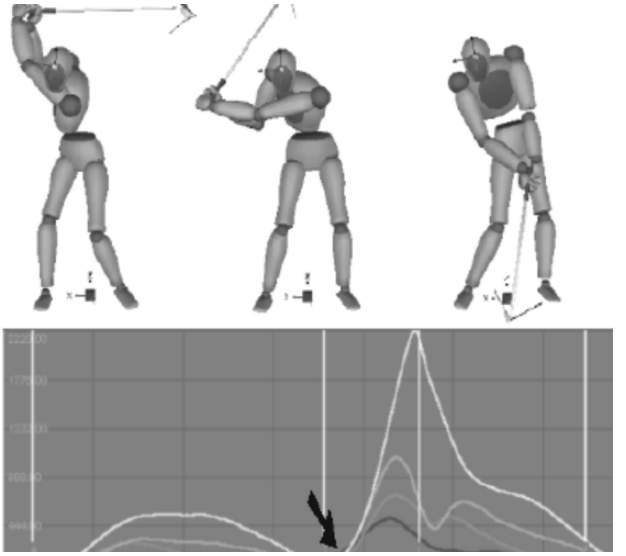
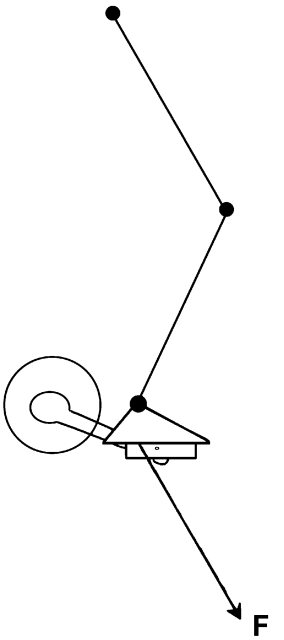
# PART III

## Mechanical Bases

Mechanics is the branch of physics that measures the motion of objects and explains the causes of that motion. The images here present illustrations of the kinematic and kinetic branches of biomechanics. Measurement of the three-dimensional motion of a golfer provides a precise kinematic description of the golf swing. The angular velocities of key body segments are plotted in the graph. The representation of the orientation of the key segments of the leg and the resultant force applied by the foot to the pedal of an exercise bike represents the kinetics, or the forces that cause human movement. A knowledge of the mechanics of exercise movements allows kinesiology professionals to understand those movements, develop specific training exercises, and change movement technique to improve performance. The chapters in part III introduce you to three key areas of this parent discipline of biomechanics: kinematics, kinetics, and fluid mechanics. The related lab activities explore qualitative and quantitative analyses of key mechanical variables important in understanding human movement.






Golf illustration provided courtesy of Skill Technologies Inc., Phoenix, AZ—www.skilltechnologies.com.