



## “Musculoskeletal adaptation to in vivo loading: The good & the bad”

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Marjolein van der Meulen is the James M and Marsha McCormick Director and Swanson Professor in the Nancy E and Peter C Meinig School of Biomedical Engineering and Sibley School of Mechanical and Aerospace Engineering at Cornell University. She is also a Senior Scientist at Hospital for Special Surgery. Her research in orthopaedic biomechanics focuses on musculoskeletal mechanobiology and biomechanics. Marjolein received her SB from MIT, and MS and PhD from Stanford University, all in mechanical engineering. She worked as a biomedical engineer at the Rehabilitation R&D Center of the Palo Alto VA Medical Center. She joined the Cornell faculty as an assistant professor in 1996 and moved to biomedical engineering to become chair. She is a member-at-large on the Board of Directors of the Biomedical Engineering Society, chair for the 2019 Annual Meeting of the Orthopaedic Research Society, and an associate editor of Journal of Bone and Mineral Research. Marjolein is a fellow of AAAS, AIMBE and ASME.

### ABSTRACT

Mechanical loading is critical to the growth, development and repair of musculoskeletal tissues, particularly bone and cartilage. While this role for mechanical stimuli is recognized, the mechanisms of musculoskeletal adaptation to mechanical stimuli are not well understood. We have developed in vivo models of controlled mechanical loading as tools to examine mechanotransduction in bone and other musculoskeletal tissues, allowing us to determine the in vivo mechanics and examine the subsequent tissue response and associated signaling. This talk will summarize our recent work examining in vivo musculoskeletal adaptation in mouse models, focusing on increasing bone mass and load-induced development of osteoarthritis.

**Friday, August 31st  
12:00 Noon**

**Presented From: 4142 Engineering Building III (NC State)**

**Videoconferenced to: 321 MacNider Hall (UNC)**

**& East Carolina University (ECU)**