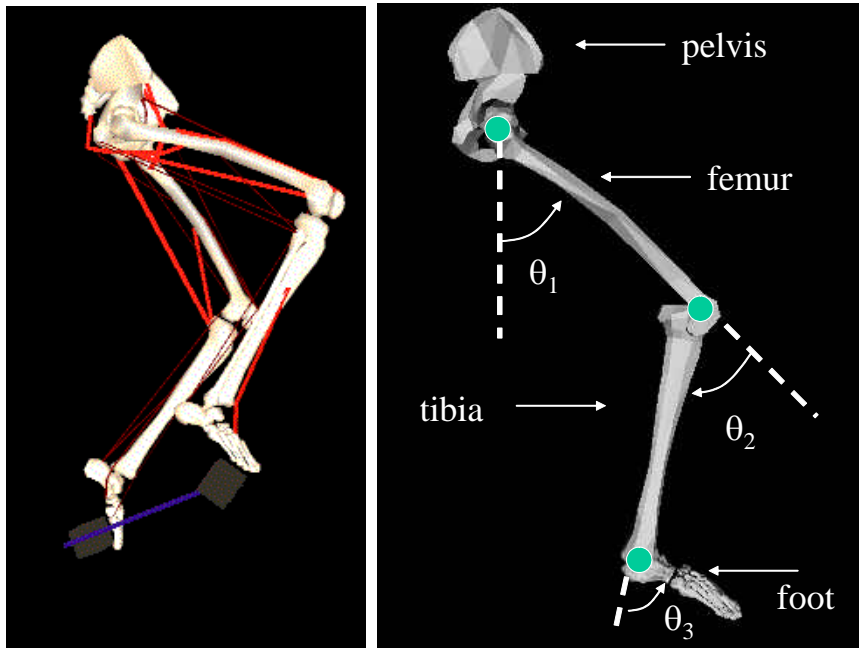


**ME 534 COMPUTER-BASED MODELING AND SIMULATION**  
**Instructor: Prof. Cagatay Basdogan**



Physics-based animation and simulation of human body is employed in sports biomechanics to investigate how muscles work and coordinate movements. Consider a 3-link planar model of the human lower body, as shown in the figure, for animating bicycling motion. To create this animation,

- (1) develop a 3D graphical model of human lower body using the Inventor files generated for 3D models of bones:  
*pelvisModified.iv, femurModified.iv, tibiaModified.iv, footModified.iv*
- (2) set transformations such that angular rotations of links can be easily displayed relative to each other,
- (3) develop a timer-sensor to animate the link motions using the following data set  
 (Use a keyboard event to start and stop your animations)

$\theta_1$ (degrees)	$\theta_2$ (degrees)	$\theta_3$ (degrees)
95	110	115
90	100	100
85	90	90
80	90	90
75	95	85
75	100	80
80	95	75
85	90	80
90	85	85
95	80	90