

## Genomic medicine and the future of physiotherapy

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### EDITORIAL

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Genomic medicine continues to evolve rapidly, with increasing amounts of information being gathered and shared between researchers at faster rates than ever before. Gene sequencing and the provision of genetic information is becoming increasingly affordable, more prevalent in hospitals and clinics, and visible in the public eye. Indeed, genes for numerous diseases and disorders, including heritable conditions of relevance to physiotherapy practice, are now being discovered with increasing regularity. People can now spend a small amount of money and send a sample of their genetic material away to companies such as 23andMe<sup>1</sup> and PatientsLikeMe<sup>2</sup> to get a report on their genetic profile, including the likelihood of developing some conditions.

The future of medicine, much trumpeted with the sequencing of the human genome, appears to have arrived—personalised approaches to care based upon an understanding of the patient's genetic profile and responses are now a target of many clinical and research streams.<sup>3</sup> Understanding genetic mechanisms involved in aging or disease through interventions such as physical exercise may open entirely new avenues or perspectives on protocols for prevention or management of common chronic conditions<sup>4,5</sup> using modifications produced in various physiological systems and pathologies.<sup>6</sup> The physiotherapy profession, along with many other medical groups, needs to act now to determine how the future of the profession can adapt to the new wave of personalised, genomic medicine.

Specialised clinical members now contribute to professional

teams dealing with genomic findings, including geneticists, bioinformaticians, and genetic counsellors. The question appears not so much if physiotherapy will become integrated with genomic medicine, but when and how. A future that is in professional synergy with genomic medicine and specialist teams appears to be a logical extension of our role as rehabilitation professionals. Provision of a framework for the integration of physiotherapy with genomic medicine will provide an opportunity for the profession to advance through translational research and further integrate itself with clinical research groups that currently use genomics. Many funding streams are now demanding that translational medicine is somehow facilitated as a key part of the funding criteria; by integrating physiotherapy with genomic medicine the profession will be able to increase collaborations and take research from the bench to the bedside with increasing effectiveness.

Physiotherapists already play an important role in the prevention and rehabilitation of many common diseases and disorders, including those for which recent strides have been made in our understanding of the contribution of genetic factors to disease occurrence and progression. Recent work has demonstrated the interaction between physical activity and genetic factors related to the chronic inflammatory activity associated with aging<sup>3</sup> and exploration into the genetics of pain and susceptibility to painful pathology is developing.<sup>7</sup> Other conditions for which physiotherapists commonly participate in management include diabetes mellitus and cardiovascular disease. The potential role of physiotherapists in addressing the factors associated with these non-communicable diseases has been recently highlighted,<sup>8</sup> with person-centred health service delivery for such diseases also the subject of a current draft policy statement produced by the World Confederation of Physical Therapy.<sup>9</sup>

An examination of current physiotherapy frameworks to identify how genomics can be integrated into physiotherapy training and practice is required, to determine how the profession will both support and facilitate the development of good practice for all clinicians and students in relation to their future role in

genomic medicine. This will enable the development of a platform for practice that will support physiotherapy involvement in genomic medicine, thereby future proofing physiotherapy for future generations of physiotherapists. If genomic medicine can become integrated successfully in physiotherapy curricula in the near future, it will be well placed to contribute to the development of this exciting field of medicine. In partnership with other medical disciplines, physiotherapy can then redefine itself for the new millennia of medicine—rather than be left behind.

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## PEER REVIEW

Externally peer reviewed.

## CONFLICTS OF INTEREST

JC is the editor of the AMJ.