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Fundamentals of Clinical Gait Analysis: A Step-by-Step Approach

Christopher M. Powers, PT, PhD, FACSM, FAPTA

Overview

Gait analysis is a fundamental aspect of physical therapist practice that is used to guide the development of the best possible intervention(s) for restoring optimal movement and function. The purpose of this course is to introduce the student to the fundamentals of normal and pathological gait. The use of observational and video analysis as an integral part of the gait examination will be emphasized. In addition, strategies to modify gait mechanics will be addressed as part of a comprehensive approach to treatment. Case studies will be utilized to promote the integration of the material presented.

Course Objectives/Learning Outcomes

At the conclusion of the course, the participant will be able to:

1. Understand the role of gait analysis as a fundamental aspect of physical therapist practice.
2. Identify and define the phases, objectives and critical events of the gait cycle.
3. Describe the normal kinematics and kinetics of the ankle, knee, hip and pelvis during gait.
4. Identify gait deviations that contribute to common patient complaints.
5. Describe typical compensatory strategies in various patient populations.
6. Develop observational gait analysis skills
7. Perform a gait analysis using video methods and commercially available applications (iPad platform).
8. Develop sound intervention programs that address the root cause of gait related impairments.

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Schedule

	Day 1
8:00-8:30	Introduction to gait analysis
8:30-10:00	The gait cycle: basic functions, objectives & critical events
10:00-10:15	Break
10:15-12:00	Normal gait kinematics & objectives (sagittal, frontal & transverse planes)
12:00-1:00	Lunch
1:00-2:30	Normal gait kinetics & muscle actions
3:00-3:15	Break
3:15-5:00	Observational gait analysis (lab)
	Day 2
8:00-10:00	Video gait analysis lab (lecture & lab)
10:00-10:15	Break
10:15-12:00	Pathological gait & clinical evaluation (lecture & lab)
12:00-1:00	Lunch
1:00-3:00	Treatment of gait dysfunction (lecture & lab)
3:00-3:15	Break
3:15-5:00	Patient cases

Christopher M. Powers, PhD, PT, FACSM, FAPTA

Dr. Powers is the founder and owner of the Movement Performance Institute in Los Angeles. In addition, he is a Professor in the Department of Biokinesiology & Physical Therapy, and Co-Director of the Musculoskeletal Biomechanics Laboratory at the University of Southern California. He holds joint appointments in the departments of Radiology and Orthopaedic Surgery within the Keck School of Medicine. Dr. Powers received his Bachelors degree in Physical Education from the University of California, Santa Barbara in 1984, his Masters degree in Physical Therapy from Columbia University in 1987, and a Ph.D. in Biokinesiology in 1996 from USC. Dr. Powers did his post-doctoral training at the Orthopaedic Biomechanics Laboratory, University of California, Irvine.

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Dr. Powers is recognized nationally and internationally for his research related to the biomechanical causes of lower extremity injury. More specifically, he is considered one of the world's leading authorities on knee injuries; in particular patellofemoral joint dysfunction and tears of the anterior cruciate ligament (ACL). Dr. Powers has published over 150 research articles and has received several awards from the American Physical Therapy Association, including the Rose Excellence in Research Award from the Orthopaedic Section, the Eugene Michels New Investigator Award, the Dorothy Briggs Scientific Inquiry Award and the Helen J Hislop Award for contributions to the professional literature.

Dr. Powers is a Fellow of the American College of Sports Medicine and a Catherine Worthingham Fellow of the American Physical Therapy Association. He also is a member of the American Society for Biomechanics, American Society for Testing and Measures, and the North American Society for Gait and Clinical Movement Analysis. In addition, Dr. Powers is the current President of the California Physical Therapy Association.

"Special thanks to Movement Performance Institute and Dr. Christopher Powers whose analysis has helped me improve my running form. As an Olympic Gold Medalist, every tenth of a second counts!"

—Jeneba Tarmoh,
USA Track and Field,
2012 London Olympic Games Gold Medalist