



Sport Sciences Research  
Institute of Iran

***Sport  
Biomechanics  
Laboratory***

# *Motion Analysis*



The Raptor series of motion capture systems allow our customers to use the system outdoors as well as indoors without changing any of the hardware or software on the system. Motion Analysis has developed exclusive new proprietary image processing software which is embedded in the Raptor cameras. The Raptor cameras have twenty times the processing power of our previous generations of cameras to accomplish all of the required image processing computations. This new, exclusive software addresses the various challenges of working outdoors in direct sunlight as well as indoor environments where reflections and lighting conditions can also affect a capture, while maintaining extreme accuracy and real-time capabilities.

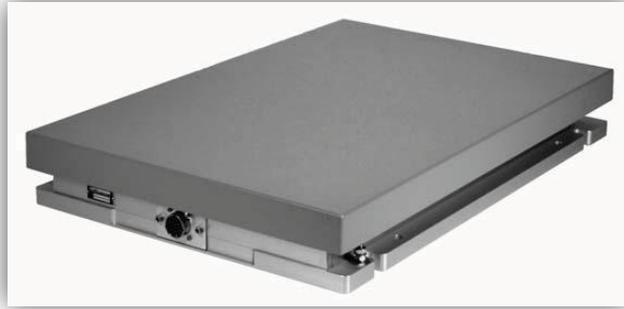
## ***Features:***

1. Indoor and outdoor capture without changing any of
2. the hardware or software
3. Gray scale centroid or gray scale edge (user selectable)
4. for every marker at all frame rates
5. 1-500 Hz selectable frame rates at full resolution
6. Portable - up to 8 cameras in two suitcases

7. Built-in zoom provides more visual options for ease of
8. set-up
9. Separate zoom, iris and focus settings independent of
10. ring light
11. High power, near IR ring lights (HPRL)
12. LED display panel for camera identification and status
13. 323 LED's for brighter and better light uniformity
14. Four body mount points on camera
15. Software controlled adjustable light output
16. SDK provided at customer's request

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## *Force Plate (AMTI)*



A force plate is designed to measure the forces and moments applied to its top surface as a subject stands, steps, or jumps on it. Force plates are regularly used in research and clinical studies looking at balance, gait, and sports performance. AMTI offers a wide range of platform sizes to best meet the needs of individual researcher's applications. Standard platforms sizes range from approximately 45 x 50 centimeters to more than 1200 x 1200 centimeters. AMTI also regularly provides custom-sized force plates for specialized applications.

AMTI's OR6-7 is the "standard size" force plate for gait studies and is used in hundreds of labs around the world. High sensitivity, low crosstalk, excellent repeatability and long-term stability make this platform an ideal candidate for research and clinical studies.

### ***Features:***

1. Excitation: 10V maximum
2. Crosstalk: Less than 2% on all channels
3. Temperature Range: 0 to 125°F (-17 to 52°C)
4. Fx, Fy, Fz hysteresis:  $\pm 0.2$  % Full Scale Output
5. Fx, Fy, Fz non-linearity:  $\pm 0.2$ % Full Scale Output

## *Postural measurement Portable Box*



This box contains tools suitable for studying different aspects of physical condition. Its features are mentioned as being lightweight, portable and inexpensive. This device is used to assess postural condition and spine (lordosis and kyphosis), Shoulders, knees and feet abnormalities.

### ***Features:***

1. kyphometer (for kyphosis and lordosis measurement)
2. Norma ruler (In two sizes, large and small, to measure Q angel and joints range of motion)
3. Caliper (to measure the distance between knees and ankles)
4. Forward Shoulders measurement

# *Foot pressure*

## *(Emed Pedography Platforms)*



Emed Pedography Platforms are accurate electronic systems for recording and evaluating pressure distribution under the foot in static and dynamic conditions. The Emed<sup>®</sup> systems belong to the family of novel pedography measurement platforms. All scientific Emed<sup>®</sup> platforms operate with calibrated capacitive sensors.

### ***Features:***

1. are portable platform measuring systems
2. contain calibrated capacitive sensors
3. get connected via USB to laptop or desktop computers
4. require Windows 7 or 8 operating system
5. accurately measure foot pressure and body weight in static and dynamic mode
6. start recording automatically when the subject's foot contacts the platform
7. data acquisition can be controlled by novel database
8. link with novel foot report software

## *Specifications:*

1. dimensions: 690x403x 16(18)
2. number of sensors: 6080
3. sensor resolution (sensors/cm<sup>2</sup>): 1/4
4. pressure range (kPa): 10-1270
5. pressure threshold (kPa): 10
6. synchronization: frame by frame in- and out- synchronization



## *Gait and running analysis system (schein company)*



The SCHEINWORKS System allows using several measuring systems with only single software. The core of the analysis is the treadmill with integrated pressure measuring plate. In combination with the optional synchronized SCHEINWORKS cameras, motion analysis can also be performed visually. The SCHEINWORKS Digi PED foot scanner, which can also be used as an individual measuring unit, complements the analysis. The treadmill is a practical solution for smaller sized set-ups if only little space is available. Its light-weight construction makes it perfect for mobile use. It can be set up and folded away easily. It is delivered completely assembled and can be taken into operation at once.

### **Features:**

1. Speed: 0,8 - 14 km/h
2. Running surface: (L x W) 122 x 144 cm
3. Weight: approx. 75 kg
4. Dimensions: (L x W x H) 160 x 80 x 131 cm
5. Dimensions folded: (L x W x H) 159 x 80 x 47 cm
6. Track access height: 19 cm
7. Maximum user weight: approx. 100 kg
8. Sensor surface: 94,8 x 40,6 cm
9. Number of sensors: 5376

## *Zuki*



This machine as a resistance device can improve both muscle strength and Zuki skill. Using a lever, the angular momentum caused by resistance section is attached to a rod in a sinusoidal path. Sinusoidal movement of the device may cause high punching resistance at the beginning, low resistance at the middle and an increase at the end of the movement. this pattern causes a ballistic movement.

### ***Features:***

1. Considering contraction types (concentric and eccentric)
2. Considering rhythm and range of motion
3. Considering body joints condition such as knees and ankles
4. Cutting resisting force after performing skills such as throwing
5. Maintaining Zuki skill movement pattern while strengthening with resistance
6. No additional muscle involvement in skill strengthening
7. Impossibility in learning wrong skills while practicing with Zuki
8. Considering rhythm and pronation supination movements required for the Zuki skill