Team 14: Ankle Injury Prevention

R&V Point Allocation

Subsystem	Requirement	Points
Battery	Stores and reliably provides 9V for at least a 30-minute period.	2.5
DC-DC Buck Converter	DC-DC buck converter provides 5V ($\pm$ 5%) from a 9V source.	2.5
Flex Sensors	The output voltage of the flex sensor must correspond to the flex sensor resistance, which is determined by the bend angle. The relationship between the bend angle and output voltage must be linear.	7.5
Pressure Sensor	The pressure sensor must be able to read values in the range of 0-100 pounds in order to help identify key events such as jumps, lands and push offs.	5
Bluetooth Transmitter	The transmitter must be able to transmit data to a device at least 30 feet away.	5
Microcontroller	Must be able to communicate with the Bluetooth module. The microcontroller's ADC will be required to read voltage values from the sensors ranging from 2.181 V to 5.272 V.	7.5
Bluetooth Receiver	Software module receives data without loss through Bluetooth for a 30 minute period.	5
Model to Map Ankle Angle & Identify Key Events	Model maps out ankle angles on the frontal plane accurately. Model determines when jumps and landings are occurring accurately.	5
Model to Determine Injury Risk	"Total Ankle Stress" calculation reflects how much a user is utilizing their ankle muscles accurately. "Ankle Variance" reflects how destabilized the user's ankle is.	5
User Interface	The interface must be able to display the processed data to the user within 1/2 second of the data being sent from the signal collection module.	5
	Total	**50**