Clinician's Commentary on Salbach et al.¹

Scientific inquiry is one of four domains at the centre of the Curriculum Content Framework of the content guidelines for the Entry-to-Practice Physiotherapy Curriculum in Canadian university programmes;² the role of *scholarly practitioner* is one of the seven essential competencies required of physiotherapists in Canada.³ Therefore, teaching key skills required to use, create, and disseminate research knowledge is an important part of physiotherapy education.

To illustrate the dissemination of research findings made in the course of the MScPT curriculum at the University of Toronto, Salbach and colleagues¹ present rates of presentation and publication by MScPT student research groups from 2003 through 2009. In this retrospective study, the authors found that dissemination efforts by 113 student groups totalled at least 43 presentations at scientific conferences and 32 publications, which, they conclude, represents a “moderate rate” of dissemination. Their study makes an important contribution by presenting the first published rates of scientific dissemination by physiotherapy students—indeed, the only published dissemination rates for health professional trainees other than medical students and residents.

Salbach and colleagues used comprehensive methods to identify dissemination events and achieved an excellent response rate, particularly in the later years of their study period. As response rates were lower (<80%) in the early years of the study period, it is possible that the dissemination rates presented for those years (2003, 2004) may be slightly overestimated, if non-responding groups tended to be those that did not publish their findings. In contrast, as the authors note, the dissemination rates presented (particularly for publications) for the later years (2008, 2009) may be underestimated because of the limited follow-up time available. Taken together, a rise in dissemination over time appears likely, particularly from 2006 onward.

To verify this rise, and to extend the timeline slightly, I undertook an informal search to estimate the publication rate to date of my own graduating class at the University of Toronto, MScPT 2010. This cohort totalled 19 research groups, including one from the Advanced Standing programme. A Facebook request to members of the graduating class of 2010 identified 10 peer-reviewed publications from 10 research groups.^{4–13} Further bibliographic searching of the class list via Ovid AMED (Allied and Complementary Medicine) and MEDLINE yielded no further publications. Thus, at approximately 2 years' follow-up, the publication rate for the class of 2010 appears to be 52.6%; 50% of these publications appeared in *Physiotherapy Canada*. Like Salbach and colleagues' estimates for 2008 and 2009, this dissemination rate may be expected to increase with longer follow-up.

I believe that the level of dissemination achieved by the scholarly efforts of physiotherapy students is commendable and that it represents an important, and possibly growing, contribution to the base of evidence in our evidence-based/evidence-informed profession. As a relatively recent MScPT graduate, I have found that the first-hand experience of creating and disseminating new research knowledge provided opportunities to learn lessons far beyond the focus of my own group's study. In addition to the role of *scholarly practitioner*, at least three of the other essential competencies of physiotherapists

in Canada can arguably be developed in important ways by participation in research: those of *expert*, *collaborator*, and *communicator*.

As a clinician, I find that the experience of creating research, from study design through analysis and publication, has affected the way I treat patients/clients. Key activities in a research endeavour—defining a clear question, finding the appropriate measuring tools to answer that question, distinguishing real effects from potential confounding variables and the expected variation in a system—are thought processes I try to bring to each treatment session. I consistently ask myself, *How can I tell if my treatments are effective?* and *What do I need to measure (and when) to be sure that this is working?* In a way, each treatment session is a mini-study in itself. Selecting appropriate assessment measures, analyzing findings, and evaluating the effectiveness of interventions are key components of the role of *expert*.

To ensure that my skills and practice continue to develop, I find I frequently need to check the published literature for evidence-based guidance on patient conditions that are less familiar to me. While developing the research ethics proposal for my student group's study, I learned efficient ways to access peer-reviewed primary literature, sources for meta-analyses, and other expert sites that synthesize health information; these skills now serve me well in my time-strapped practice. Having helped to analyze and write a research manuscript, I find I now have an internal point of reference from which to evaluate the papers I read. Sample size means something personal in terms of the hard work that comes with each respondent/participant; I look for signs of adequate controls and appropriate blinding of assessors and/or participants; I have seen how big a change might be needed to show statistical significance, and have come to understand how statistical significance might differ from clinical significance. These critical evaluation skills can be taught from theoretical principles, but they mean much more when one has personally struggled to collect the data to answer a new question. These skills of the *scholarly practitioner* also support the ongoing development of the *expert*.

Creating opportunities for physiotherapy students to engage in creating research knowledge also has the potential to develop the *collaborator* role, improve inter-professional collaboration, and increase recognition of physiotherapy among other health professions. The marathon-like collaborative work required for a group-based research project builds and tests skills in goal setting, long-term planning, and conflict resolution. At an individual level, those experiences can be invaluable assets to carry into inter-professional, team-based workplace settings. At the level of the profession, ensuring that physiotherapy research continues to advance will be pivotal in maintaining the respect of other professionals as all health professions move to support their practices with an increasing base of good evidence. This will be ever more critical as funders (e.g., health systems, third-party payers, and patients/clients themselves) scrutinize our treatment practices and make cost-benefit decisions about the care we provide. The assistance and energy physiotherapy students can bring to the research forum is a resource that we, as a profession, cannot afford to waste.

Finally, competence in “speaking the language of research” will be critical for physiotherapists in our role as *communicator*, particularly when we interact with other health professionals. In some ways, the language of research and researchers may be a *lingua franca* for the health professions—a common frame of reference among professions that otherwise tend to see patients/clients through the lens of their own skill sets, despite all of our best efforts to provide client-centred care. We need to be comfortable discussing ideas and terms such as *outcome of interest*, *confounding variables*, *randomization*, and *face validity* in many, if not all, settings in which physiotherapists practise: wherever we interact with other health professions, wherever we need to justify our treatment choices, wherever a patient/client might ask us, “I saw this on the Internet—is it for me?”

For physiotherapy students, participating in hands-on research during their training can have broad positive impacts on their personal development as practitioners. This process can also make broad positive contributions to our development as a profession. As a product of this experience, I would advocate that all physiotherapy programmes in Canada create as comprehensive an opportunity as possible for their students to design, conduct, and disseminate physiotherapy research.

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