people think, respond and behave. Scope of Physical Therapy practice-The scope of physiotherapy practice is influenced by the ratio of qualified physiotherapists to the population. The number of physiotherapists per head of population varies enormously, particularly within the AWP region, ranging from 1:1,750 in particular region being 1:60,000 people. In Ethiopia there are approximately 14 physiotherapists for 60 million people.

With the emergence of patient-centered care, consumers are becoming

Physical therapy past, present and future

Kumar SP

**Professional discussion**

effective managers of their care- in other words, "effective consumers." To support patients to become effective consumers, a number of strategies to translate knowledge to action (KTA) have been used with varying success. The use of a KTA framework can be helpful to researchers and implementers when framing, planning, and evaluating knowledge translation activities and can potentially lead to more successful activities. Using the framework, tailored consumer summaries, decision aids, and a scale to measure consumer effectiveness were created in collaboration with consumers.29

**Research- past, present and future:**

Journals are acknowledged as crucial sources of evidence-based information relevant to physiotherapy practice.30 The first research about physical therapy in the United States was published in March 1921 in The PT Review.14 The first RCT in Physical Therapy evaluated Ultra-Violet radiation therapy and was published in 1929 by Dora Colebrook in Medical Research Council Special Report Series.31,32 Initially the RCTs were published in medical journals and not until 1967, for the first time an RCT evaluating physical therapy intervention was published in a physical therapy journal. This unique credit goes to author- Landen B whose study evaluated superficial heat vs. cold in LBP and was published in Physical Therapy journal.

The first systematic review was published in 1975 by Kolind-Sorensen which was on lateral ankle ligament injuries in a Danish journal Ugeskr Laeger. The first evidence-based clinical practice guideline was published in the year 1987, a report of the Quebec task force on spinal disorders which was on activity-related spinal disorders by Spitzer W in Spine.31 In the recent past, systematic review of systematic reviews also came to be published, on Spinal Manipulation33 in Chronic LBP.34

The rapid growth of evidence as witnessed by the presence 1 record in 1929 to 100 records in 1972, to 1000 records in 1986, 5000 in 1999 and to 10,000 in 2005 is an indicator of a rapid shift towards research and evidence-based practice.29 Presently as on March 2010, there are 15,920 records in Physiotherapy Evidence Database35 which includes 2257 systematic reviews and 13,096 randomized controlled trials and 567 clinical practice guidelines in physiotherapy alone. As we observe the growth of evidence when analyzed specialty-wise, Musculoskeletal holds the highest position with more than 2,000 records followed by Cardiothoracic with less than 1,250 records.31

Region-wise, 1,037 studies were on treatment of lumbo-pelvic disorders and condition-wise, there were 173 records “surprisingly” for incontinence alone. Regarding dissemination of “this” evidence, it is a rare occurrence that only 3% of this number (340 out of 11,494 records as on September 3, 2007) was published in general medical journals.31 It is not a matter of pride that 97% of physiotherapy evidence is published in physiotherapy journals like Physical Therapy, Physiotherapy, Journal of Physiotherapy (formerly Australian Journal of Physiotherapy) and Physiotherapy Canada. It is indeed a matter of question and uncertainty why physiotherapy evidence is not published in general medical journals. The need of the present hour to improve inter-disciplinary awareness and multi-disciplinary collaboration in clinical practice is achievable only if Physical Therapy scientific community works in liaison with other medical community towards solving this issue, if we really mean to aim global professional autonomy in practice.

The existing researcher-clinician gap should be minimized in order that- improved application of best research findings and evidence into practice; and also for generation of best research evidence from expert clinical practice- can go hand-in-hand towards betterment of our society and our profession.36 Research or science in Physical Therapy has changed from positivism (verifiable by observation) to hermeneutics (based on understanding) and then finally to pragmatism (based on actions).3 The existing researcher-clinician gap should be minimized in order that improved application of best research findings and evidence into practice; and also for generation of best research evidence from expert clinical practice- can go hand-in-hand towards betterment of our society and our profession.36 Research or science in Physical Therapy has changed from positivism (verifiable by observation) to hermeneutics (based on understanding) and then finally to pragmatism (based on actions).3

**Physical therapy- past, present and future**
supposedly different philosophies- positivism and phenomenology. Positivism relied on quantitative research methods and phenomenology relied on qualitative ones. Combining science (which is objective and is based on the body) and art (which is subjective and is based on the mind) using an inextricably blended mixed model of quantitative-qualitative research is essential. Professional autonomy is achievable through the following five steps outlined by Professor Stanley Paris in his keynote address at Biennial conference of New Zealand Society of Physiotherapy (NZSP) in 2008, as definition of scope of practice; research; clinical doctorate programs; marketing; and, maintenance and advancement of our autonomy.

Summary-professionalization to professionalism:

It is extremely essential to transform the physical therapy profession from professionalization into professionalism.

Professionalization and professionalism, as distinct entities according to Julia Evetts.

Professionalization is a series of diverse and variable, social and historical processes of development, of how work sometimes becomes an occupation, and how occupations achieve various forms of occupational control of work sometimes called professional.

Professionalization occurred in physical therapy in its practice areas in diverse fields of medicine (from obstetrics to geriatrics and palliative care) directed towards patient care from before birth till after death (bereavement care).


Professionalism as defined by Julia Evetts.

Professionalism includes those aspects of the occupational control of work which are in the best interests of customers, clients and patients, as well as in the advice-giving, lobbying and sometimes oppositional aspects of professions’ relations with states, legislative bodies, and regional and local administrative agencies.

Herbert Swick outlined nine main attributes of professionalism as:

- Subordination of one’s own interests to the interests of others
- Adherence to high ethical and moral standards
- Responding to societal needs
- Evincing core humanistic values
- Exercising accountability for themselves and for their colleagues
- Demonstration of a continuing commitment to excellence
- Demonstration of a commitment to scholarship and to advancement of their field
- Dealing with high levels of complexity and uncertainty
- Reflection upon one’s own actions and decisions

Professionalism is the key to move physical therapy forward, in all the three core areas of education, practice and research. Studies on professional development and impact of professional development programmes
Professional discussion

<table>
<thead>
<tr>
<th>Core values of professionalism</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accountability</td>
<td>Accountability is active acceptance of the responsibility for the diverse roles, obligations, and actions of the physical therapist including self-regulation and other behaviors that positively influence patient/client outcomes, the profession and the health needs of society.</td>
</tr>
<tr>
<td>Altruism</td>
<td>Altruism is the primary regard for or devotion to the interest of patients/clients, thus assuming the fiduciary responsibility of placing the needs of the patient/client ahead of the physical therapist’s self interest.</td>
</tr>
<tr>
<td>Compassion/ caring</td>
<td>Compassion is the desire to identify with or sense something of another’s experience; a precursor of caring. Caring is the concern, empathy, and consideration for the needs and values of others.</td>
</tr>
<tr>
<td>Excellence</td>
<td>Excellence is physical therapy practice that consistently uses current knowledge and theory while understanding personal limits, integrates judgment and the patient/client perspective, challenges mediocrity, and works toward development of new knowledge.</td>
</tr>
<tr>
<td>Integrity</td>
<td>Integrity is steadfast adherence to high ethical principles or professional standards; truthfulness, fairness, doing what you say you will do, and “speaking forth” about why you do what you do.</td>
</tr>
<tr>
<td>Professional duty</td>
<td>Professional duty is the commitment to meeting one’s obligations to provide effective physical therapy services to individual patients/clients, to serve the profession, and to positively influence the health of society.</td>
</tr>
<tr>
<td>Social responsibility</td>
<td>Social responsibility is the promotion of a mutual trust between the profession and the larger public that necessitates responding to societal needs for health and wellness.</td>
</tr>
</tbody>
</table>

Table 1: Seven core values of professionalism according to American Physical Therapy Association (APTA)\(^{42}\)

though plenty, do not adequately reflect the knowledge, attitudes, beliefs and experiences of therapists in seven core values of professionalism namely accountability, altruism, compassion/caring, excellence, integrity, professional duty, and social responsibility (table-1)\(^{42,43}\). Such a professionalism-based paradigm shift is evidently the need of the hour to weather the storm\(^{48}\) of challenges and opportunities facing us. Come on, therapists, let’s embark on the noblest role of mentorship.\(^{49}\)

ACKNOWLEDGMENTS
None.

CONFLICTS OF INTEREST
None identified.

REFERENCES


Professional discussion


40. Kumar SP. Physical therapy in palliative care: from symptom control to functional independence- a critical review. Indian J Palliat Care. (In review, as on 5th June 2010).


Key points:

Past- The techniques used in Physical Therapy were used well before the name “Physical Therapy” came into existence. History is filled with moments of milestones and of pride.

Present- The recent developments are owed mainly to international collaborations especially in research and its dissemination.

Future- We need to perform a thorough reflection and strategic planning in our doctoral programmes, practice autonomy and imparting professionalism among therapists. Impact analysis of such paradigm shift is thus warranted.