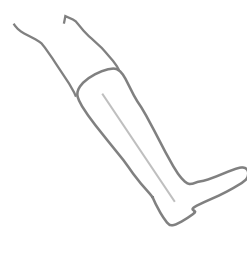
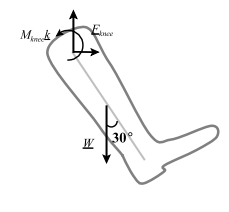
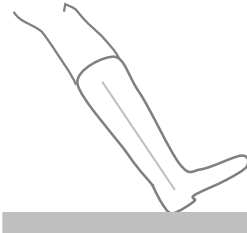
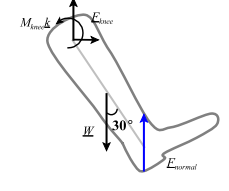
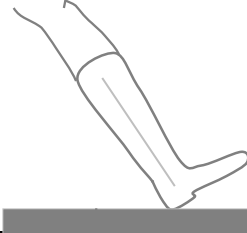
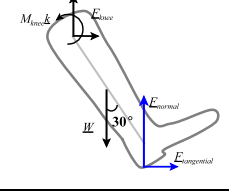

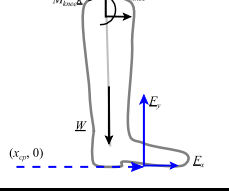

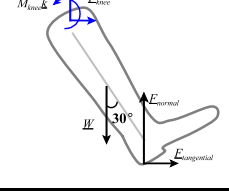
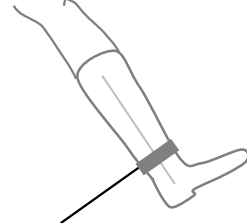
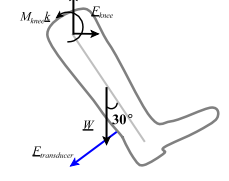
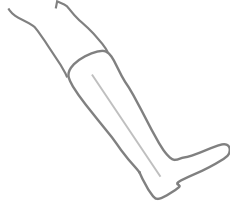
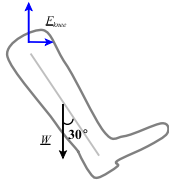


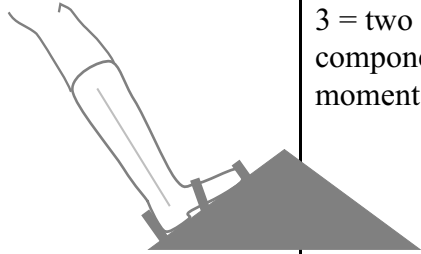


Number of Unknowns for Various Types of Connections

Type of connection	Space diagram	Number of unknowns	Free-body diagram
Free ended limb		0 at free end	
Frictionless surface or rollers		1 = force in normal direction to surface	
Point loading on a rough surface		2 = normal force from surface and tangential force (frictional) parallel to surface	
Rough surface		3 = ground reaction force and its horizontal centre of pressure	
Separation at a joint (e.g., knee)		3 = net force (x and y components) and net moment of force	
Single active muscle or ligament or cable with known line of action		1 = magnitude of force (tension in tendon) along the line of action	

<p>Frictionless hinge</p>		<p>2 = two components of force, no moment of force</p>	
<p>Frictionless slot</p>		<p>1 = normal force to slot, no moment of force</p>	
<p>Segment connected to a surface, cantilever beam</p>		<p>3 = two force components and the moment of force</p>	