Abstract:
The primary goal of human locomotion is to stably translate the center of mass (CoM) over the ground with minimum expenditure of energy. Because the CoM is approximately located within the pelvic center, the pelvic movement is crucial for walking. An abnormal pelvic motion during the gait not only causes overexertion, but also adversely affects the motion of the trunk and lower limbs. In this talk, different robotic interventions using tethered pelvic assistive device (TPAD) are discussed by performing human experiments with healthy subjects and patients with gait deficits. Moreover, the corresponding changes in the biomechanics during TPAD training are studied to understand how TPAD mechanistically influences the quality of the human gait. These methodologies with TPAD can be used to improve abnormal gait patterns that are often observed in cerebral palsy or stroke patients. Future directions of robotic devices to enhance mobility or task performance of patients will be discussed as well.

Bio:
Jiyeon Kang PhD is the director of AWEAR (Assistive WEArable Robotics lab) and an assistant professor in Mechanical and Aerospace Engineering at University at Buffalo. She completed her postdoctoral training in Rehabilitation Biomechanics Laboratory at University of Michigan. She obtained her Ph.D. degree in mechanical engineering from Columbia University. She received the B.S. and M.S. degrees in mechanical engineering from Seoul National University in 2008 and 2010, respectively. She worked as a researcher in Korea Institute of Science and Technology (KIST) for two years developing a rigid arm exoskeleton and its control method. Her major interest is in rehabilitation and assistive robotic devices to enhance the motor function of various patient groups.