

1056-H5-1975      **Anthony Tongen\*** (tongen1@jmu.edu), MSC 1911; Department of Mathematics, James Madison University, Harrisonburg, VA 22807. *Biomechanics of Running and Walking*.

Running and walking are integral to most sports and there is an incredible amount of mathematics involved in examining the forces produced by just one foot contacting the ground. This paper will discuss biomechanical terms related to running and walking such as ground reaction force, duty factor, and impulse. We will then mathematically model the vertical ground reaction force curves for both running and walking, successfully reproducing experimental data. Finally, we will discuss the biological implications of the mathematical models and present two great applications of integration. (Received September 22, 2009)