

Physiotherapy Research Foundation

Grant Case Study

Researcher Name: Professor Catherine Dean

Grant Type and Year: Seeding Grants, 1994 and 2000

Research Title Intersegmental coordination during reaching in seated subjects (1994).
A randomised controlled trial of the efficacy of protocol to train sitting balance early after stroke (2000).

Research Background

Nearly 400,000 Australians have had a stroke, with approximately 38,000 stroke events reported in 2017. The cost to the Australian health system on stroke management and care was more than \$633 million in 2015-2016, with stroke the tenth largest cause of disease burden in Australian in that year.¹

About the Grant Recipient

Professor Catherine Dean is the Deputy Dean and Associate Dean, Learning at the Faculty of Medicine, Health and Human Sciences at Macquarie University. She joined Macquarie University in 2011, as Head of the Physiotherapy Program, following ten years at the University of Sydney as an academic with teaching, research and administrative responsibilities.

She is a leading researcher and educator in physiotherapy, has received numerous scholarships and awards and is widely published in high impact journals. Her research has been integrated into Australian and international clinical practice guidelines.

The Impact on Knowledge Production and Further Funding

The original PRF funded research paper ‘Sitting balance I: trunk-arm coordination and the contribution of the lower limbs during self-paced reaching in sitting’ was published in Gait and Posture in 1999. It has been cited 125 times. Subsequent studies provided evidence for task specific training after stroke and the first randomised controlled trial. This work, ‘Task related training improves performance of seated reaching tasks after stroke: A randomised controlled trial’ was published in Stroke in 1997.

Professor Dean received a second PRF grant in 2000. This resulted in the paper “Sitting training early after stroke improves sitting ability and quality and carries over to standing up but not to walking: a randomised controlled trial” which was published in the Australian Journal of Physiotherapy in 2007. The article has been cited 112 times.

Professor Dean has over 50 publications and continues to supervise research students across a wide variety of topics. She has secured over \$4 million in funding for research into stroke rehabilitation from bodies such as National Stroke Foundation, National Heart Foundation and the NHMRC.

While small in comparison to larger grants, Professor Dean credits the PRF grant with improving the quality of her early research, by enabling the purchase of consumables and the use of blind assessors.

Impact on Clinical Practice

Professor Dean's research challenged the myth of the importance of trunk in sitting balance and instead highlighted the critical role of the legs in improving sitting balance after stroke. The study changed understanding around biomechanics and provided clear evidence for task and context specific training in stroke rehabilitation.

Professor Dean used her research to develop treatment programs which are used in physiotherapy practice and rehabilitation units across Australia and North America. The findings remain the best evidence for intervention in stroke and have been included in clinical practice guidelines in Australia and Canada, including the NHMRC approved 2010 Clinical Guidelines on the Management of Stroke.

Impact on Patients and Public Health

According to Professor Dean, rehabilitation that provides training related to everyday tasks like sitting and reaching, standing and walking after stroke is critical. With stroke one of the most disabling adult conditions, and the ability to reach for objects beyond arms-length while seated necessary for independent living, effective physiotherapy can determine whether a patient goes home and gets back into the community, or they end up in an assisted living or nursing home.

With a focus on optimising function, physiotherapy rehabilitation after stroke has a significant impact on quality of life.

1. <https://www.aihw.gov.au/reports/australias-health/stroke> Accessed 09/03/2021