



Quick Start Guide

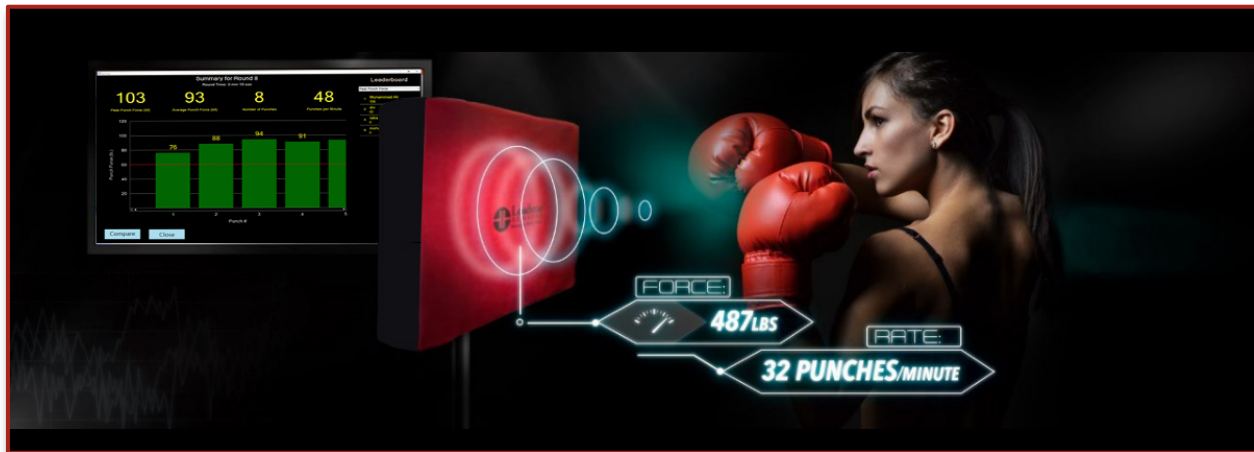
Version 2.0

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INTRODUCTION TO PUNCHSENSOR

PunchSensor is a complete hardware and software solution that helps boxers, mixed martial arts practitioners and other athletes to measure, track, and evaluate impact forces such as from punching or kicking.



PunchSensor Kit Components

The kit includes the following components:

- Punch Sensor (approximately 15" x 20")
- Punch Pad that covers the sensor (approx. 2" thick)
- High Speed USB Sensor Interface
- PunchSensor Software
- Kit is fully calibrated and ready to use
- Just needs to be mounted onto a wall or an exercise frame

Software Features

The software allows the user to measure the following parameters from a Punch or Kick:

- Peak force of each impact
- Number of impacts
- Average force per round
- Number of punches per minute
- Compare the value of the punch against a Target
- Compare performance from multiple sessions and see how one stacks up against competition

Note: The software is designed for 1920x1080 screen resolution.

HOW TO MOUNT THE PUNCHSENSOR

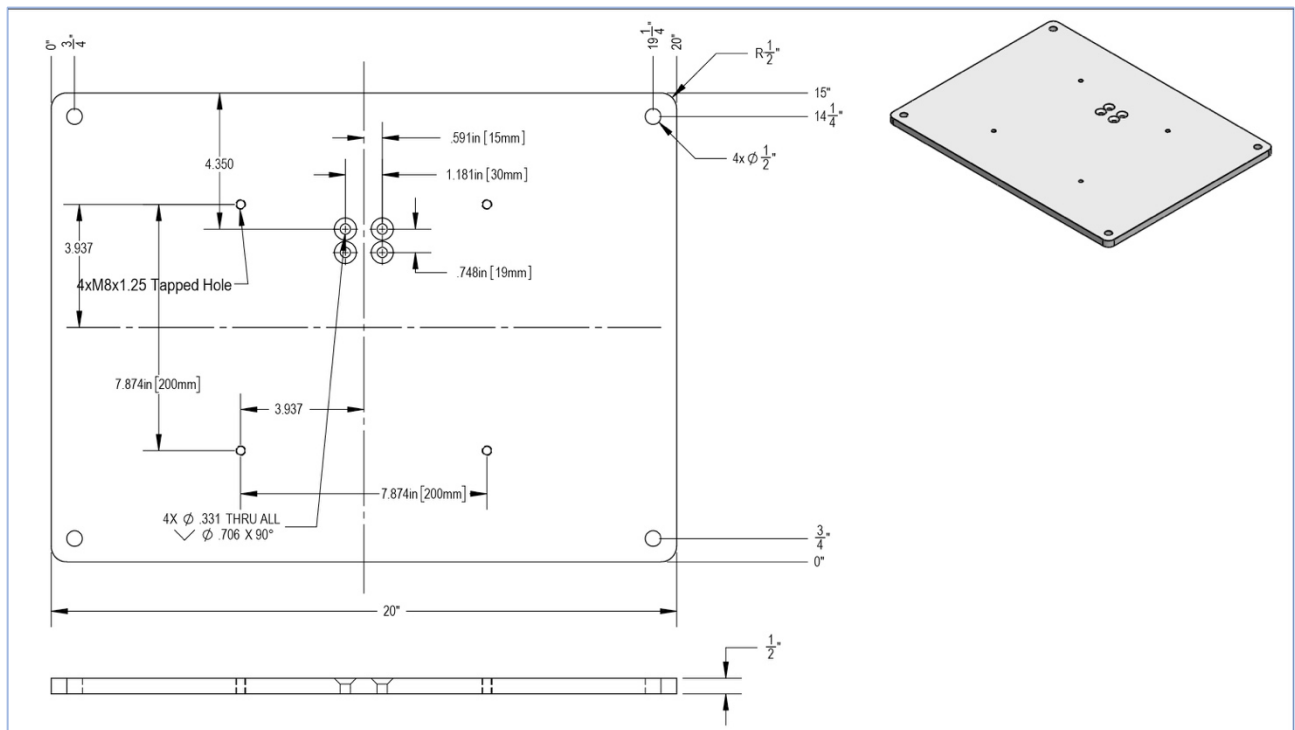
The PunchSensor is made with two aluminum plates that sandwich a sensor between them. The upper plate has the Punch Pad mounted to it to make it safe to punch or kick. The back plate is the mounting plate that can be mounted to a frame or to a wall or to any other surface using some mounting features provided on the back of the sensor.



PunchSensor Installation: Mounted to an Exercise Frame

Mounting Features

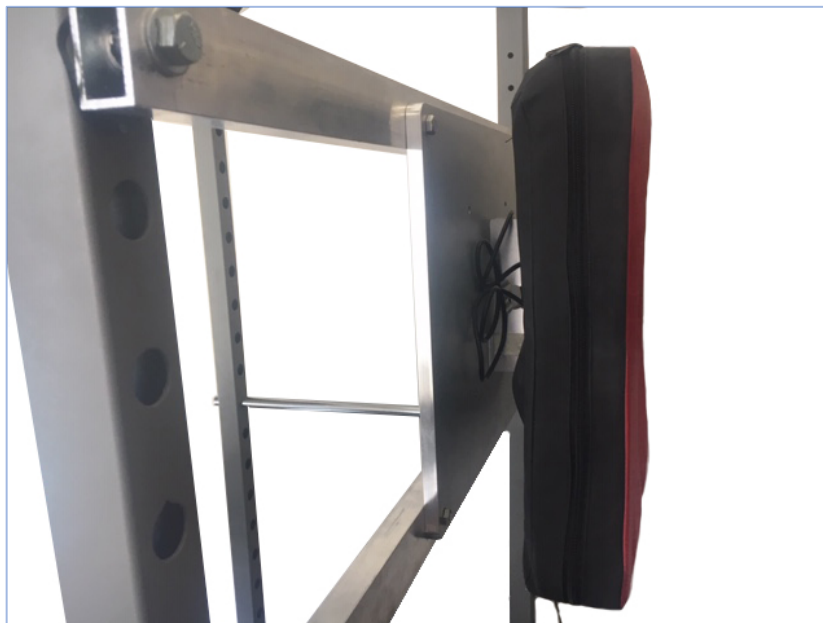
1. Mount the back plate using the four holes on the base plate.
You can see the four through mounting holes at the four corners of the base plate in the diagram shown below. You can use these four holes to bolt the PunchSensor onto a wall or an exercise frame.
2. Use four threaded holes to mount large screen TV:
In addition to the four through holes, there are four threaded holes that are compatible with VESA standards for large screen TV mounting. You could use those holes with commercially available TV mounts.



PunchSensor Base Plate Details

PunchSensor Installation: Side View

Shown below are two close-up images that give a detailed look at how to mount the Punch Sensor to an exercise frame using two aluminum bars.



PunchSensor Installation: Rear View and Side View

SOFTWARE INSTALLATION AND OPERATIONS

Installing the Software

1. Open the Installation CD or USB storage device Or Download Link.
2. Click on Setup.exe to run the Installation file.
For many users with virus and other protection or security installed, it is best to Right-Click on the Setup file and Run As Admin, even if you are already an Admin (or seek help from your IT professionals).
3. Once the setup is complete, the process will try to install the drivers to handle the USB functionality of the sensor. If this step is not properly completed, you may have trouble finding the sensor when you go to the next step and run the program. In case of difficulty, please reinstall the drivers by visiting [loadstarsensors.com/support/downloads](https://www.loadstarsensors.com/support/downloads) page.
4. If you run the setup file as Admin, then it will try to change the latency timer for the sensor COM Port to 1 ms. If it doesn't, you can do it manually the first time you use the sensor.
 - a. Launch the Device Manager and find the port which serves as the COM port for our sensors.
 - b. This shows up when you plug in the USB connector into the PC that you are going to use. Please follow the instructions provided on this link to make sure the Latency Timer setting is set to 1 ms.

<https://www.loadstarsensors.com/assets/manuals/html/how-to-set-latency-timer/latency-timer.html>

5. In case of difficulty, visit [loadstarsensors.com](https://www.loadstarsensors.com) and under the Support menu option, select the Remote Support option. Download and Install the support app and contact us with the ID and password. We can then see your screen with your permission and assist you.

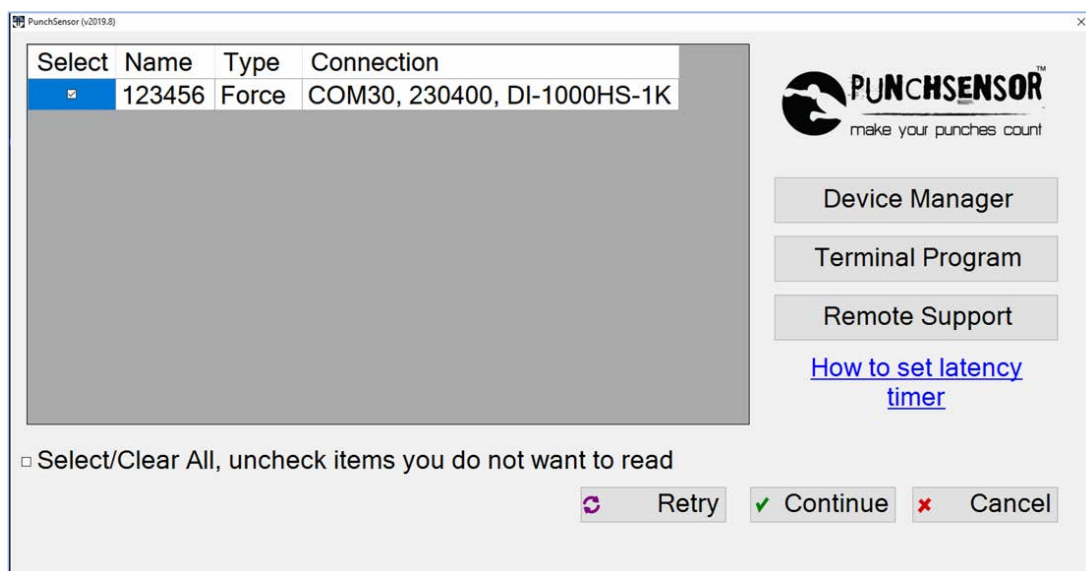
Operating the Software

1. Start PunchSensor application.



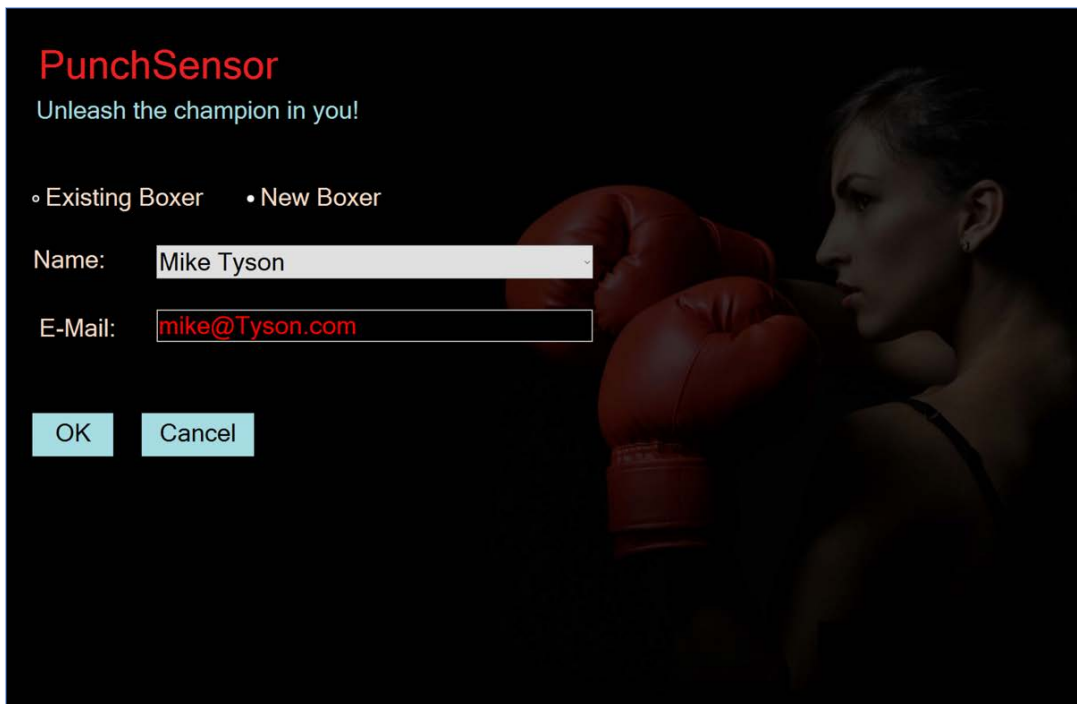
2. Select Sensor and select Continue.

The software will find all COM ports that are relevant to your software solution. Here for example it shows up as COM30, operating at 230K baud rate. In case you need to access the Device Manager or seek help from Loadstar Sensors, click on Device Manager or Remote Support using the convenient buttons on this screen.



3. Register

- New User: Enter a name or alias and Email address you'd like to use when operating the software.
- Existing User: Click on Existing Boxer and select the User from the dropdown menu.

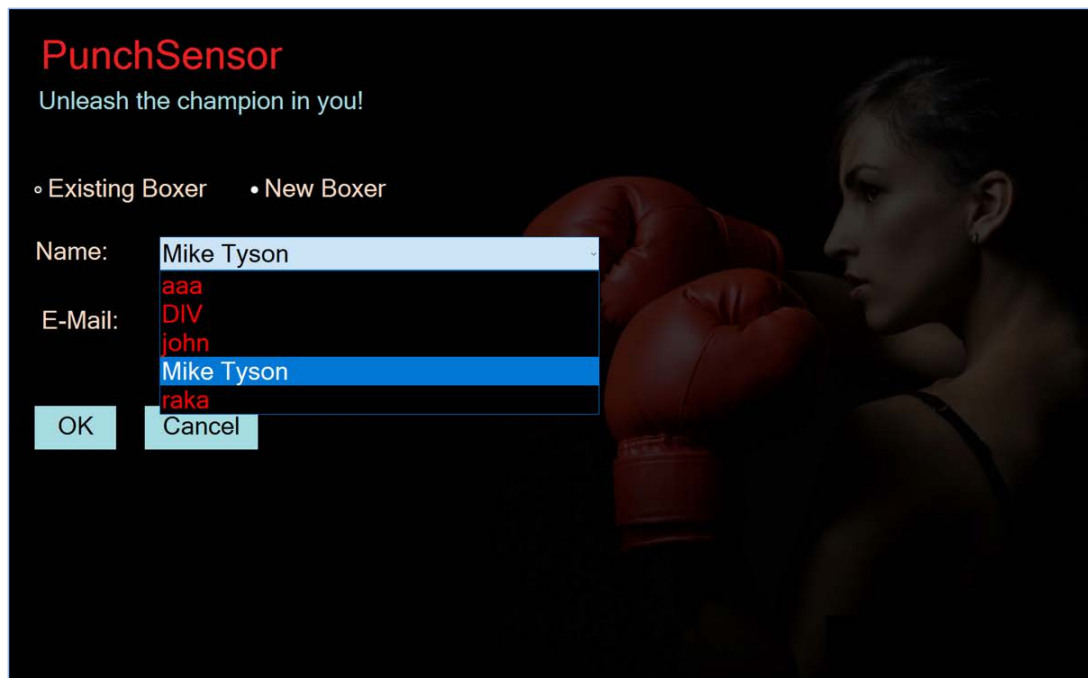


PunchSensor
Unleash the champion in you!

◦ Existing Boxer • New Boxer

Name:

E-Mail:



PunchSensor
Unleash the champion in you!

◦ Existing Boxer • New Boxer

Name:

E-Mail:

4. Input Settings:

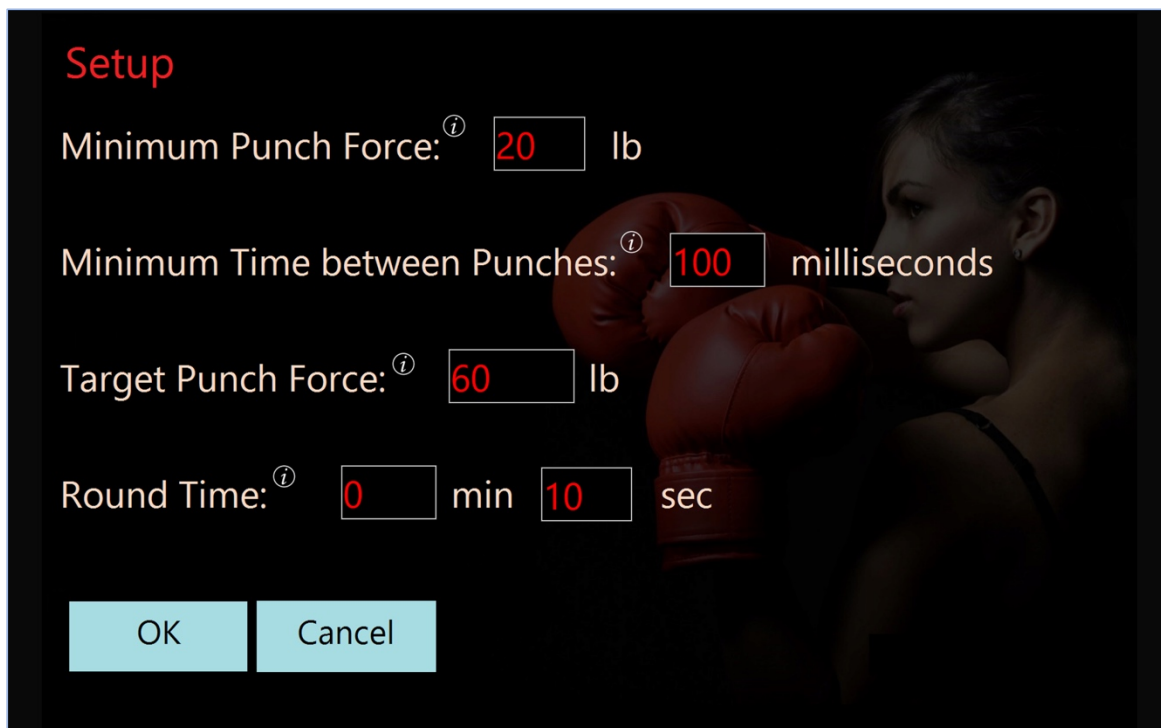
These are the settings a user can adjust to achieve the best performance from the sensor and accurately measure punch/kick forces.

Minimum Punch Force: This is the minimum force that is counted as a Punch. This is an important parameter used to weed out vibrations and other incidental forces that are not to be mistaken for a punch.

Minimum Time Between Punches: This is the minimum time that is expected between punches. This assumes that no human being can punch faster than this interval. For e.g. 100 milliseconds means that a person can at best punch 10 times per second. This is also used to weed out vibration from true punches.

Target Punch Force: This is a target one can set to aim for during practice. So, with proper techniques and strengthening exercises, one can achieve this target force.

Round Time: What is the duration of the session to record and measure? Select 30 seconds, 1 minute etc.



Setup

Minimum Punch Force: ⓘ lb

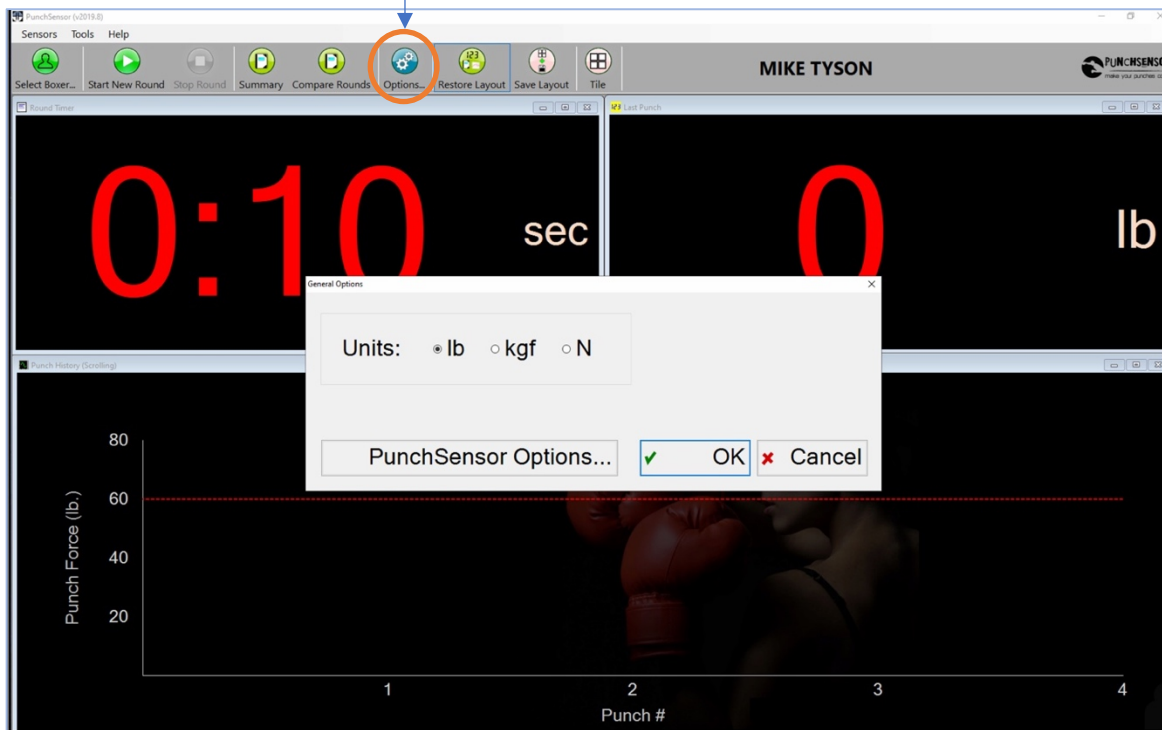
Minimum Time between Punches: ⓘ milliseconds

Target Punch Force: ⓘ lb

Round Time: ⓘ min sec

You can access the Settings by clicking on the Options icon on the Menu/Tool Bar and select the units you would like the Force to be measured and displayed in.

Click on Options
to go to Settings screen

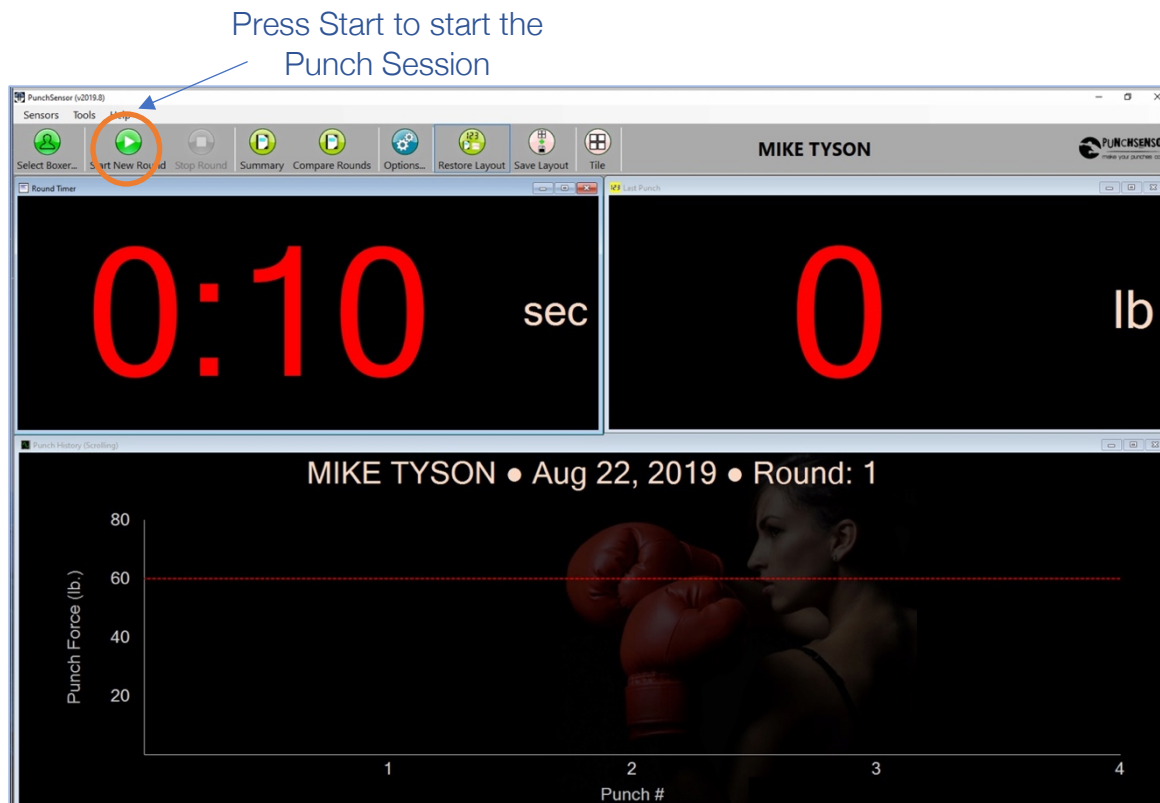


5. Start Punching

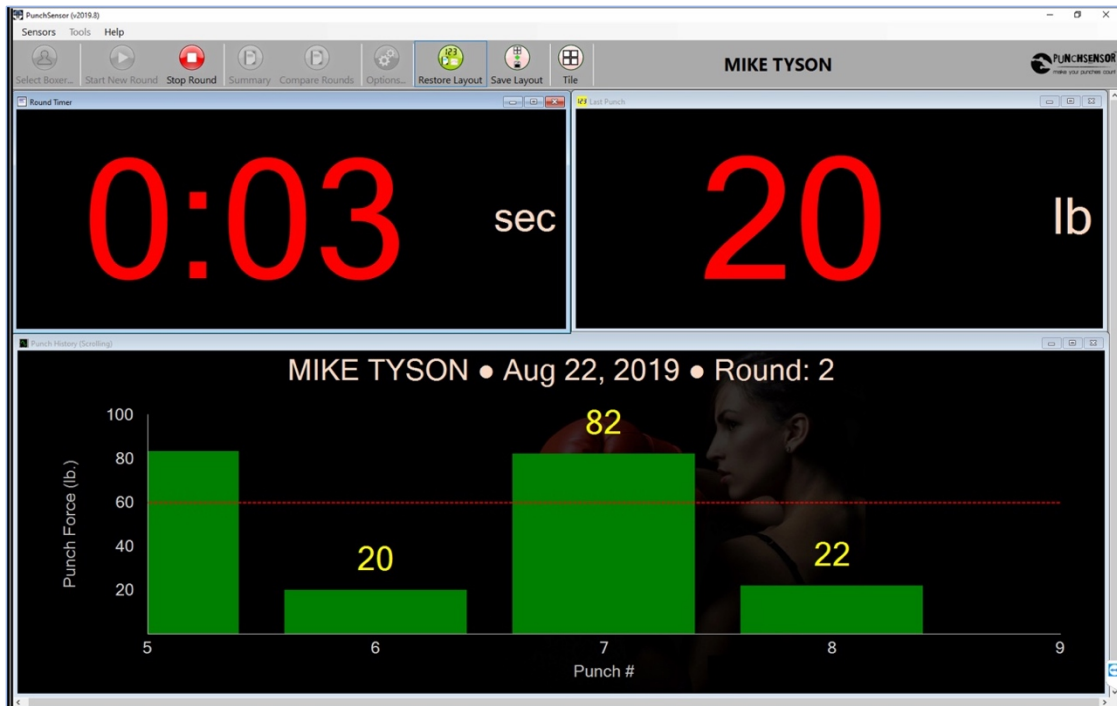
If you've completed initial setup, you should come to this screen. It will show you the Round time you selected and should show blanks for the punch force value and plot.

All the windows shown on this page can be adjusted to make them as large as the user wants. One can hide or close windows that you don't want or place other ones available by clicking on the "tile" button to see all available parameters. Once you have setup the screen as you want it to be, click on Save Display View. This ensures that next time you start the program it will launch with this view.

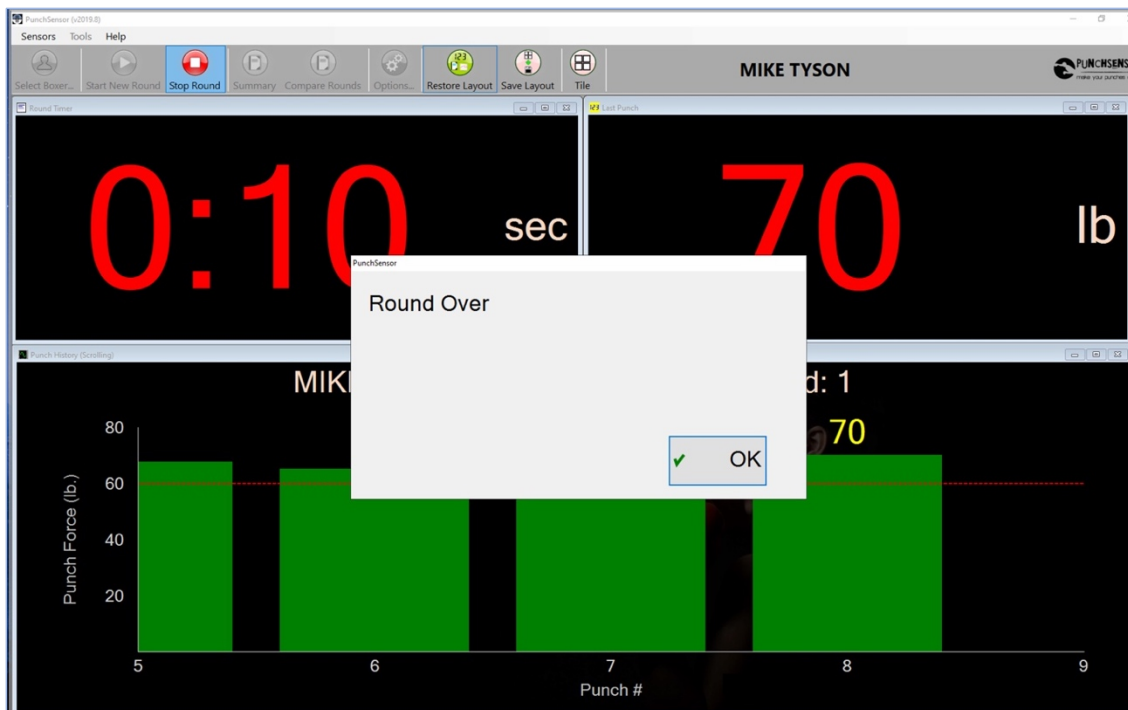
Then click on the Start New Round button. At that point the timer will start, and you can start punching. The sensor will start showing the peak punch force and plot the last four values to you as a bar chart.



When you click on Start New Round Button, you will see the punch timer decrement.



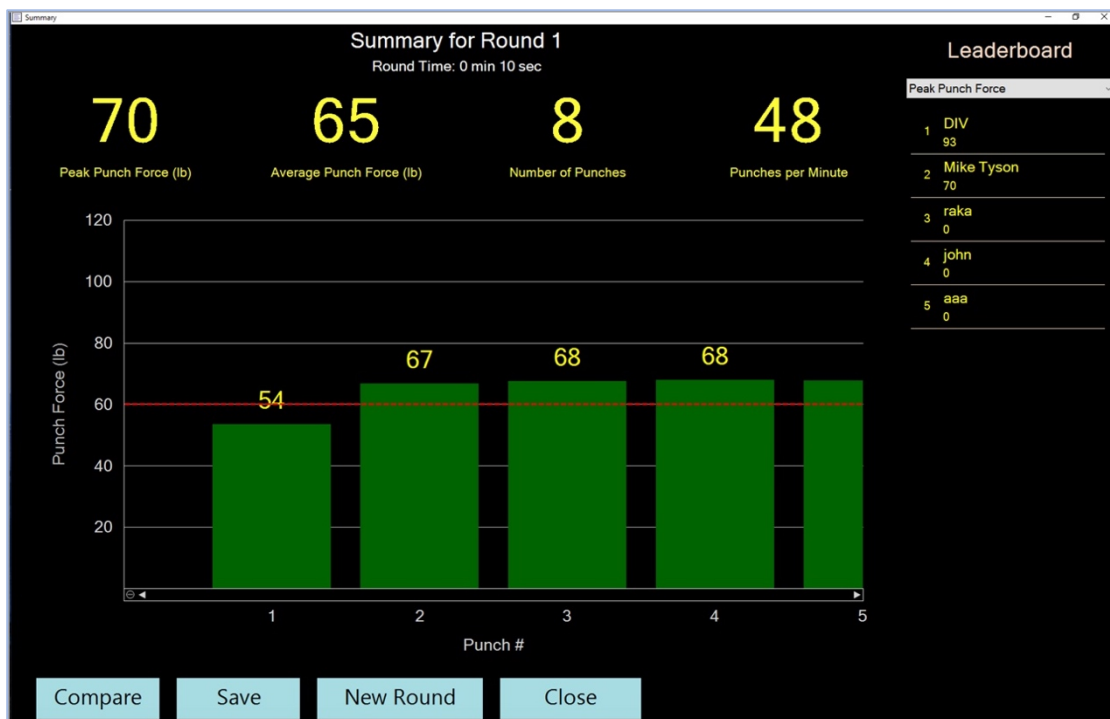
After the time expires, you will hear a bell. Once you click on OK, you will see a Session Summary



6. Summary

This screen shows a summary of the current round. You can see all the punches as a bar graph and scroll through them all by using the scroll bar at the bottom of the graph. And a summary of the round is shown with the Peak Punch Force, the Average Punch Force, Number of Punches and Punches per minute.

In addition, a leaderboard can be seen to the right that shows the top performers in each category. You can use the drop-down menu to select the parameter by which you want to view the leaders.



If you want to save this session, click on Save button. You can use this saved information to compare with other rounds later using the Compare button.

If you don't want to save, click on Close button and return to previous screen. If you want to start a new round, click on New Round button.

If you click on any button without saving, the data from the current round will be discarded and the round number will stay the same.

7. Compare Punch Forces from Various Sessions

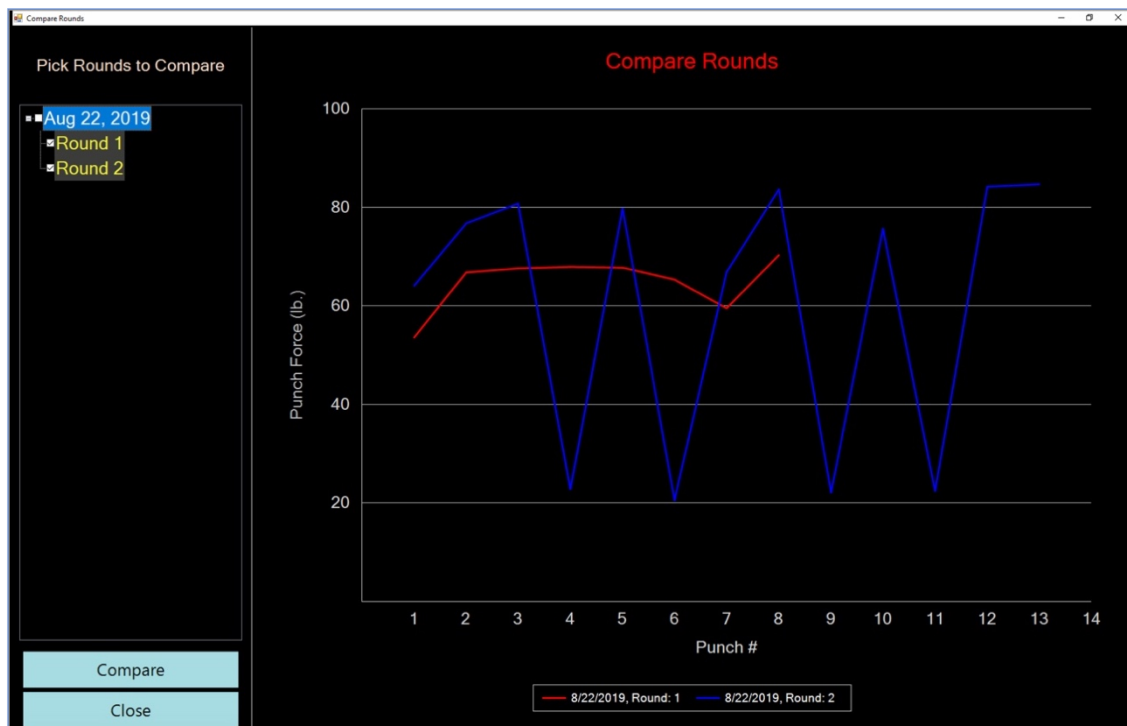
A user can plot data from multiple sessions using this tool to compare and track their progress from session to session.

For example, a coach may help you improve your technique that helps you impart more energy into your punches the following week. You can compare the before and after of the two sessions and see how you are doing.

You must select the sessions you want to compare by clicking on the square selection boxes.

If you want to print or copy the images on this screen to share with others, please use Windows Snipping Tool to capture the images.

You can then paste the image onto any application on your computer and save and print as needed.





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