

## Today's physios have an awesome responsibility!

I hope journal readers will allow an elder to muse on the differences between when I graduated as a physio in 1957 and the practice climate of the 21st century. While the basic purpose of the profession has not changed, simply put, to habilitate or rehabilitate individuals to their fullest potential, the education, scope and manner of practice is vastly changed. These changes have made physiotherapy a far more exciting and challenging profession, with a diversity of career options. These changes however, also imply a greater responsibility.

We now live in a highly jargoned world, we dialogue rather than talk or discuss; we claim our practice is evidence-based, or best practice-based. We have dropped therapies, such as massage from physiotherapy education though many private practices around the world include a massage therapist. Although there was insufficient evidence to retain massage within the curriculum, it apparently is acceptable to include such a therapist within group practice. Also, while evidence for efficacy of electrotherapy remains weak, multi-technique therapy within one session is common. Clients often receive ultra-sound, acupuncture, traction, and interferential therapy, often with no posture, exercise or life-style advice. Is this evidence-based? Best practice? I think not and fear billing issues are governing some physiotherapy practice. There is that perennial problem of aligning theories of practice with actual practice and its financial needs.

The service physiotherapy provides should be unique and essential, and with proven effectiveness and efficacy. As Jette (2012) noted in his recent McMillan lecture, physiotherapy needs to focus on establishing what "works", rather than proving that physiotherapy is effective. Jette (2012) stressed the profession's need to widely use standardized outcome measures. It is also critical that clinicians use these measures as validated and not make minor changes that annul the ability to combine and compare results across multiple studies. Clinicians need to "not just talk the talk but to walk the walk" (Walker 2002).

In the mid-50s the curriculum contained 80 hours of massage. Physiotherapy textbooks could be counted on one hand; I do not recall using journals. There simply was no evidence other than anecdotal, for physiotherapy techniques and modalities although physiological effects were claimed. Physiotherapists, including academic faculty who spent most of their time teaching, conducted almost no research. The Chartered Society of Physiotherapy in Britain had commenced its Fellowship programme, which led to the development of early case studies that provided some basis for clinical practices.

Comparing then with now is rather like Rip Van Winkle waking up from his 30 years of sleep to find a totally different world. For example, there are now over 100 professional journals, increasingly available on-line. There is an abundance of textbooks on all aspects of the profession by physiotherapists. Sadly this abundance of reference material requires great vigilance by today's physiotherapists since many are poorly referenced, lack evidence for the described techniques or rely on secondary references. Sadly there is also an abundance of post-graduate/continuing education courses, where attendees often pay considerable fees but fail to challenge presenters for

evidence of their approach, or investigate their credentials to be an authority on the topic. Back in the late 1950s and 1960s opportunities for further education were limited. We were, however, unlike current students, not taught to listen and read critically. Today's students are exposed to courses on research, evaluation of research, along with vital courses on health care law, and ethics. Day-to-day practice in the 21<sup>st</sup> century is infinitely more challenging and contains more inherent dangers and responsibilities.

The diversity of media sources, the ease by which therapists can quickly obtain 300, 600 or more references can be overwhelming and leads many to only read abstracts and inadequately scrutinize the study conducted. Hence there has been a rise in a body of literature to teach health professionals how to read different types of papers; to sort the wheat from the chaff, to determine what is worth reading and what should be discarded (Helewa and Walker 2000).

What were the career paths of the 50s? Most physiotherapists were in hospital practice, a few in private practice and physiotherapy education. Increasingly today, hospital outpatient departments are closed, and many more are employed in private practice. Entry-level education ranges from the baccalaureate to a professional doctorate, although the evidence for the ever-increasing higher degrees lacks rigor. The scope of current practice is enormous – ranging from frontline triage in the USA armed forces, physiotherapy diagnoses, first-contact practice, intra-articular injections, to name a few. The potential for malpractice has greatly increased and it is of interest that currently there is a debate on whether cervical manipulations should be abandoned by physiotherapy (Copeland 2012).

Current graduates face challenges we never considered. For us jobs were plentiful. Our main concerns were, where we bursary students would be sent for the first 2 years, and would we land a sole charge position on graduation. Employment overseas was easily obtainable; NZ Physiotherapy enjoyed a strong reputation. The recent economic recession world-wide, closure of many hospital positions, restrictive financing for individuals requiring physiotherapy, and changing standards internationally, have made procuring positions much more difficult for today's graduate. However, I also suspect that today's graduates, better educated, are more versatile and better equipped to maximize opportunities. They also have the capacity to demonstrate that physiotherapy not only can be effective but also cost-effective.

Finally, may I challenge current practitioners to ensure that the profession addresses the full scope of health problems, in particular the sadly neglected areas of chronic and secondary disabilities, as well as the looming problem of the seniors' explosion. Dementia now predicted to affect over 65 million people within a few decades. I am concerned about the prevalent interest in treating healthy individuals with a high potential to return to their former level of activity. When I graduated the needs of patients with poliomyelitis dominated health care. Today and tomorrow it is the need of the ageing population to retain their independence, and the needs of individuals with cerebral palsy, muscular dystrophy and cystic

fibrosis, to name a few, whose lives have been extended for several decades by modern health care.

Clinicians need to be as effective as possible in the least amount of time as possible. More is not necessarily better. Pursue specialization but not at the expense of always considering the client as a whole. Current knowledge of neurophysiology, motor and cognitive learning, is I believe as important to musculoskeletal specialists as knowledge of muscles, joints and kinesiology is to the neurology specialist, to give a few examples. Other health care professions have adopted a more administrative role but I believe that our profession, physical therapy is, at its heart, a hands-on, caring profession and should never lose sight of that core. Numerous other disciplines and professions are reaching out for a 'piece of the rehabilitation pie' and if physical therapy is to be *first among many*, not just *one of the many* (Walker 2002), our practice must be holistic and with a scientific basis.

For the clinician of today and tomorrow, first access, autonomous practice, and physical therapy diagnoses carry an

## HAND MADE HISTORY

# Electromagnetic therapy: fact or fiction

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## Electrotherapy and electromagnetism

Electrotherapy and electromagnetism have recently been reintroduced into medicine, principally in the field of locomotor systems. Extravagant claims have been made and the various techniques in use have been disputed vehemently. Is this another example of the 'Emperor's clothes' phenomenon or is there somewhere a germ of truth?

### Historical

Four hundred and fifty years ago Theophrastus Bombastus Paracelsus von Honenheim reported on the use of magnetic iron rodlets which, when adequately placed, 'Heal fractures and ruptures, pull hepatitis out and draw back dropsy, also healing fistulae, cancer, and blood flows of women'. Naturally, such claims did not endear Paracelsus to the medical establishment of the day, and his observations were not investigated again until Franz Anton Mesmer, a qualified physician, began to study magnetism in the 18th century. He achieved cures with his iron rod magnets, but unfortunately, later moved on to the transmission of 'magnetic forces' by the laying on of hands.

In the course of the 18th century, basic studies on electricity were carried out by Franklin, Lavoisier, Galvani and Volta. Some of these studies are still done by every medical student today. At the end of the 18th century, Michael Faraday discovered

awesome responsibility and a greater potential of legal issues. A critically thinking and constantly evaluating clinician will better overcome these hurdles.

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## REFERENCES

- Copeland J (2012) Should cervical manipulation be banned? *Physio Matters* July:10.
- Helewa A and Walker JM (2000) Critical Evaluation of Research in Physical Rehabilitation: Towards an Evidence-based Approach. WB Saunders, Philadelphia.
- Jette A (2012) Face into the Storm, 43<sup>rd</sup> McMillan Lecture. *Physical Therapy* 92(9): 1221-1229.
- Walker JM (2002) Will Physiotherapy be first among many, or will it simply be one of the many? Enid Graham Memorial Lecture Award. *Physiotherapy Canada*, 54(4):226-232.

electromagnetic induction, and based on his work, inventors in England developed in 1869 a device into which the patient was placed. The device produced magnetic waves which flowed lengthwise through the patient. Outside of Eastern Europe, such devices were regarded as the implements of quacks and charlatans.

Electromagnetism began its long trek back to orthodox medicine with a classic experiment of Fukada and Yasuda<sup>1</sup> which demonstrated the piezo-electric property of bone. Piezo electricity is a property of anisotropic crystalline structures and consists of elastic and electric oscillations in reversible causality. Elastic and electrical polarisation has a linear dependence; both can be produced not only through mechanical forces, but also through the forces of an electric field. This gave the first rational explanation of Wolff's law that in bone, function determines form.

This led to considerable investigative activity and it was shown that constant direct current in the microampere range when applied to bone will cause new bone formation mostly around the cathode or negative electrode.<sup>2</sup> It was then shown that both pulsed direct current, and alternating current produced bone formation at both electrode sites. These effects can be produced either invasively, i.e. by implanting an electrode, or non-invasively by inducing electrical potentials by means of electric fields, or pulsed magnetic fields in close proximity to tissues. The hazards associated with high voltage electric fields made it less attractive than pulsed magnetic fields for clinical

Cameron HU (1983). Electromagnetic therapy: fact or fiction. *New Zealand Journal of Physiotherapy* 11(2):31-32.