



*'Applying Biomechanics to Achieve  
Peak Performance'*

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## **PRODUCT DESCRIPTION**

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### ***REAL-TIME MOTION BIOFEEDBACK***

Advanced Motion Measurement's (AMM) AMM-3D GOLF, Motion Analysis Sport and Research Systems are based on 'real-time' electromagnetic acquisition hardware. This type of system allows the operator to monitor the sensors in 'live' mode (where sensors are actively sending positional and rotational (6DOF) information to the computer, and simultaneously the sensors are actively visible on a PC or laptop monitor) prior to capture. While in this 'live' mode the AMM system can be used as a real-time motion (biofeedback) generator. The system operator can select any motion (kinematic) variable and place an audible (sound) tone and visual cue on any range of movement (based on the variable type, i.e. degrees, centimeters, etc.). Once this is done the operator and the subject can both hear when the movement is either in range (positive feedback) or out of range (negative feedback).

#### **A Sports Example**

In golf, the system operator may be concerned with head movement. The operator can place a tight constraint on vertical movement of the head sensor. If the subject, at anytime during their golf swing, moves their head upward greater than the specified amount, the tone will sound. This would then allow the subject to learn to keep their head from rising above this level during the swing. In addition, in a golf swing, the rotational component of the upper torso is a factor of critical concern. During a practice swing an audible tone and a visual cue could be set for a specified range of rotational motion for the torso. When the golf swing reaches the top of the back swing, the tone is activated and signals whether the swing has remained inside the range or passed outside the nominated range (i.e. has the golfer over rotated the shoulders (or the hips ...etc.) compared to an average/professional golfer. This feature makes the *AMM-3D Sport Biomechanics Analysis and Training System* a truly unique training tool. Students learn to modify their technique very quickly!

#### **An Ergonomics Example**

An example of this might be the angle the spine of a subject during a lifting task. The system operator may set a tone on the angle of the sensor, placed on the spine, versus the vertical axis, and when the subject bends over greater than a defined number of degrees, the system would sound a tone. This might be used as a warning to the subject that they are in an undesirable position for a lift, thus training them to lift in a more upright safe manner.

#### **A Rehabilitation Example**

Another example for rehabilitation purposes might be to set a tone on a range of motion for two sensors placed on the forearm and the upper arm, i.e. around an elbow, to measure flexion/extension. If the system operator is trying to increase the range of motion for the subject's elbow, they may set the tone for the range of motion they wish the subject to achieve. When achieved, the tone will sound. The range can be increased slightly upon each visit to the facility, thus giving the subject feedback as a reward for having accomplished the new increased range for their elbow. This is an instantaneous tone when the exact angle is reached, thus eliminating guesswork or use of goniometers or other measuring devices.