

Physical Activity Counseling in Kinesiology Curricula: What is Offered in Ontario?

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ABSTRACT

Background: Physical activity counseling (PAC) is a viable approach for individualizing behavior change yet it is unclear if training opportunities in this area constitute a portion of the curriculum offered to university students by kinesiology departments. **Objectives:** The purpose of this study was to describe the availability of courses in PAC within the curricular offered by kinesiology departments at the post-secondary level. **Methods:** Data were extracted from the 2018-2019 undergraduate calendars published by kinesiology departments from universities in Ontario, Canada. **Results:** Seventeen of the 22 universities (77.3%) reported a department of kinesiology (or equivalent). Every kinesiology department offered courses in human biomechanics and human psychomotor learning or neuroscience. Less than half ($n = 7$; 41.2%) of these kinesiology departments offered PAC courses. **Conclusions:** Overall, this study makes it apparent that university students completing a kinesiology degree may have limited access to formal training opportunities devoted exclusively to PAC in comparison to other knowledge domains (e.g., human biomechanics). Based on these results, it seems reasonable to contend that kinesiology programs may warrant reconfiguring to meet the occupational demands of exercise professionals who use PAC to combat physical inactivity.

Key words: Health Promotion, Counselling, Professional Practice, Certification

INTRODUCTION

Physical inactivity is a leading cause of premature morbidity and mortality worldwide (Owen, Healy, Matthews, & Dunstan, 2010). Population-health studies have reported as few as 23.0% (adults) and up to 81.0% (adolescents) do not meet public health recommendations for physical activity globally (World Health Organization, 2016). Additional reports indicate that overall rates of physical inactivity have remained largely unchanged since 2001 (Guthold, Stevens, Riley, & Bull, 2019). Within Canada, results of the 2017 Canadian Community Health Survey (CCHS, Statistics Canada) imply 43.6% (adults) and 40.0% (youth) do not meet the age-stratified physical activity guidelines advanced by Health Canada. In the province of Ontario (Canada), 43.5% (adults) in addition to 40.0% (youth) do not meet Health Canada's physical activity guidelines indicating physical inactivity across the lifespan is a problem in Ontario. As such, calls have been forthcoming to devote greater attention to intervention strategies that could reduce (or ameliorate) the prevalence of physical inactivity (Morgan, Young, Smith, & Lubans, 2018).

Physical Activity Counseling (PAC) is one of several intervention options available to health professionals working

to combat physical inactivity (Health Quality Ontario, 2015; Vanwormer, Pronk, & Kroeninger, 2009). While consensus agreement on the nature (i.e., What is it?) and function (i.e., What it causes?) of PAC remains equivocal, most experts concede that PAC is an umbrella term representing a constellation of individually tailored approaches targeting physical activity behavior change (Fraser, Brown, Whiteford, & Burton, 2018; Gao et al., 2016; Richards, Hillsdon, Thorogood, & Foster, 2013). Previous studies have reported that PAC leads to short-term increases in physical activity behavior (Lamming et al., 2017), sustained mobility (Rasiah et al., 2011), and reduced sedentary activities (Balducci et al., 2017) across cohorts at risk for premature morbidity and mortality due to physical inactivity (Altenburg et al., 2015; Carraro, Roppolo, Bonetta & Gilli, 2015; Gao et al., 2016). Based in part on this evidence, it is hardly surprising that advocacy groups (e.g., Exercise is Medicine®) have promoted the utility of PAC as an intervention tool for health professionals (e.g., physicians, etc.) to use in the fight against physical inactivity.

One unresolved issue linked with the use of PAC concerns identifying which health professionals are best-situated to deploy this approach in clinical practice. Health advocacy

groups – such as Exercise is Medicine® - have implicated primary-care physicians as the ideal health professional to use PAC during patient consultations with the goal of reducing the net contribution of physical inactivity to non-communicable diseases (NCD). Yet less than 10.0% of medical schools in the United States of America offer courses in PAC and/or exercise prescription (Connaughton, Weiler, & Connaughton, 2001) with greater emphasis afforded to other areas of medical education (e.g., pharmacology; O'Shaughnessy, Haq, Maxwell, & Llewelyn, 2010). Comparable studies in the United Kingdom have noted the average time spent educating trainee physicians about the Chief Medical Officer's Physical Activity Guidelines was 4.2 hours in total across the entire curriculum (Weiler, Chew, Coombs, Hamer, & Stamatikis, 2012). The net effect of this omission in the clinical education of physicians likely contributes to low levels of PAC in primary-care settings where researchers note as few as 32.4% of patients consulting a physician obtain exercise recommendations (Barnes & Shoenborn, 2012). Weiler et al. (2012) have queried whether future physicians will be "adequately prepared to counsel patients on physical activity behaviour change" (p.2) which raises the question: Which health professionals are best suited to use PAC in clinical practice?

Registered kinesiologists (RKIN's) constitute one group of health professionals that may use PAC in clinical practice to reduce physical inactivity exhibited by clients from various cohorts (e.g., cancer survivors, etc.) across the lifespan (e.g., youth, older adults, etc.). Operating as 1 of 26 health professions governed by the Regulated Health Professions Act (1991) in Ontario (Canada), RKIN's use physical activity behavior(s) to prevent/manage the burden of living with NCD's, as well as, optimize human performance (Ontario Kinesiology Association, 2019). Previous studies – albeit mostly with cancer survivors (see Wong, McAuley, & Trinh, 2018, for a review) – indicate a preference to receive PAC from a physical activity specialist rather than other health professionals (e.g., nurse, oncologist, etc.). It seems logical therefore to advance the idea that RKIN's may deploy PAC as an individualized approach to reducing (or ameliorating) physical inactivity behavior, yet it is not clear if adequate training in PAC is provided for kinesiology students based on their educational history (Brawley, Gierc, & Locke, 2013). Extrapolating from research with medical students (Connaughton et al., 2001; Weiler et al., 2012), it seems unreasonable to presume that RKIN's have the necessary skills and training to use PAC based on their educational training. To date, it seems clear that RKIN's will need to demonstrate effective communication skills as a key professional competency (Prevost, Kpazai, & Attiklemé, 2015), yet it is unclear if kinesiology students receive formal instruction in PAC as part of their post-secondary education.

Building on previous studies of medical curricular (Connaughton et al., 2001; Weiler et al., 2012), the purpose of this study was to describe the availability of courses in PAC within the curricular offered by kinesiology departments at the post-secondary level. No hypotheses were advanced or tested in this descriptive study. To address the study purpose, the following question guided this investigation: Do

kinesiology programs in Ontario (Canada) offer courses in PAC for university students?

METHODS AND MATERIALS

Study Design

This study used an archival research design (Vogt, Gardner, & Haeffele, 2012) relying on existing data published via the undergraduate calendars from 17 Ontario universities for the 2018-2019 academic year. Each undergraduate calendar was fully accessible to the public at the time of data collection.

Data Source

The sampling frame was comprised of all post-secondary institutions geographically located within the province of Ontario (Canada) designated as a 'university' ($N = 22$) in 2018 by the Government of Ontario (Canada). The sample for this study included the 17 universities (77.3%) from the sampling frame that advertised a department of kinesiology (or equivalent; e.g., Human Kinetics). The data used in this study were the course title and course description published within the undergraduate calendar for each kinesiology department in the sample. In Canada, an undergraduate calendar – also known as a course calendar - is the official university document which provides comprehensive details about degree programs including descriptions of each course offered within the curriculum.

Instrumentation

All data were extracted using a coding manual developed a priori to reduce ambiguity in the data collection process (Cooper, 1982). The coding manual was developed based on formal interactions between study investigators plus consideration of previous investigations that have used similar approaches to data collection (Wilson, Mack, & Sylvester, 2011). The coding manual was comprised of five sections that contained items assessing the following variables: (a) Study Identifiers (University name and Department name); (b) Study Filters (Public availability of the institution's undergraduate calendar); (c) Courses on PAC; (d) Required courses listed by the College of Kinesiologists of Ontario (CKO; e.g., ergonomics, etc.), and (e) Elective courses listed by the CKO (e.g., Sports Medicine and Rehabilitation Techniques, etc.). The final version of the coding manual is available from the lead author (PMW) upon request.

Data Collection

Prior to data collection, all facets of this study were reviewed then classified as 'exempt' from further scrutiny by the Research Ethics Office at Brock University (File #18-263-WILSON) given that no data were collected from human participants (TCPS-2, 2018: Article 2.1), and this study used data exclusively accessible to the public without any expectation of privacy (TCPS-2, 2018: Article 2.2). All data were extracted from each university's official website by the lead investigator (PMW) then entered into a computer

software program for subsequent analyses. Data extraction proceeded in stages. First, the coding manual was developed following consultation between the lead study investigators (PMW and DEM) and comparison with previous studies (Wilson et al., 2011). Second, a subset of the sample used in this study ($n = 4$ or 23.5%) was examined (by PMW) using the coding manual to identify possible ambiguities in the coded variables or areas of concern stemming from interactions between the data source and the coding manual. Third, modifications were made to the wording of select items within the coding manual. Fourth, data were extracted using the coding manual then entered into a computer software program for subsequent analyses.

Data Analyses

Data analyses proceeded in two steps. First, the data were screened for missing values or out-of-range values linked with errors in data extraction and/or data entry. Second, frequency counts were used to quantify the data using the coding manual. All data analyses for this study were performed using IBM SPSS (Version 25).

RESULTS

No missing values were evident for any item (e.g., department name, etc.) coded in the data extraction process for any case (i.e., university). 'Kinesiology' was the most common departmental name ($n = 9$; 52.9%), followed by 'Human Kinetics' ($n = 3$; 17.3%), then 'Kinesiology and Physical Education' ($n = 2$; 11.8%). The following departmental names were least common in this sample: (a) 'Physical and Health Education' ($n = 1$; 5.9%); (b) 'Kinesiology and Health Studies' ($n = 1$; 5.9%); (c) 'Kinesiology and Health Sciences' ($n = 1$; 5.9%). Only 41.2% ($n = 7$) of the kinesiology departments in this sample offered a course in PAC.

Table 1 displays the results from the curricular scan for required courses listed by the CKO. Variability was evident given the range of values reported in Table 1 (Range = 5.8% to 100.0%). Pathology was the least frequent course offered while two courses - Human Biomechanics and Human Psychomotor Learning or Neuroscience - were offered by kinesiology departments at every university. The median frequency of required courses offered was 88.2% ($M = 81.2\%$; $SD = 0.3\%$).

Table 2 displays the results of the curricular scan for elective courses listed by the CKO. Variability was noted in the data albeit less so than evident with required CKO courses (Range = 23.5% to 100.0%). Human Growth and Development was one of the most common elective courses offered by kinesiology departments. Courses focused on Introduction to Kinesiology were offered by less than a quarter of university programs. The median frequency of elective courses offered was 85.3% ($M = 81.2\%$; $SD = 0.2\%$).

DISCUSSION

The aim of this study was to describe the availability of courses in PAC within the curricular offered by kinesiology

Table 1. Frequency counts assessing required courses

Coursework	Percent 'Yes'
Human Biomechanics	100.0%
Human Psychomotor Learning or Neuroscience	100.0%
Exercise Physiology	94.1%
Research Design, Methodology and/or Statistics	94.1%
Human Anatomy	88.2%
Human Physiology	88.2%
Health or Sports Psychology	88.2%
Ergonomics	82.4%
Nutrition	82.4%
Assessment and Exercise Prescription	76.5%
Pathology	5.8%
No evidence of being unsure/not clear was noted during coding when 'Percent Yes' < 100	

Table 2. Frequency counts assessing elective courses

Coursework	Percent 'Yes'
Other Kinesiology-Related Elective	100.0%
Human Growth and Development	94.1%
Gerontology/Physical Activity/Aging	88.2%
Sports Medicine and Rehabilitative Techniques	88.2%
Practicum/Internship in Kinesiology	88.2%
Physical Activity and Health	82.4%
Sociology of Movement/Exercise/Sport	82.4%
Individual/Independent Study in Kinesiology	82.4%
Thesis/Independent Research Project in Kinesiology	82.4%
Introduction to Kinesiology	23.5%
No evidence of being unsure/not clear was noted during coding when 'Percent Yes' < 100	

departments at the post-secondary level. To address this purpose, an archival research design was used in this study to scan course titles – and associated course descriptions – published by 17 universities in Ontario (Canada) advertising a kinesiology department (or equivalent; e.g., Human Kinetics, etc.). Data were extracted using a standard coding manual from the 2018-2019 undergraduate calendars published by each university. Less than fifty-percent of these kinesiology departments offered a course in PAC within the undergraduate curricula. This observation, while purely descriptive in nature, is lower than options for other elective courses (excluding Introduction to Kinesiology) focused within other domains recognized by the CKO (see Table 2 for a complete list). Overall, the results of this study align with Brawley et al.'s (2013) commentary, as well as, imply that kinesiology departments may not provide access to coursework in PAC for undergraduate students despite the importance of effective communication skills for health professionals

(e.g., RKIN's) charged with reducing physical inactivity behaviors.

Perhaps the most interesting finding emerging from this study concerns the limited number of kinesiology programs in Ontario (Canada) providing formal undergraduate courses in PAC. Based on the results of this study, it seems plausible to contend that access to PAC instruction at the undergraduate level within kinesiology departments in Ontario is scarce at best. These observations align with previous studies – albeit in medical education – that document limited exposure to PAC (and exercise prescription) reported by trainee physicians (Connaughton et al., 2001; Weiler et al., 2012). Our findings also lend empirical support to commentary by Brawley et al. (2013) who lamented that kinesiology students may be inadequately prepared to use PAC skills in professional settings because of limited training devoted to this area provided during their post-secondary education. Extrapolating from Brawley et al.'s (2013) assertions, the major implication of this study is that aspiring health professionals (e.g., RKIN's) educated via kinesiology departments lack access to, and professional training in, the communication skills and techniques of PAC which represent an important clinical skill for exercise professionals (Prevost et al., 2015).

Several factors may combine to explain the limited array of courses devoted to teaching PAC in university-based kinesiology programs – at least within Ontario, Canada. It is plausible that our findings reflect the educational philosophy operating within institutions of higher learning governing the nature and scope of training opportunities provided to kinesiology students. Extrapolating from research focused on medical education, it is apparent that courses devoted to PAC and/or exercise prescription are not emphasized for trainee physicians (Connaughton et al., 2001; Weiler et al., 2012) whereas coursework in pharmacology is more prominent (O'Shaughnessy et al., 2010). The data reported in this study – displayed in Tables 1 and 2 – describe a parallel trend within kinesiology departments insofar as few programs offer elective courses in PAC compared with optional coursework in other subdisciplines of kinesiology (e.g., Human Growth & Development, etc.), or niche areas linked with exercise promotion (e.g., Gerontology & Physical Activity, etc.). Directors of kinesiology programs charged with the task of curriculum development may be inclined to favor options reflecting faculty interests (or aptitudes), in addition to, coursework focused on teaching students to assess discrete issues (e.g., nature of an injury, etc.) then prescribe corrective solutions (e.g., low-impact range of motion exercises, etc.), rather than developing professional communication skills. While this observation is speculative at best, it seems clear that PAC is one communication approach that can be useful in clinical practice which deserves greater attention in the curriculum offered by kinesiology departments charged with training future exercise professionals (e.g., RKIN's, etc.).

One alternative explanation for the limited availability of PAC courses offered by kinesiology programs is the absorption of this topic within a broader (perhaps 'introductory') course designed to expose kinesiology students to various challenges encountered when attempting to change physical inactivity behavior. For example, the data reported in Table 1

lend credence to this argument indicating that many kinesiology programs offer coursework in Health or Sports Psychology for undergraduate students where PAC may be one module taught within such a course. Examining the syllabi for such courses may reveal exposure to PAC content for undergraduate kinesiology students that was concealed by the generic nature of the course titles/descriptions published within each institution's undergraduate calendar. As such, it is possible that overall access to information about PAC for undergraduate students in kinesiology programs is higher than reported in this study. Predicated on this assumption, it begs the following question: Why has PAC – a recognized professional competency in skillful communication for RKIN's (Prevost et al., 2015) – been relegated to a subcomponent of courses devoted to broader content (e.g., Health or Sports Psychology, etc.)? In brief, it seems reasonable to acknowledge this question verifies the importance of evaluating curricular offered by kinesiology programs at the post-secondary level to ensure students pursuing careers as exercise professionals (e.g., RKIN, etc.) do not lack exposure to, and satisfactory training in, the full spectrum of communication skills integral to their career endeavors.

A key contribution of this study is that it represents an initial attempt to describe available coursework targeting PAC instruction offered via kinesiology departments. The absence of universal standards pertaining to the nature (i.e., What is required?) and scope (i.e., How much depth is optimal?) of courses required of all kinesiology programs hinders the interpretability of the data reported in this study. Nevertheless, one implication of the results emerging from this study concerns the ongoing debate regarding the importance of formal coursework designated to teach kinesiology students basic/advanced skills in PAC (see Brawley et al., 2013, for commentary). Future investigations could use this study as a platform to develop research initiatives that address in detail the prevalence of courses devoted to PAC in kinesiology programs. Further attention could be devoted to the feasibility of course development in PAC at basic plus more advanced levels of the curriculum where course progression could foster the development of more effective communication skills.

Despite the novel and informative findings emerging from this study, a few limitations warrant consideration alongside future directions to advance this area of research. First, the sampling frame was restricted exclusively to universities in Ontario (Canada) with kinesiology departments (or equivalent) which likely restricts the external validity of the findings. Future studies could investigate university curricular from other geographical locations (e.g., British Columbia, etc.) to determine if the results of this study generalize across other Canadian university systems. Second, this study focused on undergraduate curricula operating within kinesiology departments. Additional investigations could broaden the scope to include other departments (e.g., rehabilitation sciences, etc.) where kinesiology students may pursue training opportunities via coursework beyond their 'home' department. Finally, the data for this study were extracted from published course titles and course descriptions offered per institution. It is plausible that PAC is taught as a subcomponent within courses

that have a broader focus (e.g., Health or Sports Psychology). Future research can address this issue by requesting additional data (e.g., course syllabi, etc.) per institution to gain a fuller understanding of the instructional offerings pertaining to PAC delivered within kinesiology programs.

CONCLUSIONS

The key implication emerging from this study is students graduating from kinesiology departments - at least in Ontario, Canada - may lack exposure to, and therefore satisfactory training in, the use of PAC skills based on their education. This finding adds to the debate concerning which features are needed to shape the educational basis of exercise professionals (e.g., RKIN's, etc.; see Brawley et al., 2013). Communication skills germane to PAC represent a valued competency area for RKIN's (Prevost et al., 2015), as well as, an individualized approach to combating the physical inactivity crisis that has empirical support (Vanwormer et al., 2009). Assuming graduates of kinesiology programs seek employment as health professionals (e.g., RKIN, etc.), it seems fair to postulate that university-based programs ensure the provision of courses focused on professional communication strategies - including PAC - for students to access within their curriculum. Otherwise, the results of this study, combined with the commentary from Brawley et al. (2013), raises a key question: Where do (or will/should) kinesiology students obtain training in PAC?

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