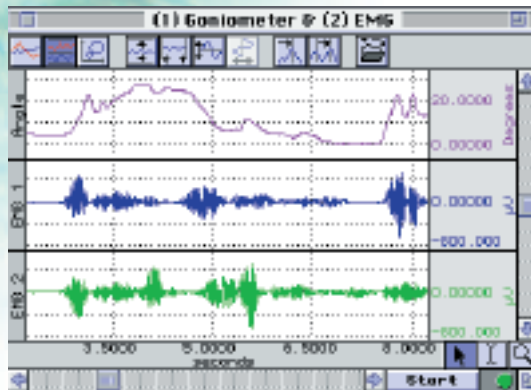


Record body movement data for extended periods or trigger recordings when movement occurs (e.g. karate kick). Input and analyze data from force plates and synchronize measurements with video capture equipment. Perform real-time calculations and post-collection analysis, including X/Y plotting. Use markers to log events as they occur, then add comments immediately or later.

## FEATURES

- GAIT ANALYSIS
- RANGE OF MOTION
- ISOMETRIC CONTRACTION
- ISOTONIC CONTRACTION
- ERGONOMICS EVALUATION
- SYNCHRONIZE WITH VIDEO CAPTURE
- REMOTE MONITORING



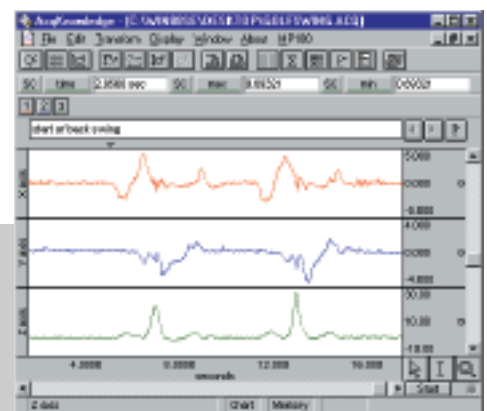
### GAIT ANALYSIS **Q42**

Simultaneously acquire up to 16 channels of gait-specific data. One setup might incorporate two channels for heel/toe strike timing, ten channels for EMG signals and four channels of goniometry data. When using a force plate, the six force and moment signals are sent directly from the force plate amplifier to the UIM100C via standard analog cables, leaving ten channels for additional signal recording. Event markers let users log important events in the data and include comments during or post acquisition.

- Injury Assessment
- Flexibility Quantification

### RANGE OF MOTION **Q44**

All parts of the body can be evaluated for range of motion. Goniometers are available for evaluating one or two degrees of freedom from the same joint (e.g. wrist flexion/extension and radial/ulnar deviations). Use the X/Y plotting feature to inspect motion resulting from two degrees of freedom. Place torsionimeters along the spine to measure twisting along the spinal axis. Place miniature goniometers on the back of fingers to determine maximum extension and flexion of the digits. Determine velocity of motion by using AcqKnowledge to perform a derivative on the recorded movement data, then run a second derivative on the data to calculate acceleration.



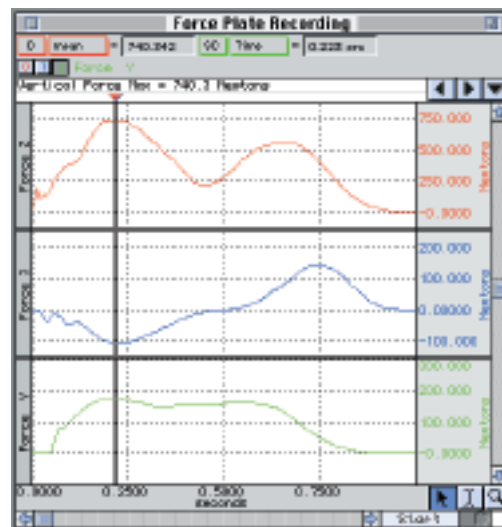
## ISOMETRIC CONTRACTION

Isolate a wide range of muscle groups and evaluate their isometric contraction characteristics for performance quantification. Configure the TSD121C hand dynamometer to measure handgrip force or a wide range of pulling forces. To measure pulling forces, secure the dynamometer to a fixed surface, then connect a tether between the dynamometer and the muscle group under investigation. If the exerted force will exceed 100kg, use pulleys to attenuate muscle forces to less than 100kg. For additional insight, acquire EMG data during isotonic force measurement.

## ISOTONIC CONTRACTION

Examine muscle groups for isotonic performance by placing the TSD109 accelerometer on a target limb actively hoisting weights of specific sizes. The accelerometer records the precise time the weight moves, and the subsequent acceleration of that movement. For isometric to isotonic transition investigations, use the TSD121C Hand Dynamometer with the Dynagrips option. Place the dynamometer in-line between the weight to be hoisted and the target limb. As the weight is lifted, the hand dynamometer will measure the applied lifting and transition forces, while the Accelerometer indicates the transition timing.

bending in the knees or unsafe rounding in the lower spine, use goniometers.



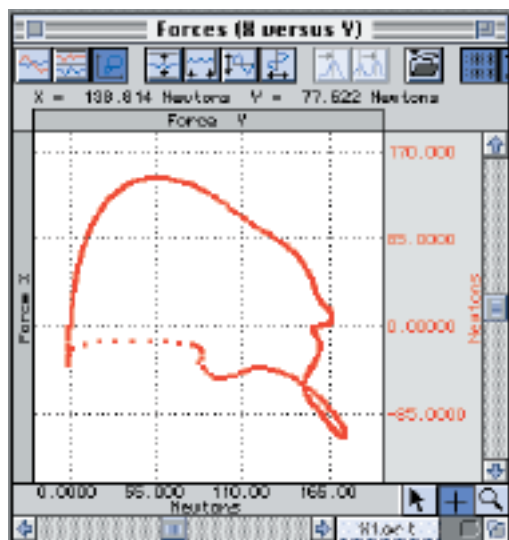
## SYNCHRONIZE WITH VIDEO CAPTURE

There are several ways to synchronize motion analysis equipment employing video capture with the MP System.

- 1) The video capture system can send a TTL trigger start pulse to the MP System.
- 2) The vertical sync pulse from the camera can be directed to an unused analog input and then AcqKnowledge's peak counter can compare the exact video recording time to the other data channels recorded by the MP System.
- 3) The MP System can send a synchronizing trigger to the video capture system.

## REMOTE MONITORING

For biomechanical measurements, the recording cables attached to the subject must be durable but unobtrusive. The TEL100C remote monitoring module set supports an extremely wide range of biomechanical measurements, with minimal cable hindrance and maximal motion flexibility. With the appropriate Smart Sensor, the TEL100C can perform the same recordings as standard amplifiers and transducers when using an MP System. The TEL100C can be located up to 60 meters from the recording computer—data is transmitted to the MP System using a single, lightweight, coaxial transmission cable. Each TEL100C will amplify up to four channels of data and the input channels automatically configure themselves for the type of Smart Sensor plugged into the amplifier/transmitter. See the *Smart Sensors* on page 67.



## ERGONOMICS EVALUATION

Body position and posture can be analyzed over a wide range of static and dynamic conditions and these measurements can be used to determine the ergonomic characteristics of a specific work activity or environment. To reliably record head tilt with respect to the X-, Y- and Z-axes simultaneously, place a TSD109 accelerometer on the head. To directly measure adequate

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