Health & Fitness Journal of Canada

Volume 15 **June 30, 2022** **Number 2**

PRACTITIONER'S CORNER

Recent Graduates' Perspectives on Undergraduate Kinesiology Programs in Canada

Yeu-Yao Cheng[1,*], Alexander Klas[2], Rebecca Ataman[3,4], Shannon Chou[5], and Sep Pouresa[6]

1 Faculty of Medicine and Health, University of Sydney, NSW, Australia, 2006
2 Faculty of Kinesiology and Physical Education, University of Toronto, ON, Canada, M5S 1A1
3 School of Physical and Occupational Therapy, McGill University, QC, Canada, H3A 0G4
4 Centre de Recherche Interdisciplinaire en Réadaptation du Montréal métropolitain (CRIR), QC, Canada, H3S 1M9
5 Department of Physiotherapy, Vancouver General Hospital, BC, Canada, V5Z 1M9
6 Faculty of Dentistry, McGill University, QC, Canada, H3A 0G4
Corresponding Author: yche6491@uni.sydney.edu.au

Abstract

Background: Kinesiologists are a growing group of health professionals in Canada who can enter practice after completing undergraduate kinesiology programs. Unlike other health professional programs such as physiotherapy that have well-established curricula and extensive national accreditation standards, kinesiology programs vary considerably between institutions. The resultant disparities in kinesiology graduates' entry-level skillsets, competencies, and confidence levels contribute to their uncertainty regarding their role in healthcare and the public's underutilization of kinesiology services. **Conclusions:** As former kinesiology students, and as current kinesiologists and allied health professionals, we offer our perspective on how undergraduate kinesiology programs could change to respond to the needs of their graduates. Specifically, we suggest an increased emphasis on practical skill development, providing students with kinesiologist mentors and teaching staff, offering kinesiologist specific career planning, and creating explicit streams of specialization. We hope our perspectives based on our own lived experience will better prepare kinesiology students for careers as kinesiologists. **Health & Fitness Journal of Canada 2022; 15(2):7-14**. https://doi.org/10.14288/hfjc.v15i2.817

Keywords: Kinesiology, Education, Fitness Professional, Allied Health Personnel, Curriculum, Professional Practice

Introduction

Kinesiology is the multi-disciplinary study of human movement, broadly encompassing topics in biophysical (e.g., anatomy, physiology, biomechanics, and motor learning), behavioural (e.g., sports and health psychology), and sociocultural (e.g., sports humanities, sociology, and philosophy) domains (Canadian Kinesiology Alliance, 2019). Kinesiology has gained popularity as a program of study in Canada over the past five decades (Elliott, 2007). There are now over 40 kinesiology undergraduate programs in Canada.

Although kinesiology was not initially developed to be a degree program for healthcare professionals (Elliott, 2007), kinesiology graduates are increasingly entering the workforce as kinesiologists. A

kinesiologist's scope of practice is defined as "the assessment of human movement and performance and its rehabilitation and management to maintain, rehabilitate or enhance movement and performance" (Government of Ontario, 2007). Kinesiologists are valued members of the allied health team, with the Canadian medical community advocating for the integration of kinesiologists into patient care (Jattan & Kvern, 2018; Kritzer, 2019). With increasing numbers of kinesiology students choosing to become kinesiologists (College of Kinesiologists of Ontario, 2015; College of Kinesiologists of Ontario, 2021) certain kinesiology academic units have responded by increasing clinical course offerings as exemplified by the University of Waterloo's curriculum in 2016 (University of Waterloo, 2016) vs 2021 (University of Waterloo, 2022). However, unlike in the education of other health professionals, kinesiology academic programs do not need to conform to extensive standards regarding the courses they are required to teach prospective kinesiologists. This has led to a wide variation in students' learning experiences in kinesiology programs.

The national kinesiology accreditation body in Canada specifies that a kinesiology program must have a total of 10 core courses (e.g., anatomy, physiology, biomechanics) and four unspecified additional advance level (i.e., 3rd or 4th year) kinesiology courses (Canadian Council of Physical Education and Kinesiology Administrators, 2020). Provincial level regulatory bodies and professional credentialing associations also have a role in setting standards, but the requirements vary from province to province. Although the relatively small set of accreditation standards that exists currently in kinesiology can allow for program variation on the basis of faculty expertise or local needs (Elliott, 2007), extensive practice standards are the norm for other healthcare professionals because patient and client safety must be considered first and foremost (Frank, Taber, van Zanten, Scheele, & Blouin, 2020; Canadian Association of Schools of Nursing, 2014). Indeed, multiple studies have demonstrated that kinesiologists entering practice have varied levels of knowledge, competence, and confidence (Brawley, Gierc, & Locke 2013; Sinden, McGillivary, Chapman, & Fischer, 2017), with many graduates feeling unprepared to safely work with patients or clients across their scope of practice. For example, Brawley et al. (2013) found that less than 10% of psychosocial courses offered kinesiology students an opportunity to practice psychosocial skills. Similarly, Sinden et al. (2017) found that only 12.5% of kinesiology students received formal functional capacity evaluation training.

A kinesiologist's scope of practice is large. As a newer profession, the practical boundaries are still being defined by practicing kinesiologists. Often the roles that kinesiologists work in overlap with other health professions such as occupational and physical therapy, and occupations including strength and conditioning coaches. For example, kinesiologists are expected by provincial regulators or professional associations to be competent in manual therapy, conducting and reading exercise electrocardiograms, and completing functional assessments, amongst other skills (College of Kinesiologists of Ontario, 2014). This prepares them for a broad range of roles including strength and conditioning, injury rehabilitation, exercise physiology and ergonomics. However, as a result of this broad scope of practice, the

potential roles of a kinesiologist are not well understood by kinesiology students and recent kinesiology graduates (Denyes, 2014), or by the public (De Lyon, Neville, & Armour, 2017). A broad base of competency is important to enable the holistic lifestyle change work kinesiologists undertake, however, a lack of understanding of clear and potential roles of a kinesiologist by kinesiology students themselves must be addressed.

As in other healthcare professions, kinesiology programs are expected to balance course offerings between conceptual and practical courses. Although there have been changes to academic programs to increase the focus on practical course offerings, the input of kinesiologists and kinesiology students in curricular and extracurricular professional development for a career as a healthcare professional is currently lacking. Their involvement may further enhance the quality of education future kinesiologists receive. Prospective kinesiologists deserve the highest standard of training so they can effectively integrate their services into the healthcare continuum and achieve the expected positive impacts on care delivery and patient outcomes (Jattan & Kvern, 2018; Kritzer, 2019).

The authors of this manuscript are former kinesiology students with recent lived experience in several kinesiology programs across Canada, as well as current kinesiologists and allied health professionals who have navigated their roles by drawing on knowledge learned in kinesiology programs. Based on our experiences in a variety of kinesiology programs, we identified strategies that can enhance the professional curriculum of kinesiology programs in Canada.

Suggested Enhancements to Kinesiology Programs

We suggest the following enhancements to kinesiology programs to better prepare students for a career as a kinesiologist: (1) further emphasis on practical skill development; (2) inclusion of kinesiologist mentors and teaching staff; (3) career guidance for prospective kinesiologists; and (4) offering streams of specialization.

1. Increased Emphasis on Practical Skill Development

Increased emphasis on practical application of knowledge could be incorporated by creating new courses or by altering or expanding pre-existing core courses to incorporate skill development. For example, the instruction hours or availability of open lab time devoted to practicing skills in exercise psychology can be increased to help students become more confident upon graduation. In 2013, Brawley et al. found that among 21 Canadian kinesiology programs with approximately 150 psychology-related courses, less than 10% of those provided an opportunity to practice clinical skills (Brawley et al., 2013). The opportunity to learn and practice techniques such as motivational interviewing and cognitive behavioural strategies (e.g., goal setting), which have been shown to enhance clients' adherence to physical activity (Brawley et al., 2013; Greaves et al., 2011), may be of value to prospective kinesiologists.

The way in which lab activities are structured may also have effects on practical skill development, and careful consideration should be given to student progression within a course and over a curriculum (Ataman & Ibey, 2021). Educational theories suggest that practical skill development and associated decision-making requires an iterative, multi-method

approach (Elstein, Shulman, & Sprafka, 1978; Young et al., 2018; Gilliland, 2014; Ataman & Ibey, 2021). At later stages of skill development, students require the opportunity to perform, reason through and integrate relevant information in different contexts (i.e., on different students or clinical cases in labs, in workplace settings). Thus, labs should be structured to build from learning the basic skill, to adapting it to various cases in the low-risk lab environment, to simulating applying the skill in a real-world, workplace setting (see Ataman & Ibey, 2021 for kinesiology-specific examples).

Kinesiology academic units could offer students a learning opportunity that is further enhanced by incorporating workplace-based learning into their curriculum. Clinical placements are a core, mandated feature of all other healthcare professions training (e.g., physiotherapy, nursing) (Physiotherapy Education Accreditation Canada, 2021) but are often optional or unavailable in several kinesiology programs. In fact, Warburton et al. (2013) suggested that without a clinical internship, kinesiologists are unfit to work with higher-risk (e.g., pregnancy, chronic diseases) populations and cautioned physicians from working with kinesiology graduates without intensive clinical training. Workplace-based learning can include co-operative (co-op) work placements and practicums (e.g., as an intern kinesiologist designing exercise programs for a target population). Certain institutions (e.g., University of Waterloo) currently have existing co-op or placement opportunities for undergraduate students. Students have generally indicated high satisfaction with co-op programs and graduates who participated in co-op programs have demonstrated higher early career success (Pretti & McRae, 2021). While this type of program requires a large commitment of human and financial resources, it would provide students with valuable direct professional experience prior to completing their degrees.

2. Inclusion of Kinesiologist Mentors and Teaching Staff

Practicing kinesiologists are uncommon in kinesiology academic units. Lecturers and professors are often experts in one of the foundational disciplines of kinesiology (e.g., anatomy, physiology, biomechanics), most of whom are neither registered kinesiologists nor qualify for certification as practicing kinesiologists (Elliott, 2007). This may be why some material is currently not taught with a focus on practical application, and therefore less relevant to a prospective kinesiologist. If courses incorporated the expertise of practicing kinesiologists or experts with experience in a practical setting (e.g., ergonomists, athletic trainers), students may be taught with a practical focus of greater workplace relevance. It is common practice to have health professionals teaching in such a manner in other health professional programs. For example, in medical school, a cardiologist would teach cardiovascular physiology to enhance the learning of theoretical knowledge by providing examples of clinical application directly relevant to prospective doctors. Furthermore, in this model, kinesiology students would have easy access to mentors. Kinesiologists and senior kinesiology students have endorsed a mentor program to clarify the role of kinesiologists for students (Denyes, 2014).

We recognize that kinesiology is a relatively new professional field and therefore finding qualified faculty who are dually trained as practitioners and academics may be challenging. If it is not

possible to find clinician scientists immediately, hiring practicing kinesiologists as guest lecturers and ensuring that students have access to kinesiology mentors via job shadowing, webinars and lectures may be helpful in the interim.

3. Career Guidance for Prospective Kinesiologists

Kinesiology students would benefit immensely from academic units educating them on career options as practicing kinesiologists. Although in most post-secondary institutions, generic career guidance is available to all undergraduate students from various faculties (both healthcare and non-healthcare related programs), healthcare profession students require specific and explicit guidance on the unique and often complicated process of professional registration and career advancement. The guidance becomes even more important for kinesiology, a young health profession that is still growing and defining its role in the existing healthcare landscape (Wayne et al., 2017).

Beyond providing career guidance, core competencies of a kinesiologist should be incorporated into the curriculum. This includes directly addressing the knowledge gap in kinesiology students' and new graduates' understanding by highlighting kinesiologists' potential roles (Braniff, Montelpare, & McPherson, 2012), and discussing business and jurisprudence related topics including personal branding and marketing. For example, institutions could host a series of relevant lectures and seminars, or point students to pre-existing provincial or national resources to gain realistic expectations of a career in kinesiology and learn key entrepreneurial skills for healthcare professionals. Finally, especially in upper years, students would benefit from being informed on available continuing education options recommended for certain career paths, whether through another or the same university, and/or through other outlets (e.g., certification institutions). These continuing education opportunities help achieve proficiency in topics relevant to an individual's career path and maintain registration or membership with the provincial kinesiology regulatory bodies.

4. Offering Streams of Specialization

It is challenging for a kinesiology graduate to become proficient in their specific, chosen role as a kinesiologist when their educational time is spread amongst all kinesiology subdisciplines (e.g., biomechanics, exercise physiology). While an entry-level of knowledge of all subdisciplines should be required for all, we believe offering different streams of specialization in the upper years upon the completion of core courses would provide kinesiology students with clearer career paths and enhanced practical skills.

Streams of specialization are offered by few post-secondary institutes (e.g., University of British Columbia, University of Alberta, University of Waterloo), yet they should be more widely available across other undergraduate kinesiology programs in the country. The University of Waterloo allows undergraduate kinesiology students to select a minor/specialization to complement their kinesiology degree including ergonomics and injury prevention, human nutrition, medical physiology and rehabilitation sciences (University of Waterloo, 2020). This approach allows students to become competent in a subdiscipline of a kinesiologist's scope of practice while gaining adequate exposure to the multiple subdisciplines in earlier years of the degree

to meet the minimal core competency requirements. Currently, to be prepared in their prospective role or area of specialization, kinesiologists often complete external education courses and certifications (e.g., American College of Sports Medicine Certified Personal Trainer, Canadian Society for Exercise Physiology Clinical Exercise Physiologist and Association of Canadian Ergonomists Associate Ergonomist) after their bachelor's degree. Incorporating some of the content and skills from these common certifications may be a meaningful way to build the curriculum within streams of specialization.

At the time of writing, professional master's degree in kinesiology are available options. However, while professional master's degrees may be a meaningful way for recent graduates to upskill or further specialize, the undergraduate kinesiology degree is the entry-to-practice degree for the profession and should therefore be treated as such. Based on our experience of self-directed learning, obtaining further certifications, learning on-the-job, and early career navigation, we believe the gap between students' competencies and those needed for entry-to-practice are not insurmountable, and can be addressed by implementing the abovementioned proposals. It also allows graduates to complete their studies in a timely manner and contribute to the healthcare system.

Limitations

In this article, we offered the perspective of our team of recent kinesiology graduates with diverse health backgrounds. As with other perspective articles, we could not ascertain through data (e.g., survey results) whether or not our viewpoints were universal among other recent graduates. However, our anecdotal experiences supported these as common themes shared by many senior undergraduate students and early career kinesiologists. We did not discuss specific strategies to implement our suggestions. We acknowledge that the execution of the changes will be logistically complex and will involve the input of various regulatory bodies and experienced faculty but would benefit from the impacted stakeholders as well – kinesiology students and graduates of the academic institution.

Conclusions

A career as a kinesiologist is a promising one, especially in an era of an increasingly sedentary and ageing population, and a heightened need for exercise professionals (De Lyon et al., 2017). The Government of Canada Job Bank currently considers kinesiologist as a career with fair to good prospects depending on the province (Government of Canada, 2021). For entry-level kinesiologists to be ready to serve the public and for kinesiology to become a more respected and well-established profession among the allied health professions in Canada, kinesiology programs should provide enhanced professional training to better prepare students for the practical setting. We believe changes in the education of kinesiologists would help both individual kinesiologists and the profession to reach its potential. Ultimately, we hope that thoroughly trained kinesiologists will enhance quality of care and outcomes for their patients.

Acknowledgements

The authors would like to acknowledge Ms. M. Cheng (recent kinesiology graduate), Mr. C. Moore (ergonomist), and Dr. J. Lin (chiropractor) for contributing

their perspectives on the subject. The authors would also like to thank the professors, lecturers, teaching assistants, and other members of the kinesiology academic units at the respective universities where they graduated from. The authors would not have become the kinesiologists and healthcare professionals that they are today without their support and encouragement.

Authors' Qualifications

The authors' qualifications are as follows: Yeu-Yao Cheng BSc (Kin), MD (candidate); Alexander Klas BKin, MPK; Rebecca Ataman RKin, MSc, PhD (candidate); Shannon Chou BSc (Kin), MPT; Sep Pouresa BSc (Kin), DMD.

References

Ataman, R., Ibey, R. J. (2021). Applying clinical reasoning theories to kinesiology: Advancing the education of future healthcare professionals. International Journal of Kinesiology in Higher Educaiton. doi:10.1080/24711616.2021.1881418

Braniff, K., Montelpare, W., & McPherson, M. (2012). Assessing the relative perspective of the regulation of kinesiologists among other health professionals. Health, 4(8), 464-469. doi:10.4236/health.2012.48074

Brawley, L. R., Gierc, M. S. H., & Locke, S. R. (2013). Powering Adherence to Physical Activity by Changing Self-Regulatory Skills and Beliefs: Are Kinesiologists Ready to Counsel? Kinesiology Review 2(1), 4-16, doi:10.1123/krj.2.1.4

Canadian Association of Schools of Nursing. (2014). CASN Accreditation Program Standards. [PDF]. Retrieved from https://www.casn.ca/wp-content/uploads/2014/12/2014-FINAL-EN-Accred-standards-March-311.pdf

Canadian Council of University Physical Education and Kinesiology Administrators. Kinesiology Accreditation. (n.d). Retreieved March 04, 2022, from http://www.ccupeka.org/accreditation/

Canadian Kinesiology Alliance. (2019). "What is Kinesiology? Who are Kinesiologists?". Retrieved May 05, 2020, from https://www.cka.ca/en/what-is-kinesiology

College of Kinesiologists of Ontario. (2014). Essential Compentencies of Practice for Kinesiologists in Ontario. Retrieved May 28, 2022, from https://www.coko.ca/wp-content/uploads/2020/06/Essential-Competencies-of-Practice-for-Kinesiologists-in-Ontario-March-2018.pdf

College of Kinesiologists of Ontario. (2015). 2014/2015 Annual Report. Retrieved May 28, 2022, from https://www.coko.ca/wp-content/uploads/2020/05/Annual-Report-2014-2015.pdf

College of Kinesiologists of Ontario. (2021). 2020/2021 Annual Report. Retrieved May 28, 2022, from https://www.coko.ca/wp-content/uploads/2021/12/CKO-5261-AR-2021-V8.pdf

Denyes, C. (2014). The Perceptions of Kinesiologists of Ethics and Professionalism as Established by the College of Kinesiologists of Ontario. (Unpublished Master's Thesis). Brock University, St. Catherines, Ontario, Canada. Retrieved from http://hdl.handle.net/10464/5912

De Lyon, A. T. C., Neville, R. D., & Armour, K. M. (2017). The role of fitness professionals in public health: A review of the literature. Quest, 69(3), 313-330, doi:10.1080/00336297.2016.1224193

Elliott, D. (2007). Forty years of kinesiology: A Canadian perspective. Quest, 59(1), 154-162, doi:10.1080/00336297.2007.10483544

Elstein, A. S., Shulman, L. S., & Sprafka, S. A. (1978). Medical problem solving: An analysis of clinical reasoning. Cambridge, MA: Harvard University Press. doi:10.4159/harvard.9780674189089

Frank, J. R., Taber, S., van Zanten, M., Scheele, F., & Blouin, D. (2020). The role of accreditation in 21st century health professions education: report of an International Consensus Group. BMC Medical Education 20(suppl 1), 305. doi:10.1186/s12909-020-02121-5

Gilliland, S. (2014). Clinical reasoning in first- and third-year physical therapist students. Journal of Physical Therapy Education, 28(3), 64–80. doi:10.1097/00001416-201407000-00009

Government of Canada Job Bank. (2021). Kinesiologist in Canada. Retrieved May 26, 2022, from https://www.jobbank.gc.ca/marketreport/outlook-occupation/25168/ca

Government of Ontario. (2007). Kinesiology Act, 2007. Retrieved July 07, 2020, from https://www.ontario.ca/laws/statute/07k10

Greaves, C. J., Sheppard, K. E., Abraham, C., Hardeman, W., Roden, M., Evans P. H., . . . The IMAGE Study Group. (2011). Systematic review of reviews of intervention components associated with increased effectiveness in dietary and physical activity interventions. BMC Public Health, 11(119). doi:10.1186/1471-2458-11-119

Jattan, A., & Kvern, B. (2018). Exercise specialists should be members of our health care team. Canadian Family Physician, 64(12), 879-880. Retrieved from https://www.cfp.ca/content/cfp/64/12/879.full.pdf

Kritzer, B. (2019). Importance of registered kinesiologists. Canadian Family Physician, 65(2), 89-90. Retrieved from https://www.cfp.ca/content/cfp/65/2/89.2.full.pdf

Physiotherapy Education Accreditation Canada. (2021). 2020 Accreditation Standards for Canadian Entry-to-PracticePhysiotherapy Education Programs. [PDF] Retrieved from https://www.peac-aepc.ca/pdfs/Accreditation/Accreditation%20Standards/Accreditation-Standards-for-Canadian-Entry-to-Practice-Physiotherapy-Education-Programs-(2020).pdf

Pretti, T. J., & McRae, N. (2021). Preparing Gen Y and Z for the future of work through co-operative education: A case study on the University of Waterloo. In T. Gerhardt, & P. Annon (Ed.), Applications of work integrated learning among Gen Z and Y students (pp. 94-118). IGI Global. doi:10.4018/978-1-7998-6440-0.ch005

Sinden, K. E., McGillivary, T. L., Chapman, E., & Fischer, S. L. (2017). Survey of kinesiologists' functional capacity evaluation practice in Canada. Work, 56(4), 571-580. doi:10.3233/WOR-172519

University of Waterloo. (2016). Kinesiology. Retrieved February 07, 2020, from http://www.ucalendar.uwaterloo.ca/1617/COURSE/course-KIN.html#KIN000S

University of Waterloo. (2020). Programs. Retrieved February 07, 2020, from https://uwaterloo.ca/kinesiology/future-undergraduates/programs

University of Waterloo. (2022) Kinesiology. Retrieved February 07, 2022, from http://www.ucalendar.uwaterloo.ca/2021/COURSE/course-KIN.html

Wayne, N., Ataman, R., Fischer, S., Smith, L., Lariviere, C., Thomas, S., . . . Santa Mina, D. (2017). Developing a research agenda for the profession of kinesiology: A modified Delphi study. Translational Journal of the American College of Sports Medicine, 2(10), 51-56. doi:10.1249/TJX.0000000000000034

Warburton, D. E. R., Charlesworth, S. A., Foulds, H. J. A., McKenzie, D. C., Shepard, R. J., & Bredin, S. S. D. (2013). Qualified exercise professionals: best practices for work with clinical populations. Canadian Family Physician, 59(7), 759-761. Retrieved from https://www.cfp.ca/content/cfp/59/7/759.full.pdf

Young, M. E., Dory, V., Lubarsky, S., & Thomas, A. (2018). How different theories of clinical reasoning influence teaching and assessment. *Academic Medicine*, *93*(9), 1415. doi:10.1097/ACM.0000000000002303