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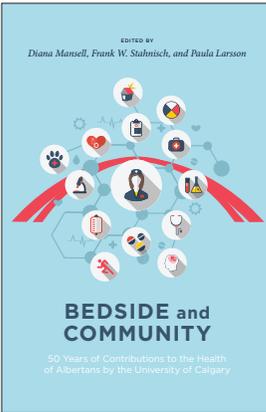
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BEDSIDE AND COMMUNITY: 50 Years of Contributions to the Health of Albertans by the University of Calgary Edited by Diana Mansell, Frank W. Stahnisch, and Paula Larsson

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The “Then” and “Now”: From Physical Education to Kinesiology at the University of Calgary

Patricia K. Doyle-Baker

Introduction

Often a timeline of milestones is used to review history captured through snapshots or videos taken over time. The so called *then* and *now* images. Certainly, the Faculty of Physical Education (*then*) and the Faculty of Kinesiology (*now*) has had several building changes, upgrades, and expansions, which have been documented through many photographs—most recently in the coffee-table book produced for the twenty-fifth anniversary of the Olympic Oval in 2013,¹ and earlier in the spiral-bound year-book produced by the Faculty of Physical Education in celebration of the University of Calgary’s twenty-fifth anniversary in 1991.² There are also a few videos, such as the one prepared for the twenty-fifth anniversary of the Human Performance Lab (HPL) in 2006.³ However, the change that has taken place inside these buildings is transformational, because, as the faculty changed, so did the worldview and lexicon associated with physical education.⁴ The story that promoted change or reform, as some might say, has deep roots, and part of the outcome was a sense of accountability and a commitment to health and wellness.⁵

The method used to tell this story falls within an unorthodox approach to writing where fact and narrative are used. Admittedly, the lens adopted for this chapter is one that treads between the lines of an academic as a doctor of public health, a knowledge-translation writer, and an exercise advocate. Credit does go to a few faculty and staff who were able to provide background material that included office documents pulled from filing cabinets. The *Annual Reports* from the HPL were a source of information on how the faculty research developed and flourished from 1981 to 2015. The *Annual Reports* also provided a view of how health outcomes have become so important over time. Some of these reports (namely, those from 1999 to 2014) are available online.⁶ Reference material from known peer-reviewed articles provided the backbone for understanding this story of transformation from physical education to kinesiology over a fifty-year period.

Our curriculum, community, and research has been driven by the World Health Organization's definition of healthy living, first articulated in 1948.⁷ In the following discussion I will argue that progress in our degree program over the years occurred in a conscious, intentional, and strategic way. I will then draw upon changes in the faculty and how they mirror a J-curve relationship, loosely perhaps, in which exercise has gained some distance from the negative images with which it was at one point associated (i.e., myths such as “no pain, no gain,” and confusion around weight loss and supplements) and has become more central to kinesiology, the medical community, and public health.

Begin with the End in Mind

The ancient Greek philosopher and naturalist Aristotle (384–422 BCE) believed that sports and gymnastics were essential to the development of the human body and to optimize functional and physiological capacity. Health-care practices, including the future fields of “athletic therapy” and “health promotion,” were part of the ancient Olympic Games. During the games, specialist services were provided by instructors called *paidotritvai*, which loosely translates as “trainers,” who took care of the athletes when they were injured and provided nutritional guidance to improve performance.⁸ The kinesiology curriculum encompasses the foundations described above, as well as athletic training, biomechanics, coaching,

environmental physiology, exercise physiology, health physiology, nutrition, sport-and-health psychology, and sport medicine.⁹

Laws of Health and Lifestyle Medicine

Later, another Greek physician, Galen (c. 129–c. 216), emerged, practising in Rome, and revisited Hippocrates's (c. 460–c. 377 BCE) ideas enhancing the current thinking at the time about health and scientific hygiene. Today this area might be considered “applied” exercise physiology, which Galen taught and practised as the “laws of health.” These are described as follows: breathe fresh air, eat proper foods, drink the right beverages, exercise, get adequate sleep, have a daily bowel movement, and control one's emotions.¹⁰ This sage advice mirrors today's recommendations for achieving and maintaining a healthy lifestyle,¹¹ and it provides the foundation for several courses, but in particular for the U of C Faculty of Kinesiology, Kinesiology 433: Health and Physical Activity.¹²

Many of the faculty's undergraduate students have successfully entered medical school with strong ideals that extend to transforming the practice of medicine through lifestyle approaches. To the best of the author's knowledge this has not been documented with our kinesiology students after they became physicians. There is, however, general research that examines how lifestyle is used in physicians' practices in the context of primary prevention.¹³ Indeed, our modern-day social behaviours, such as physical inactivity and unhealthy eating, are both major drivers of death, disease, and health-care costs.¹⁴ A case could therefore be made that this proactive view aligns with the Provincial Wellness Strategy developed for Albertans, which is designed to specifically strengthen public health and healthy living.¹⁵

Who Knew Galen Could be so Right—Such a Long Time Ago?

Many historians suggest that Galen deserves recognition as the most well-known and influential physician that ever lived.¹⁶ Galen's insightful findings would fit well with the contemporary emphasis on vigorous physical activity as a component of public health. The current guidelines from the US Department of Health and Human Services and the

Canadian Physical Activity Guidelines recommend doing at least 150 minutes of moderate-intensity exercise or 75 minutes of vigorous exercise each week.¹⁷ This is based on research demonstrating that vigorous exercise burns about twice as many calories per minute when compared to moderate exercise. High-intensity interval training sessions—commonly called “HIIT” workouts—involve repeated bouts of high-intensity effort followed by varied recovery times.¹⁸ There have been many research studies investigating this concept in both the healthy and those with chronic disease. The results have demonstrated positive outcomes with greater reductions in body weight and heart rate for individuals, for example, who have been diagnosed with coronary artery disease.¹⁹

Galen was also a physician to the gladiators (likely the first in sports medicine). He treated ruptured tendons and muscles using surgical procedures he invented, and recommended rehabilitation therapies and exercise regimens. Similarly, the Sport Medicine Clinic in the faculty is a full-service clinic that combines orthopedic surgeons and sport medicine physicians with athletic and physical therapists.²⁰

Circling Back to Exercise is Medicine

Today, we are moving again in the right direction with the global health initiative managed by the American College of Sports Medicine (ACSM) called Exercise is Medicine® (EIM).²¹ This initiative is focused on encouraging primary-care physicians and other health-care providers to include physical activity when designing treatment plans for patients. The Canadian Society for Exercise Physiology (CSEP) is the leading host organization for Exercise is Medicine® Canada (EIMC). Both the ACSM and the Canadian Society of Exercise Physiology are committed to the belief that physical activity is integral to the prevention and treatment of diseases and should be regularly assessed and “treated” as part of all health care in Canada.²² Many colleges and universities have taken up this cause, including the University of Calgary.²³

Interestingly, the emerging fields of physical education and exercise were developed primarily to promote physical and mental health in both everyday life and in sporting performances.²⁴ In recent decades, this area has been approached somewhat cautiously as the body of research on the impacts of physical activity upon mental health have taken time to

develop. There is a growing interest in the effectiveness of exercise interventions for improving mental as well as physical health in individuals with mental disorders.²⁵ There is also mounting evidence that exercise results in increased brain health²⁶ and improved profiles for markers of cellular aging.²⁷ It would seem that the health benefits of regular exercise on the mind, body, and longevity are difficult to ignore today.

In summary, the use of exercise and physical activity to achieve health has clear roots in ancient medical practice, providing ample focus for a faculty of physical education. This overview clearly lays the foundation for the intersection of kinesiology and public health, which includes scientific-based solutions to improve health through physical activity and exercise.

From Physical Education to Kinesiology

In 1945 Lou Goodwin (“Dr. Lou”; 1914–97) of the University of Alberta at Calgary, who was an instrumental leader in the development of the Western Canadian Intercollegiate Athletic Association—he had served as its secretary and later its president—was appointed as the first civilian physical training instructor for the University of Calgary. He later became the first head of the School of Physical Education,²⁸ and during the early 1960s games and sports became central to the physical education curriculum. As well, relationships were forged between intramural, interscholastic, and intercollegiate sports.

The Physical Education Building was officially opened 22 March 1962 and a new two-year education program was established as part of the bachelor of physical education degree. The School of Physical Education, formerly part of the University of Alberta, Calgary Branch, became autonomous in 1966. Five years later, a \$2 million expansion of the building was completed that included the pool, racquet courts, laboratories, and offices. Dr. Don Newton (1932-2019), the acting dean of the School of Physical Education, sent a short congratulatory memo to the faculty and staff on 13 February 1975 after the General Faculty Council gave formal approval for the Faculty of Physical Education.²⁹

Fast-forward to the Faculty of Kinesiology’s homecoming reception, held on 8 September 2006, where numerous alumni returned to celebrate the University of Calgary’s fortieth anniversary.³⁰ Dr. Bev Sandalack, a

former physical education graduate and now a professor and associate dean in the Faculty of Environmental Design, recalls that

the Phys Ed degree was a good liberal arts undergrad degree, with some solid science courses, opportunities for electives in the humanities, and a chance to develop as an athlete and as a coach.³¹

The Academic Program

During these early years the faculty offered a three-year undergraduate and a four-year bachelor of physical education (BPE) honours degree. The BPE had four routes of specialization: general adolescent (secondary-school physical education), pre-adolescent (elementary-school physical education), outdoor pursuits, and dance education. The master's of physical education specialized in the art and science of coaching, and further specialization in fitness began in the fall of 1989.

“Change was in the Air”

Since the beginning of physical education as a professional field and scholarly discipline in the late 1800s, the liberal arts and social sciences constituted key components of a holistic vision of the human body and education in its physical aspect.³² In the late 1960s and early '70s, partly in response to a rising research culture in the field, a number of sub-fields arose within physical education that included sport philosophy, sport history, sport sociology, and the comparative study of physical education and sport. There was also a move to bring about a “scientization” of physical education:³³

Since [the] inception the [of] School of Physical Education in 1966, the character of the Faculty has evolved from a singular concern with professional preparation towards an increasing concern for successfully accommodating both a professional and a disciplinary orientation in studying and communicating physical education. This evolution in character within the Faculty of Physical Education has moved the faculty to

a mid-range position within the general trend occurring at many similar institutions and in the total field of physical education. The field of physical education is a dynamic state with a welter of viewpoints and forces challenging the nomenclature, nature and boundaries of previous conceptualization of the field.³⁴

In 1978, the Faculty of Physical Education welcomed a new dean, Dr. Roger Jackson (b. 1942). Dr. Jackson has recalled how, during his interview for the position, the then vice-president, Peter Kruger, indicated that the faculty had a good teaching program but he wanted to see research and scholarship take off *now*. The faculty indicated that they needed new facilities, a graduate program, and better relationships with the “senior brass” across campus.³⁵ When Dr. Jackson stepped down after a decade as dean, he recalled that all of these goals were achieved with the help of the 1988 Winter Olympic Games.³⁶ During this decade the faculty grew at an unprecedented rate, both academically and physically, to the point where it was recognized, according to physician Dr. Warren Veale—Dr. Jackson’s successor as dean—“as one of the most outstanding faculties in Canada.”³⁷

Human Performance Lab

The HPL can be seen as a multi-disciplinary research centre that focuses on longevity and mobility by investigating anatomical, biological, biomechanical, neuromotor control, and physiological processes and phenomena. The first comprehensive course of study at the undergraduate level in physical education in North America was offered at Harvard University in 1893. The four-year program was housed in the Department of Anatomy, Physiology, and Physical Training at Lawrence Scientific School in Cambridge, Massachusetts. Along with a very strong science core there was an exercise physiology laboratory. Many exercise physiology textbooks speak to this historical contribution, and the following quotation is often highlighted:

A well-equipped laboratory has been organized for the experimental study of the physiology of exercise. The object of this work is to exemplify the hygiene of muscles, the conditions

under which they act, the relation of their action to the body as a whole affecting the supply and general hygienic conditions, and the effects of various exercises on muscular growth and general health.³⁸

Eighty-Eight Years Later—A Shared Vision

The Centre for Human Performance Studies at the University of Calgary began eighty-eight years later after the first physical education program in the United States, when Dr. Jackson recruited Dr. Benno M. Nigg (b. 1938) in 1981. Dr. Nigg was already established as an experienced biomechanics researcher at the Eidgenoessische Technische Hochschule in Zurich, Switzerland, one of the top universities in the world. When he arrived at the University of Calgary there was only the one building and a dilapidated hockey rink. Dr. Nigg was nonetheless attracted to the shared vision of what the centre could be, and the freedom to move, build, and create.³⁹ At his retirement party he reminisced with the following statements:

There was a fantastic idea, but in reality, there was nothing there—a lab that was just an old locker room. Shoddy. There was no equipment here. There were no researchers there, so in that sense, there was nothing that could attract. But there were some great ideas.⁴⁰

Dr. Nigg brought together many researchers from a variety of fields and he focused on developing an interdisciplinary laboratory. As he has explained:

The key was not to create a building, it was to create a research community where regardless of your health or human performance question, there is likely someone working in the building who has the answers.⁴¹

The first *Annual Report* produced by the Centre for Human Performance Studies was published in 1981 and included 11 names, a single PhD student, 4 journal articles, and the word “health” was not mentioned at all.⁴² The *Annual Report* in 2001 then listed about 60 “principal members”

(faculty, post-doctoral fellows, PhD students, technical support staff, and administrative assistants and managers) and about the same number of “apprentices” (master’s students, undergraduate students, visiting students, volunteers and visitors, many of them working in the HPL on a part-time basis);⁴³ 40 journal articles were included, and the word “health” was now mentioned 6 times.⁴⁴ By way of comparison, the 2015 *Annual Report* lists 243 members and apprentices, with 158 journal articles, and the word “health” received 58 entries.⁴⁵ It is important to highlight health as we should practise what we preach in kinesiology. Physical activity is seen now as “one of the easiest and most cost-effective ways to achieve the objective of having a healthier population, *physically and mentally*.”⁴⁶ There is a clear need to examine population health indicators,⁴⁷ in particular physical activity and inactivity levels, weight, and related conditions across Canada, as well as on a local level.

The Olympics and the Start of Something Bigger

Calgary was awarded the 1988 Winter Olympic Games, and this resulted in opportunities for research and an expansion into new facilities with state-of-the-art equipment, as mentioned earlier.⁴⁸ The HPL consisted of four discrete research groups at this time, covering biomechanics, exercise physiology and biochemistry, neuromotor control, and sports anthropology.⁴⁹ The biomechanics group was the largest of the four, with active research in loading of the human body, computer simulation of area movements, gate patterns of amputees, and muscle/length tension relationships. The exercise physiology group worked with high-performance athletes and monitored their blood chemistry, training, and overtraining. The neuromotor research was focused on movement patterns in skilled or unskilled individuals. Finally, the sport anthropology researchers investigated the morphological prototypes for support in the shape and the dimension of the human foot in various populations and the body composition patterns of elite athletes.⁵⁰ Today, the research groups in the HPL within the Roger Jackson Centre for Health and Wellness are involved in multi-disciplinary projects that fit within the strategic research themes outlined by the Faculty of Kinesiology in 2016: musculoskeletal health, injury prevention and rehabilitation, and exercise and nutrition in health and sport.

Instead of being focused around one science domain, such as biomechanics or exercise physiology or motor behaviour, areas are brought together to focus on collaborative modes with themes such as aging and physical activity, nutrition and obesity, hockey and concussion, or the promotion of physical activity in youth.

Time for Renewal—Name Change

Choosing a new name for the faculty, one that best represented and described the research with the proposed new majors was not an easy task, though it was not unusual at the time. Many North American universities were doing the same in the late 1980s and early '90s, and a significant discourse was generated. It was recognized that a knowledge-domain and nomenclature problem existed with the name physical education.⁵¹ The term “kinesiology” promoted a broad-based disciplinary, professional, and performance approach to the study of physical activity. The name also had a historical connection. According to American physical education specialist Karl M. Newell:

The encompassing nature of human physical activity lent itself naturally to kinesiology holding multiple academic agendas. Indeed, it is hard to think of a scholarly discipline or field of study that had more agendas in academe than kinesiology.⁵²

Therein was the difficulty of fashioning a consensus, and although kinesiology appeared to be the most commonly selected name in Canada (four universities utilized that name at the time: the University of Waterloo, Simon Fraser University, the University of Saskatchewan, and the University of Calgary), the choice was not unanimous.⁵³

The Faculty Name Change Committee (whose members were Dr. Michael R. Hawes, Dr. Patricia K. Doyle-Baker, Professor Shirley Murray, Dr. Colin Lumby, and Assistant Professor Jon Kolb) met in October 1990 and surveyed full-time faculty and support staff, research groups and laboratories. There were many factors to be considered with the naming of the faculty, and Dr. Michael Hawes, chair of the committee, prepared a list on 4 May 1994 and sent it to all faculty. Professors, instructors, and researchers alike were to consider the introduction of new programs and

degrees in the future; collaborative degree offerings; joint appointments with the Faculties of Education, Fine Arts, Medicine, and Engineering; the establishment of new research programs and centres; the expansion of research topics; and the possibility of new curriculums. The list was not meant to be exhaustive, but certainly Dr. Hawes wanted to capture the more common agendas that were important at that time. As well, Dr. Hawes emphasized that

the needs of our graduates were not being met and they have difficulty being seriously considered for jobs outside the traditional physical education realm because their academic preparation appeared to be particularly associated with the teaching of physical activities.⁵⁴

After broad consultations and much discussion, the Faculty Name Change Committee recommended “Kinesiology”

because it has traditionally been associated with our field and fundamentally describes the study of movement. It is a word that is unique to our field, all-encompassing of our current practice and one which has been increasingly, adopted within the University sphere. It is a single word which concisely addresses the collective field of inquiry, it does not require various qualifiers and hyphenation in order to define what we are about.⁵⁵

Following the name change an intensive curriculum reorganization process took place to define the majors (athletic therapy, biomechanics, exercise and health physiology, mind sciences, leadership in pedagogy and coaching) within the bachelor of science and bachelor of kinesiology degrees:

On July 12, 1994, the Council of the Faculty of Physical Education approved a proposal to change its name from the Faculty of Physical Education to the Faculty of Kinesiology. It was determined that the name change would more accurately reflect the collective fields of inquiry within the faculty.

The proposal was sent to the University Planning Committee, which gave its approval on January 26, 1995 and forwarded it to General Faculties Council.⁵⁶

Ironically, when the Faculty of Physical Education changed its name to Kinesiology, the dance program moved to the Faculty of Arts.⁵⁷ However, on 21 November 2013, the first Canadian five-year combined degree program offering a bachelor of arts in dance and a bachelor of kinesiology was unveiled. The program was designed to provide a strong foundation in both arts and science, with an emphasis on dance as a form of therapeutic physical activity.⁵⁸ Perhaps what comes around goes around.

Undergraduate Degree of Choice

Recent enrollment growth in kinesiology places it second among academic areas of study in higher education according to a recent article entitled “The Public Face of Kinesiology in the 21st Century.”⁵⁹ Kinesiology has emerged as the undergraduate degree of choice for many students at the University of Calgary as well. This is supported by the change in the composition of faculty, selected research directions, and in the curriculum design of the academic programs.⁶⁰ Students are seeking careers in a variety of allied health and medical fields, as well as in more traditional areas such as fitness leadership, health promotion, health and physical education, recreation, and sport. The key factor in kinesiology’s unprecedented growth and increased popularity as an undergraduate degree choice has been its expanded scientific basis and its increased opportunities for professional applications. These include certifications associated with the Alberta Provincial Fitness Unit⁶¹ and the Canadian Society of Exercise Physiology.⁶²

Over the past three decades, exercise physiologists have become increasingly involved in providing exercise and health physiology services; testing, evaluation and exercise prescription in clinical environments. Exercise specialists, as they are called by Alberta Health Services,⁶³ must be certified from the Canadian Society for Exercise Physiology or the American College of Sports Medicine and carry the professional designation CSEP-CEP or ACSM-EP. Their scope of practice includes working with healthy populations as well as individuals and families who are challenged by musculoskeletal limitations and cardiovascular, pulmonary,

neuromuscular, and metabolic diseases. For example, within the clinical domain they apply the concepts of positive exercise in maintaining physiologic function to specific disease processes related to an individual's metabolic and cardiovascular profile. This population can range from children to seniors. Students at the University of Calgary can become certified exercise physiologists after completing their degree.

The Merger in 2003

The Sport Medicine Centre, with sport medicine, clinical, and research services, has developed as a hub of intensive research programs and clinical activities since its inauguration at the U of C Faculty of Kinesiology in 1988. Officially established for the Winter Olympic Games, its primary objective was to integrate and foster comprehensive research, education, and clinical care programs in sport medicine for Calgary and Alberta. In 2003 the Sport Medicine Centre and the HPL merged into one integrated unit.⁶⁴ The resulting physical proximity was one reason for this change, and the second was the realization of the symbiotic research interests of the two groups,⁶⁵ which made this merger a logical step forward.⁶⁶ As noted by the University of Western Ontario's Dr. Vladimir Hachinski (b. 1941), a distinguished Canadian neuroscientist, "knowledge is acquired in pieces, but it is understood in patterns. Some of the important answers in science and medicine lie between fields."⁶⁷

The University of Calgary Sport Medicine Centre is a world-class leader in sport and exercise medicine prevention and clinical service. The Sport Medicine Centre treats Canada's Olympians, the University of Calgary "Dino" teams, professional and many elite athletes, and many of Calgary's "weekend warriors."⁶⁸ The mission is to take the learnings from high-performance sport and evidence-based medicine and bring it to the whole community. Dr. Nick Mohtadi, who took over the position of director in January of 2015 from Dr. Preston Wiley, says he has stayed here because "the Sport Medicine Centre is the best place in North America to do sport medicine. The best place."⁶⁹ The Sport Medicine Centre has a history of innovation and high standards. One example that Dr. Mohtadi is most proud of over the centre's twenty-five years includes the Acute Knee Injury Clinic.⁷⁰ The clinic employs an approach that utilizes kinesiologists to help assess patients, moving them into the appropriate treatment stream

(surgery or physiotherapy) more quickly and thereby easing the bottleneck of patients waiting to see an orthopaedic surgeon.⁷¹

The centre's professional practice has transformed the way in which people in the community are cared for. Certainly, as the emphasis on physical activity as a tool for improving public health grows, the expertise of professionals with the combined knowledge and skills from kinesiology and sport medicine fields will continue to be highly sought after. This is positive news for kinesiology graduates.

The Art and Science of “Then” and “Now”

Outside the north entrance of the Olympic Oval is “the Spire” created by Calgarian Charles Boyce. This installation was made possible by the money allocated by the Government of Canada to build the Olympic Oval Art collection. It is a huge structure that combines art and science. It symbolizes the progression of human movement—crawling, walking, running, jumping, and flying. It is affectionately known as “the Paperclip.” Perhaps what has held the faculty together through the many changes over the years, and especially our transition from physical education to the science-based knowledge of kinesiology, is not unlike the concept of a paperclip. After all, kinesiology is derived from the ancient Greek word *kinein* (“to move”) and *logia* (“study”). The faculty today does this at a very high level through a combination of teaching and scholarly activities across several very diverse research platforms with the goal of seeking the latest evidenced-based outcomes to improve function, health, and wellness. As Roberta Parks (an American physical education historian) noted, through it all the core of physical education, as one of the few academic fields that considers the human being in its totality, has been preserved.⁷² *Then and Now.*

NOTES

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