

# FOUNDATIONS OF Kinesiology





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## DEDICATION

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To the teachers who mentored me, and the students whom I have taught, who form a bridge honoring the past and building for a better future. The shining beauty of this bridge is what motivates me to carry and pass the torch.

To Emily Dell for excellent assistance in the technical preparation of the manuscript.

—Carole A. Oglesby

To the kinesiology students of California State University, Northridge, who inspire and motivate me every day.

—Kim Henige

To all the kinesiology students who take seriously the idea that our efforts to promote human flourishing through physical activity are best realized when they are undertaken with a play spirit.

—Douglas W. McLaughlin

To all kinesiology students who appreciate the importance of movement and its lasting benefit.

—Belinda Stillwell



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## FOREWORD

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Congratulations! I suspect that since you are reading this text, you are among the thousands of students that have been accepted into a kinesiology major program. Kinesiology is one of the fastest-growing majors across the country, and you are now among a growing number of students who will apply their skills in a variety of applications.

The purpose of this text is to orient new students to the field known today as *kinesiology*. The text will take you on a journey to explore the basic knowledge and essential skills needed by kinesiology professionals. The text consists of three parts, each with a series of chapters. I invite you to take the long view and examine the table of contents to develop a broad understanding of where this journey leads, as the authors and contributors have envisioned a specific approach with which you might begin to more fully realize the extent of the field.

Recognized scholars and professionals with broad expertise wrote the chapters here. Most important, however, is that they also teach an introduction to the major course at their home institution, which has familiarized them with the ever-changing and dynamic conditions produced by newly enrolled groups of students. They know the factors that will contribute to your success, as modeled in the adoption of a learning-centered approach for the text as described in Part I. By adopting this approach, you are expected to be active rather than passive in your learning. You will learn better, as evidenced by retention and transfer of knowledge, if you engage with the material. Part I also presents a competencies orientation that will assist you in beginning to realize the sets of skills necessary for earning a degree and moving toward professional practice. Furthermore, the faculty teaching your introductory classes can easily construct activities to help you identify competencies to assess your development. The authors demonstrate how the

knowledge we have about how people learn and cutting-edge educational practice can be applied in kinesiology.

In Part II, the authors examine the foundations of kinesiology using a “pillars” metaphor to study the various subdisciplines of the field. Part II of the text also lays the groundwork for absorbing deeper-level coursework in biomechanics, exercise physiology, motor behavior, and sport psychology that you will encounter later in the core of your program of study.

Lastly, Part III of the text offers specific scenarios to support your understanding of the complexities of kinesiology as you move toward integration of subdisciplinary knowledge by applying a holistic approach. Apply these skills whenever learning new information, and always attempt to create meaning by connecting these new ideas with information you already have in your memory. This holistic and comprehensive approach will enable you to deeply and broadly understand kinesiology.

As a field that now leads to many different options for practice, kinesiology has realized enormous changes since its inception at the turn of the 20th century. Your journey launches here with an understanding of the roots of kinesiology in physical education and physical medicine. The programs that were designed over 100 years ago prepared teachers of physical education with the intention of improving the physical health and well-being of the populace. Today, kinesiology is a complex area of academic study. It has a body of knowledge with diverse forms of scholarship and numerous applications.

Broadly defined, kinesiology is the study of the art and science of movement, and because movement is the means by which as humans we interact with the world, many applications can be made from the knowledge gained in a kinesiology major. Today, kinesiology majors apply their knowledge in a wide range of practices, including as physical education teachers, physical therapists, occupational therapists, athletic trainers, human factors and ergonomics specialists, sport managers, adapted physical activity specialists, and medical doctors. Many more new applications of knowledge from kinesiology will be made as our society continues to discover new techniques for practice and new technologies to understand human motor performance. Some current-day examples of technological advances and applications in kinesiology include the use of an exoskeleton to afford upright posture while moving for people with paraplegia and quadriplegia, the use of a brain–muscle computer interface to control the movement of a robotic

arm, and the use of brain stimulation techniques to produce new pathways for movement of affected limbs in those with brain injuries.

Reflected in this national transformation is how departments and professional organizations in higher education (e.g., American Academy of Kinesiology, American Kinesiology Association, National Association for Kinesiology in Higher Education) have incorporated the term *kinesiology*, and how our leaders have reenvisioned their purposes, what products they deliver, and the constituencies for whom they provide services. Although the term *kinesiology* is widely accepted to identify the broad area of study, some departmental structures use different names to emphasize specific components of kinesiology (such as *movement science*, *exercise science*, and *sport science*, to name only a few), or they outright reject the term *kinesiology* to describe the field. Progress and tensions can be observed in any transformative process.

Although our most prominent scholars have called for these transformations, external social and educational forces have also had an impact on kinesiology. In general, in an age of information implosion and an era where high degrees of specialization are valued, kinesiology has been impacted, as have all disciplines in academia. Faculty are now required to conduct and publish more data-based research, as evidenced by the proliferation of journals and journal manuscripts over the last 50 years. Learn more about the expertise of your faculty by conducting a search of the library databases and Google Scholar to see what they have published; you might even consider becoming actively involved in their research programs.

A consequence of the transformation is overspecialization and a lack of integration of information among the subdisciplines. We are at a crossroads though, because scholars in our field have envisioned the big picture. In January 2014, a historic congress, held in conjunction with at the National Association of Kinesiology in Higher Education annual conference in San Diego, brought together our most thoughtful and seasoned leaders to establish dialog on how and why we need to reunite our field. The proceedings can be found in an issue of *Quest* (2014, volume 66, number 3).

This is not the first time our field has needed uniting. As you unpack the history, you will learn that until the latter part of the 20th century our field was segregated by sex. In K–12 education, males and females were separated for physical activity in classes and in sports. Oftentimes, the curricula governing the segregated programs varied, too. In colleges and universities

a variety of settings existed. Some programs had separate activity and theory classes, or various combinations of the above. In 1972, the passage of Title IX by the U.S. Congress enacted a more neutral playing field specifically for males and females in professional school admissions, such as law and medicine; however, the most formidable impact was on the real playing fields of athletics and physical education programs.

The merger of males and females is still being managed in many programs; as well, today we must accommodate many diverse principles and issues into our programs (e.g., race, religion, sexuality, gender assignment, disability, and age) and not make assumptions that one way is the right way. In this text the authors commit to successful inclusion of diversity in sport to offer you a holistic view, including global sport and its impact. Additionally, numerous scenarios are presented to direct your understanding of how diverse groups can be served and included in sport and kinesiology practice.

As with any journey, you must connect all of the pieces to make it successful. Follow the strategies contained in this text and use them so that you can become the next successful expert contributing to our field.

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## P R E F A C E

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*Foundations of Kinesiology* provides a guided journey into the discipline and profession of kinesiology. Its learner-centered approach is designed to give each reader a sense of relationship to its authors, whom you can consider to be mentors who care deeply about the progress of those choosing to enter the field. We have written this text for students in their first year as kinesiology majors or as transfer students who have entered kinesiology following earlier choices that were not the desired match.

The number of students choosing to study kinesiology is extraordinary. As just one example, consider that kinesiology is the seventh largest major in the entire California State University system, which numbers hundreds of thousands of students. This growth is nationwide, as the various postgraduate applications of kinesiology have stretched well beyond the traditional paths of teaching and coaching to include health and wellness and professions such as physical therapy, athletic training, physician assistants, fitness specialists, adapted specialists, and administrators. The kinesiology core is also expanding as research and scholarship embraces basic scientific theories and applies research in new areas.

A great challenge has emerged in the necessity to refine and maintain core scientific bases as well as to achieve relevance and cohesion in the emerging applications. This text is specifically designed to present an introduction to the holistic core features of the discipline of kinesiology along with real-life scenarios that dramatically illustrate how the entire discipline is useful in solving individual and social challenges. We offer evidence-based information utilizing both quantitative and qualitative approaches in the science-based formulations of chapters.

## Why This Text?

The authors have years of experience teaching introductory courses, and it was in the teaching of these courses that we encountered frustration with other textbooks. While these other options were excellent, lengthy sections invariably went unread and unused in the structure of the course. There was either too much material for a typical introductory course, or the text went into detail about aspects of the discipline that were outside the parameters of particular departmental configurations. We were also dissatisfied with the impersonal, journal-style presentation of these texts that were to serve as a welcome and introduction to a lifetime of disciplinary study. We have sought to create a text that speaks to each student in a more personal, mentor-like fashion. The learner-centered approach completes this picture, as the readings and assignments make it necessary for the student to add her or his personal knowledge, views, and experiences to the content.

## Organization of the Text

The content is organized as an exploration of a new cognitive structure—kinesiology. It is intended consciously to provide a foundation for the knowledge of the discipline to be acquired throughout the length of collegiate studies and a pathway to success through the full journey as a professional. This foundation has three sections and an epilogue: an introduction to the text and format, core subdisciplinary elements, applied real-life scenarios utilizing multiple subdisciplinary knowledge sources, and closing challenges concerning the way ahead.

Part I, “Kinesiology: Its Fundamentals and Paradoxes,” comprises Chapter 1, “Fundamentals and Paradoxes,” Chapter 2, “Pathway to the Pillars,” and Chapter 3, “A History of Kinesiology.” These three chapters serve as a preparation for the course and associated readings ahead. In Chapter 1, students are asked to consider the curiosity of never having encountered the label *kinesiology* in their elementary and secondary school coursework in physical education. Students are encouraged to get comfortable with the unique aspects of their discipline and profession. Chapter 2 introduces the bases of the text. It is in this chapter that we, as authors, give detail and meaning to the three commitments on which the text is based:

1. The holistic view of kinesiology, in which the discipline is seen not as a train with many separate and discrete cars that can be assembled and disassembled without effect, but as a unitary whole.



2. The learner-centered approach, wherein the student-reader is not perceived as an empty vessel into which the wisdom and knowledge of the professor is poured. Rather, ideas are presented for exploration and enhancement through the involvement of all.
3. A competency- and skill-based approach, wherein tools are presented in every chapter to enable the student-reader to be better able to serve themselves and society through lifelong endeavors.

Part II, “Pillars of the Discipline: Kinesiology Subdisciplines,” offers nine chapters introducing the knowledge base of kinesiology. These chapters illustrate the remarkable reach of kinesiology, from contemplation of the meaning of the body (philosophy), to the biomechanical and chemical complexities of the body in motion (biomechanics and exercise physiology), to the behavioral and social realities of play and sport in our world (sociology and psychology of sport, motor behavior), to the complexities of teaching and managing sport and recreation in diverse institutional structures (pedagogy, sport management, adapted physical activity). This breadth and depth of knowledge ends the introduction to kinesiology in most texts.

Our text takes another step in illustrating the holistic nature of our comprehensive discipline in Part III, “Integration of the Pillars.” In these chapters, real-life scenarios are narrated in detail, showing how the totality of kinesiology can be crucial in enabling a healthy and joyful course of life for diverse populations. These scenarios deal with life-long active habits, maintaining an active lifestyle while making transitions throughout the life span, overcoming injury and illness challenges in pursuing sport, being inclusive in our individual and community participation patterns, and building enduring excellence in performance. Again, for ease of comprehension, each of these diverse chapters follows a common path in which we find (1) a narrative description of the characters in the story, (2) a description of the situational context, (3) a description of the challenges, (4) the elements of possible solutions using knowledge from the subdisciplines, and (5) options for solutions and consequences.

The last three chapters offer a retrospective as the student completes the text. These chapters consider how the totality of this introduction to the field prepares the student-reader for the remainder of his or her collegiate experiences and provides ways of thinking about the career path ahead.

## Features of the Text

This text has multiple aids and benefits built into its narrative.

Each chapter begins with Learning Objectives and Key Terms that help orient the reader to the chapter content. Key Terms are then defined in the margins of the text, as well as in the Glossary at the end of the text.

Within the body of each chapter, *Stop and Think* boxes provide questions that will help the student-reader fully grasp the significance of the content. Additional boxes scattered throughout the text also help to amplify content. Chapters within each part also feature a consistent heading structure designed to aid the acquisition of content.

Each chapter ends with a Chapter Summary that recaps the chapter content, along with Discussion Questions.

## Instructor Resources

Qualified instructors can receive the full suite of Instructor Resources, including the following:

- Test bank
- Slides in PowerPoint format
  - One set of standard slides for a traditional classroom experience
  - One set of discussion-based slides for a learner-centered classroom experience
- Instructor's Manual
- Sample syllabus

We, the authors, hope this text will have significant meaning to you as a cornerstone foundation to your professional library and the “story” of your career in kinesiology.

*Carole A. Oglesby*

*Kim Henige*

*Douglas W. McLaughlin*

*Belinda Stillwell*

## ABOUT THE AUTHORS

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### **Carole A. Oglesby**

Dr. Carole A. Oglesby has been in the professoriate for 45 years. She earned a PhD in Kinesiology from Purdue University in 1969 and a PhD in counseling at Temple University in 1999. She was a department chair at Temple from 1992–1995 and at California State University, Northridge, from 2003–2009.

She has been recognized through the Association for Intercollegiate Athletics for Women (AIAW) Award of Merit, the National Association for Girls and Women in Sport (NAGWS) Honor Fellowship, the Women's Sports Foundation Billie Jean King Award, the American Alliance for Health, Physical Education, Recreation and Dance (AAHPERD) R. Tait McKenzie Award, and the American Psychological Association, Division 47, Lifetime Achievement Award in Public Service.

Carole has published more than 55 chapters, articles, and essays, as well as four books/monographs. While at Temple, she advised 49 successful PhD students. She has performed consulting work for Olympic/Pan-American Game rowers and cyclists and for a race car driver, along with years of work with collegiate, high school, and youth teams and participants. She has been named a Distinguished Alumnus at both Purdue and Temple.

### **Kim Henige**

Dr. Kim Henige received her BA (emphasis in Exercise Science) and MA (emphasis in Exercise Physiology) in Physical Education from CSU Northridge and her EdD in Education (emphasis in Learning and Instruction in Science Education) from the University of Southern California. Dr. Henige is a Certified Strength and Conditioning Specialist (National Strength and Conditioning Association) and a Certified Exercise Physiologist (American College of Sports Medicine).

At CSUN, Dr. Henige supervises the Peer Learning Facilitator Program for exercise physiology courses within the department. In addition, she supervises Commit to be Fit, a fitness program on campus for staff, faculty, students, and the local CSUN community.

Her research interests are in the area of science education, specifically improving the cognitive and affective domains of the learning experience for students in exercise physiology. She was inspired to write this book based on the needs of her students. She saw a need to present the big picture before students begin taking courses within the major. She also recognizes the need to help students apply their coursework to real life in order to make it meaningful to them.

### **Douglas W. McLaughlin**

Dr. Douglas W. McLaughlin is an associate professor of kinesiology at California State University, Northridge. He earned his PhD in kinesiology from the Pennsylvania State University. His research focuses on ethical issues concerning the Olympic Games and the role of physical activity in promoting the good life. He holds the strong conviction that game playing is the central activity of a life most worth living. Playing Ultimate is his most cherished way to express his play spirit, though an arthritic knee has him considering new alternatives. This transition provides an opportunity to reflect on his own efforts to teach students ways to invite and support people to engage in physical activity in intrinsically meaningful ways.

### **Belinda Stillwell**

Dr. Belinda Stillwell is an associate professor in the kinesiology department at California State University, Northridge. She received her PhD from Arizona State University in physical education/curriculum and instruction/secondary education. She works extensively with students who are pursuing their undergraduate degrees in kinesiology/physical education, as well as those going on to earn their Single-Subject Teaching Credential. Her research interests entail creating and delivering swimming instruction to those students who are afraid in water. In terms of the material in this text, it is her hope to catch and hold students' interest and motivation to learn about the broad nature of kinesiology as it applies to human movement across diverse populations.

## ABOUT THE CONTRIBUTORS

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### **Bonnie Berger, EdD, CC-AASP**

Dr. Berger is a professor in the School of Human Movement, Sport, and Leisure Studies at Bowling Green State University in Bowling Green, Ohio, where she teaches undergraduate and graduate courses in exercise psychology and conducts research on the contributions of exercise to quality of life. Her research interests focus on the development of an exercise taxonomy designed to maximize the psychological benefits and complex interactions among mood alteration, exercise enjoyment, social physique anxiety, and life-satisfaction in diverse populations. Internationally recognized for her expertise on the contributions of exercise to quality of life, Dr. Berger has been an invited speaker and a visiting fellow at universities in numerous countries around the world, including Australia, China, the Czech Republic, England, Greece, Morocco, Singapore, and Thailand. Dr. Berger is a charter member, fellow, and Certified Consultant of the Association for Applied Sport Psychology (AASP). She also served as AASP's president and is a fellow and founding member of the American Psychological Association (APA) Division of Exercise and Sport Psychology (now Society for Sport, Exercise and Performance). She also is a fellow in the prestigious National Academy of Kinesiology (NAK), and is a charter member of the North American Society for the Psychology of Sport and Physical Activity (NASPPSA), from which she received the Outstanding Dissertation Award.

### **Robert A. Bucciere, MSW, LCSW**

Robert A. Bucciere is currently a mental health and healthcare consultant in North Carolina. Prior to being a consultant, he was a hospital manager for the Department of Clinical Social Work and Chaplaincy Program at the University of Utah: Health Care. Prior to his position as a manager, he was

the lead licensed clinical social worker at the University Health Care: Neurobehavior HOME Program. He graduated from the University of Maryland at Baltimore and the University of North Carolina at Greensboro.

### **Sean P. Flanagan, PhD, ATC, CSCS**

Dr. Flanagan is a professor at California State University, Northridge. He received his BS in exercise science (with an emphasis in athletic training) from the Pennsylvania State University, an MS in exercise and sport science (with an emphasis in exercise physiology) from the University of Dayton, and a PhD in biokinesiology (with an emphasis in biomechanics) from the University of Southern California. He is a certified Athletic Trainer (National Athletic Trainers Association), Strength and Conditioning Specialist (National Strength and Conditioning Association), and Exercise Physiologist (American College of Sports Medicine). Additionally, he is a member of the American Society of Biomechanics. His research interests are in the biomechanics of kinetic chains, compensatory motions as a cause and a result of musculoskeletal injury, and the use of resistance exercise to restore, maintain, or improve human function.

### **Nancy Getchell, PhD**

Dr. Getchell is a professor at the University of Delaware, where she focuses her research on the development and learning of motor control in children with disabilities not usually associated with motor dysfunction, such as autism spectrum disorder and learning disabilities. Recently, she has begun to use functional near-infrared spectroscopy to better understand brain-behavior connections.

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Dr. Jamieson is Professor and Chair in the Department of Kinesiology and Health Science at California State University, Sacramento. Her teaching and research interests are focused on issues related to sport, power, and social stratification, including feminist, postcolonial, and queer analyses of transnational sporting spaces that operate at spectacular and non-spectacular levels. Dr. Jamieson's research has been published in the *Sociology of Sport Journal*, the *Journal of Sport and Social Issues*, *AVANTE*, the *Women in Sport and Physical Activity Journal*, the *Journal of Lesbian Studies*, the *Journal of Physical Education, Recreation and Dance*, and *Reading Sport: Critical Essays on Power and Representation* (Northeastern, 2000).



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Dr. Jung is a professor in the Department of Kinesiology at California State University, Northridge and serves as a director at the Center of Achievement through Adapted Physical Activity, which provides internationally recognized adapted exercise and aquatic therapy programs. His research focuses on studying movements of people with neuromuscular disabilities and investigating clinical outcomes after therapeutic exercise. He teaches classes in adapted physical activity and therapeutic exercise.

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Shayna Kilpatrick received her bachelor's degree from California State University, Northridge, in kinesiology with an emphasis in exercise science. Her love for biomechanics and human movement, in general, has pushed her to continuously expand her knowledge in the kinesiology field. Shayna's passion for helping others comes through in her instructing of fitness and Pilates classes. In addition, she loves to compose textbooks and manuals, allowing her to share her knowledge with others.

**Steven Loy, PhD**

Dr. Loy has years of experience as an exercise physiologist. In the first decade of his career he focused on teaching and completing publications based on traditional laboratory research. With the recognition of exercise as a significant part of the solution to many of the diseases that are prevalent in today's society, he shifted his attention to the public health arena, which has been his focus for the past 15 years. His intentions are to have professionals in public health recognize the contributions kinesiology can make to improve population health and the importance of creating jobs for kinesiology professionals. Throughout his career he has emphasized the importance of experiences gained and professionalism demonstrated by the students he teaches.

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Dr. Mache is currently an assistant professor in the Department of Kinesiology at California State University, Chico, where she teaches courses in biomechanics, biomechanical analysis, and research design. Melissa is an applied biomechanist whose research interests focus on enhancing the safety and skill of human movement for movers of all ages and abilities. Melissa holds

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Dr. Pfleegor currently serves as an assistant professor of sport administration at Belmont University in Nashville, Tennessee. His research emphasis involves the utilization of ethical theory and historical methods to examine a variety of issues in sport, such as leadership, management ethics, and heritage management. Dr. Pfleegor is a member of the executive board for the International Association for the Philosophy of Sport. He was named a 2014 Gerald "Gerry" D'Agostino Distinguished Scholar by his alma mater, The College at Brockport, State University of New York.

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Dr. Reel is a professor and associate dean of research and innovation at the University of North Carolina, Wilmington (UNCW). Prior to UNCW, she was an associate professor and director of graduate studies in the Department of Health Promotion and Education at the University of Utah. She received her bachelor's degree from North Carolina State University and her master's and doctoral degrees from the University of North Carolina, Greensboro. Dr. Reel has published several books, including *Filling Up: The Psychology of Eating* (Greenwood, 2016); *Working Out: The Psychology of Sport and Exercise* (Greenwood, 2015); *The Hidden Faces of Eating Disorders and Body Image* (AAHPERD, 2009); and *Eating Disorders: An Encyclopedia of Causes, Treatment, and Prevention* (Greenwood, 2013).

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Jaime Schultz is an associate professor of kinesiology and women's, gender, and sexuality studies at the Pennsylvania State University. She has published or edited five books: *Women in Sport* (Oxford University Press, forthcoming); *Women and Sports in the United States: A Documentary Reader* (with Jean O'Reilly and Susan K. Cahn; Northeastern University Press, forthcoming); *Moments of Impact: Injury, Racialized Memory, and Reconciliation in College Football* (University of Nebraska Press, 2016); *American National Pastimes—A History* (co-edited with Mark Dyreson; Taylor & Francis, 2015); and *Qualifying Times: Points of Change in U.S. Women's Sport History* (University of Illinois Press, 2014); as well as numerous journal articles and essays in edited collections.

**Maureen Smith, PhD**

Dr. Smith teaches sport sociology and sport history at California State University, Sacramento. She is an active member of the North American Society for the Sociology of Sport, as well as the North American Society for Sport History. Her research interests are varied, and include material culture in sport, such as sport statues, African American sporting experiences in the 20th century, as well as topics related to women in sport, including the Olympics and Paralympics.

**Teri Todd, PhD**

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**William Whiting, PhD, FACSM, CSCS**

Dr. Whiting earned a bachelor's degree in mathematical sciences from Stanford University and his master's and PhD degrees in kinesiology from UCLA. He has been a professor in the Department of Kinesiology at California State University, Northridge, since 1994, and also serves as an

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Dr. Wughalter is a professor at San Jose State University. Her major area of specialization is motor behavior. She teaches a variety of classes in the undergraduate and graduate programs on motor learning, research methods, measurement and evaluation, and writing. Dr. Wughalter has been involved in professional writing and service in the kinesiology field for over 35 years.

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