# LIVE VIEW SPORTS



LVStudio

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# 1 Connecting the Camera

Make sure your LVPro or LVPro2 camera is connected to your iOS device via WiFi before launching the LVStudio App.

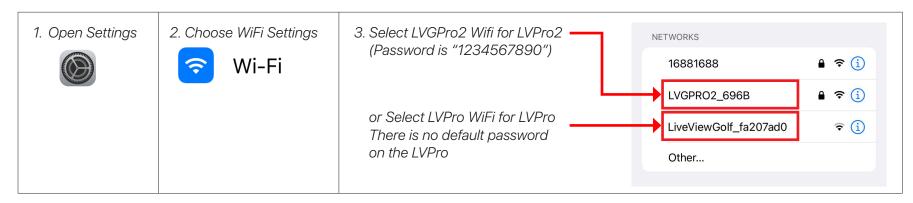
#### a. Step 1

Power up your camera by pressing and holding the power button for 3 seconds.



#### b. Step 2

Select the LVPro or LVPro2 Hotspot.



#### c. Step 3 (LVPro2 Connection Trouble Shooting)



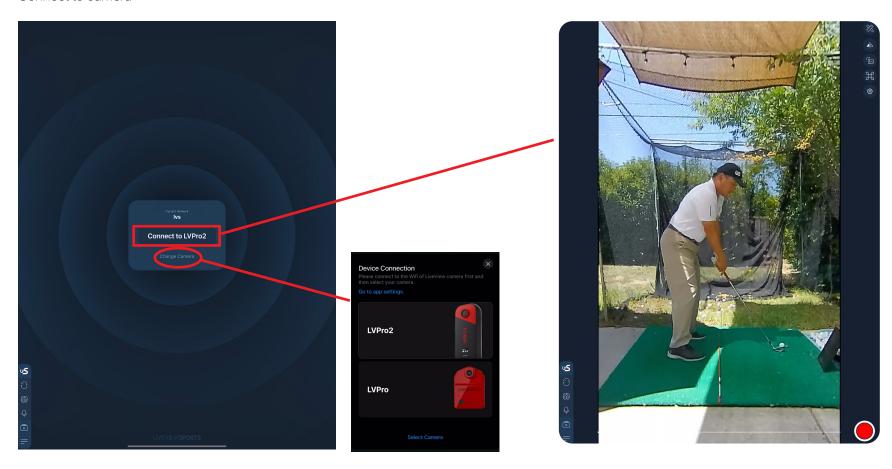
NOTE: Only one device can be connected to the LVPro2 at a time.

If the LVPro2 cannot connect, check to make sure that the camera is not already connected to another device. Check the LVPro2 MFD for message feedback. If the MFD message reads "Ready" another device is already connected to the camera and must be disconnected before connecting the new device. The MFD should read "Waiting" in order to connect your device.

# 1 Connecting the Camera

d. Step 4

Connect to camera



Check that the Camera description matches your model.

If the model does not match, choose the correct camera, before connecting.

LVPro and LVPro2 use different video protocols and are not compatible. You will not get video if you select the incorrect camera.



#### **Display Functions**

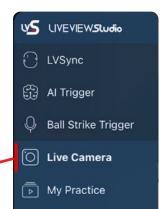


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- Draw lines, circles, rectangles and other objects.
- Flip video to match movements for front facing video.
- Rotate video to match camera orientation (LVPro only)
- Apply grid overlay for reference.
- Quick Settings.

#### **Expand Full Menu**



্ট্টি Settings

Profile

- LVSync (Dual Camera)
- Al Swing Recording.
- Sound Trigger Recording
- Home Screen (Live Camera)
- Recorded Swing Library
- Settings
- User Profile

#### **Manual Recording Button**

#### **Basic Function Overview**



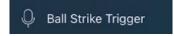
#### 1. Live Camera (Section 3)

Live Camera provides a live video feed from the position of the LVPro2 or LVPro camera. This function creates a digital mirror that allows you to see yourself as you are moving.



#### 2. Swing Recording (Section 4)

There are 3 methods to record your swing:



Al Trigger

- · Manual Recording uses button press to trigger countdown and then recording. Recording length is set in "Recording Settings"
- Ball Strike Trigger uses your device microphone to listen for a loud "clap" from ball strike to trigger a recording. Videos are trimmed automatically using a pre-strike recording buffer to show the entire swing sequence.
- Al Trigger (LVPro2 only) uses Al image analysis to detect if a full swing has been taken and triggers a recording based on the golfer's
  motions. Videos are trimmed automatically similarly to the Ball Strike Trigger. "Al Trigger" is only available on the LVPro2



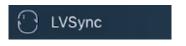
#### 3. Recorded Swing Library (Section 6)

See all recorded swings in the "My Practice" section.



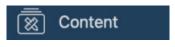
#### 4. Split Screen (Guided Mirroring) (Section 7)

Guided Mirroring loops a reference video of a prior or third party model swing for visual comparison during live practice.



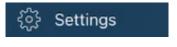
#### 5. Dual Camera (Section 8)

LVSync can convert an additional iOS device into a second camera to enable simultaneous streaming and recording of two camera angles.



#### 6. Content Downloads (Section 9)

Download Content provides access to pre-built sample swings and lesson content from the LVS Cloud. Some content requires premium subscription and in-app payment. A registered Profile is required to access Content downloads.



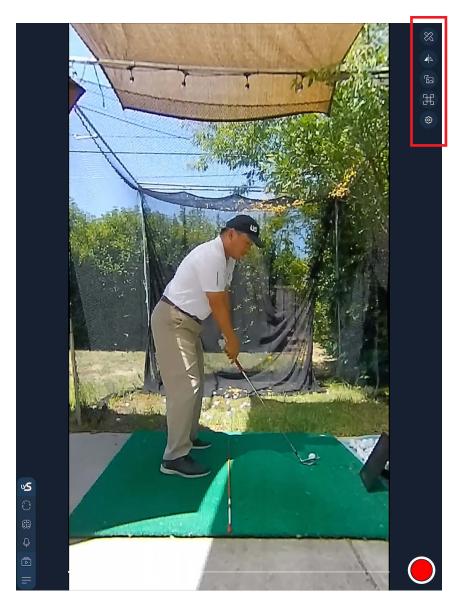
#### 7. Settings (Section 10)

Settings provide additional control over key features as well as access to hardware camera settings such as WiFi channel and custom SSID settings.

Live Camera provides a streaming video feed that works like a mirror to show you what you look like from a coach's eye. You can monitor your setup and takeaway to understand exactly what your ideal swing should feel like. Once you understand the difference between your current swing and the target swing, use Live Camera to groove the new feelings until you can get the correct movement based purely on the new feel.

## **Live Tools**

Digital Video can be adjusted with Live Tools to Flip Video to match your movements, create reference Grid overlays, rotate video to match camera alignment, or insert graphics to provide precis reference points for your practice:



Home Screen

# 4 Swing Recording

Swing recording is simple and convenient in LVStudio. You can use manual recordings, automatic recordings triggered by your ball strike and even automatic recording triggered by your movements when ambient noise makes sound trigger difficult. Automatic recordings are trimmed automatically to capture both the back swing and follow through.

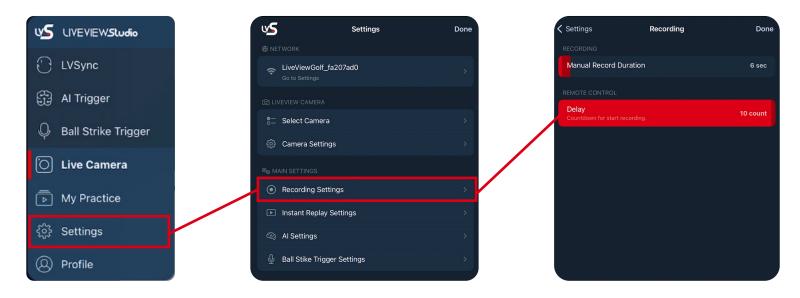


#### a. Manual Recording

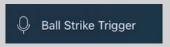


Trigger a manual recording by pressing the red button. A manual recording is a timed recording that runs for a set number of seconds and then stops automatically. Once a recording starts, the circle turns into a red square with a timer that counts up the recording time until the recording is complete. Manual recordings can also be stopped by pressing the red square during the recording duration.

Adjust the recording duration and countdown timer in the App Settings.



# 4 Swing Recording



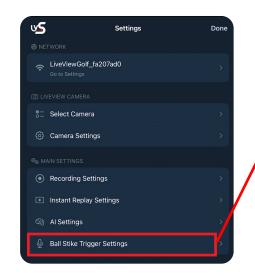
#### b. Sound Trigger

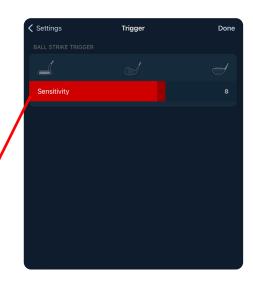
Pressing the "Ball Strike Trigger" button puts your device into listening mode represented by a green microphone in the top right corner. Any loud sound will then trigger a swing recording (red microphone) that includes an additional 2 seconds of backswing to capture the full swing sequence.



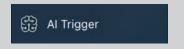


Adjust the sensitivity of the trigger to filter out background noise by setting the trigger to "loud". Make the trigger more sensitive to quiet sounds like a putter by setting it to "soft"





# 4 Swing Recording



#### c. Al Trigger (LVPro2 Only)

The LVPro2 camera hardware introduces Al Trigger that uses Artificial Intelligence to record swings by watching your video. Al Trigger presents a big leap over Sound Trigger because it allows use of the LVPro2 in noisy areas like most driving ranges. Al Trigger can follow your movements and knows when you are at ball address and when you've competed your swing.

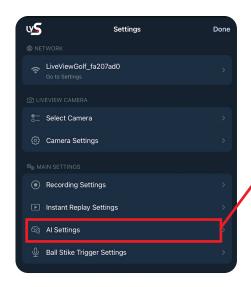


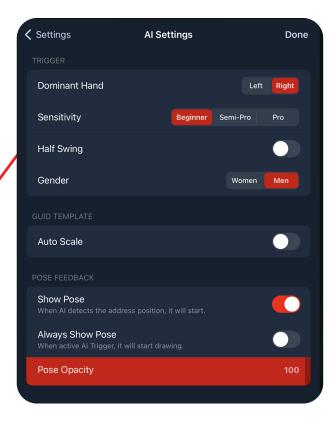




When Al Trigger is active, address the ball and wait until LVStudio has acquired your body. You can see this when LVStudio draws lines over your body to track your movements. Once your body has been recognized, swinging through the ball will trigger a recording.

# **Al Settings**





**Dominant Hand (Left/Right)** – if you swing golf left handed, change this setting to match your swing preference.

**Sensitivity** - This determines how strict the model looks at your swing. "Beginner" will make triggering the model easier, but may cause more false triggers from random motion. The "Pro" model - will only trigger when a more traditional golf swing is seen.

**Half Swing** - enables trigger from a 1/2 takeaway and 1/2 follow through.

**Gender** - Allows the model to adjust from women to men's swings.

**Auto Scale** - When drawing line and other objects in Al mode, Al Scale will automatically scale and apply the lines to fit your body.

**Show Pose** - Al pose lines are visible or hidden.

**Always Show Pose** - Al may hide the pose when no setup or swing is detected. This forces pose lines to stay on at all times.

**Pose Opacity** - adjust how opaque the pose line overlays are. set to "0" to hide lines and "100" to show lines clearly.

# 5 Video Player

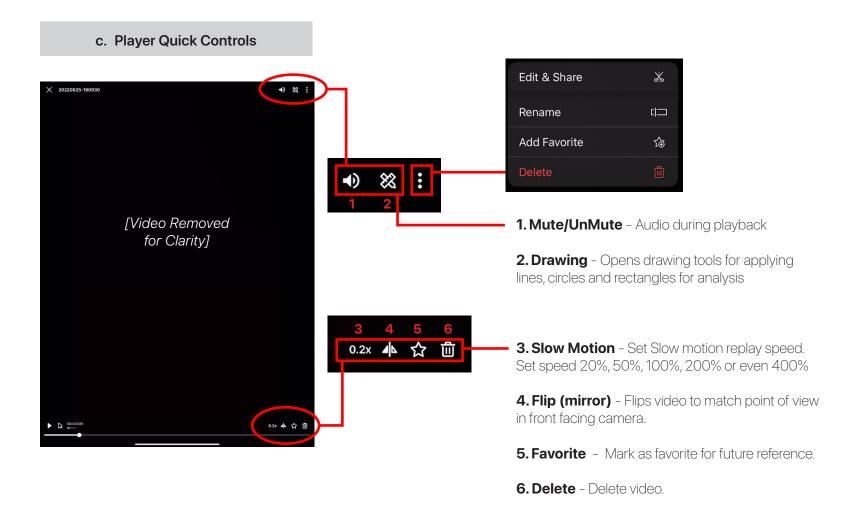
The LVS video player triggers automatically after every recording. It is also available in the file library to review saved swings. By default most controls are hidden to present a cleaner interface. The only control visible is the progress bar which can be used to manually control playback and find specific frames.

# a. Slider Control <- [] -> use the button on the slider to fast forward and rewind your video

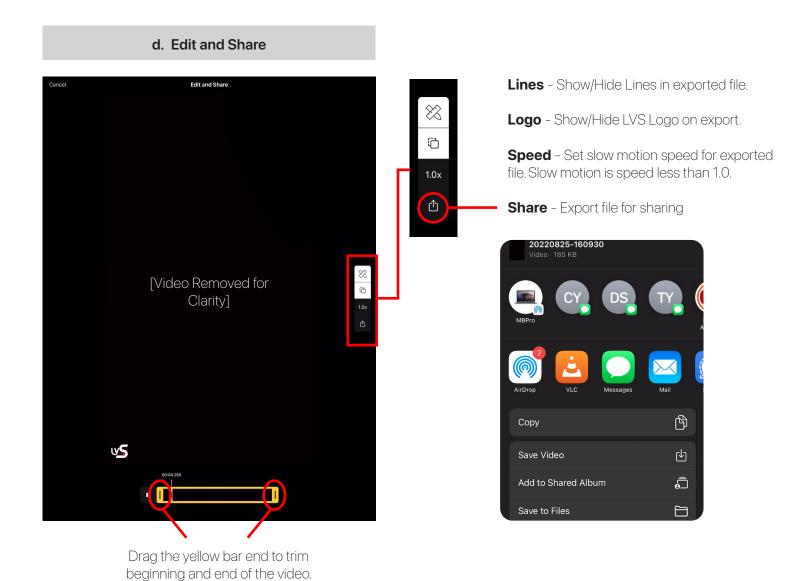
#### Control Zones:

Tap anywhere in the control zone to apply player commands. This also opens additional controls

- 1. Frame by Frame (Back)
- 2. Play/Pause
- 3. (Frame by Frame (Forward)



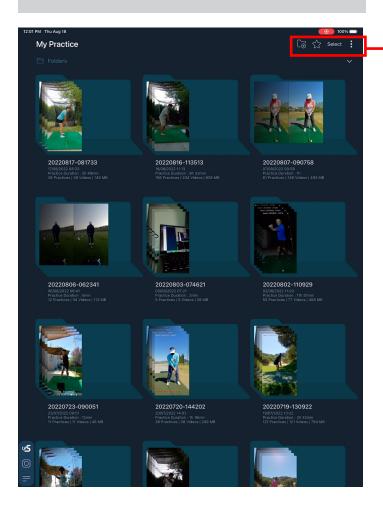
# Video Player



# 6 My Practice

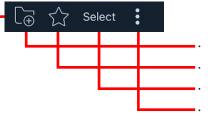
All swings are saved in "My Practice" and swings are automatically organized into folders. By default a new folder is created at the start of each session, but automatic folder creation is limited to once per calendar day. You can create additional folders manually. New swings are saved into the latest folder.

#### a. Practice Library: Folders



The key functions of the swing library are to:

- a. Delete Files and Folders
- b. Find Favorites
- c. Organize Swings (Folders)
  - New Folders
  - Merge Folders
  - · Move Files between Folders.
  - · Rename Files and Folders.
- d. Edit and Share
- e. Compare Swings.

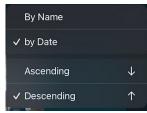


Create New Folder

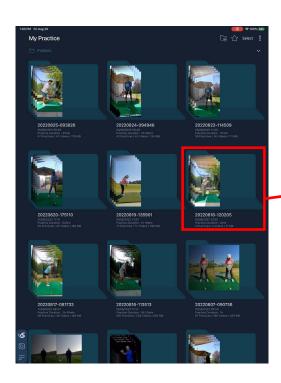
Show "Favorite" Folders

Select Folders (for delete, move or merge)

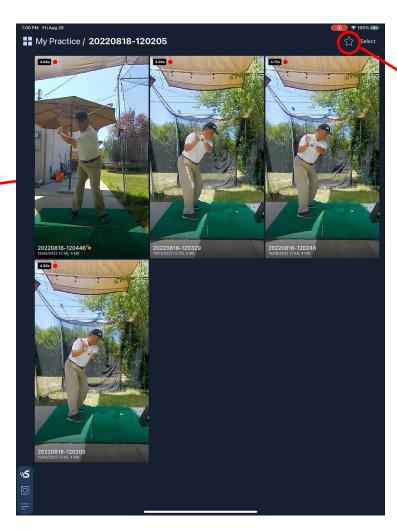
Change Sort List Order



#### b. Practice Library: Files

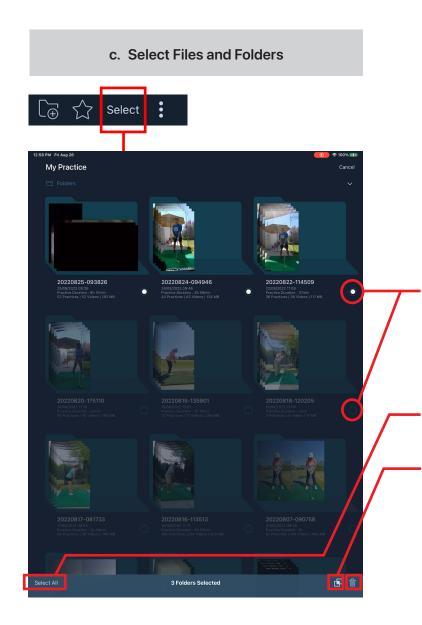


Select a folder to see the contents in detail. Choosing a file will open the video player for editing or sharing.



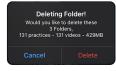
"Favorite"

You can filter videos using the Favorite filter to reduce the number of videos shown.

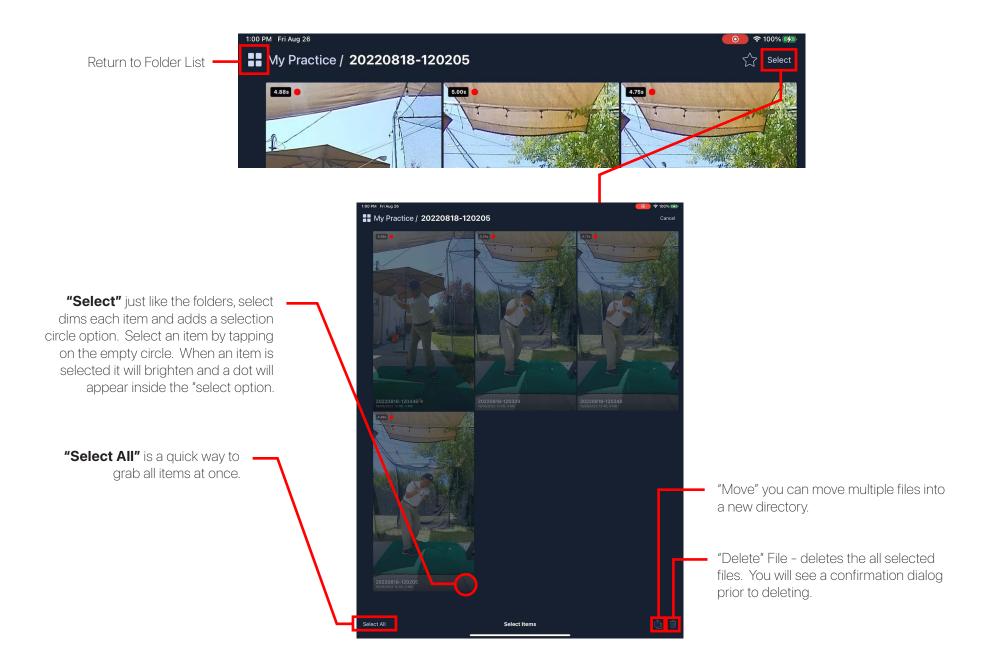


"Select" dims each item and adds a selection circle option. Select an item by tapping on the empty circle. When an item is selected it will brighten and a dot will appear inside the "select option.

- "Select All" is a quick way to grab all items at once.
- "Merge" combines the contents of multiple folders into one.
- "Delete Folder" deletes the folder and all contents. You will see a confirmation dialog prior to deleting.



# 6 My Practice



# **Swing Copy using Split Screen**

Split Screen allows you to play a second swing video while watching yourself with live mirroring. This process of real time comparison can produce results amazingly quickly as your eye can catch subtle differences in body angles and movement sequence that are essential to make real changes. We refer to the process of learning by watching and copying a reference swing as the "Swing Copy" method.



To Activate Split Screen, First connect to the LVPro or LVPro2 camera and then select the "Split Screen" from the Main Menu.



#### 1. Use Split Screen in Portrait Mode

In order optimize screen use, we recommend using your LVPro camera in portrait mode by physically rotating the camera 90 degrees. LVPro2 runs in portrait mode by default.





In portrait mode there will be wide black bars on the side of your screen.



# 7 Split Screen

#### 2. Select Split Screen Video

Activating Split Screen will move your live video to the left and create an empty window in the right 1/2 of the screen for display of your reference video.

Select either your previous video, or tap the "+" symbol to add a new video.

Selecting a new video will bring up your My Practice Library of past swings.

My Practice

Pody

In the coming weeks you will be able to select sources outside

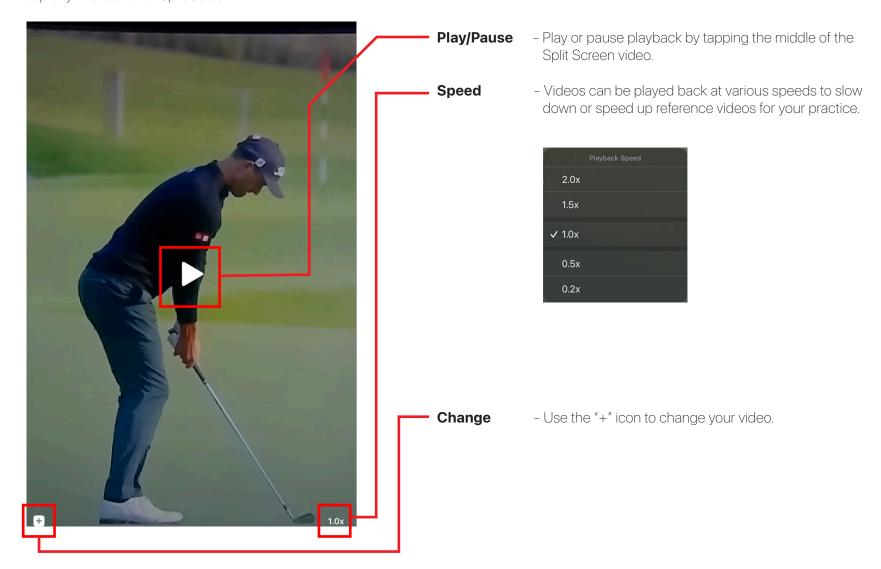
of the "MyPractice" Folder by selecing "Photos" and other

sources here.

# 7 Split Screen

#### 3. Adjust Playback Settings

Videos are automatically set for looped playback. To pause playback and access the player controls simply tap anywhere on the "Split Screen".



# What is LVSync

LVSync is a subscription add-on to your LVPro to enable dual camera capture for your practice sessions. The cost is for the subscription is \$9.99 per month or \$99.99 for one year. When you subscribe for 1 year for the first time, you receive a 6 month free trial. Your first billing will not start until your trial expires and you can cancel for free anytime prior to that.



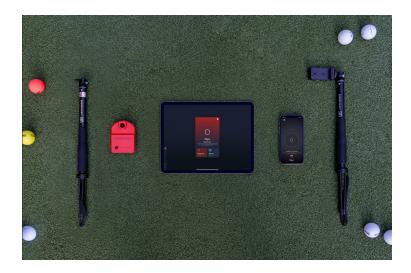
### What Do I Need

To Use LVSync You Need:

- 1 x LVPro Camera or LVPro2
- 2x iOS 15 Device: need one device for use as Viewer (usually iPad) and second for use as camera (usually iPhone)
  - LVSync Subscription

#### Optional

-2x LivePod 2: (can be any other tripod for holding the the LVPro/LVPro2 and the second iOS Devices as camera)



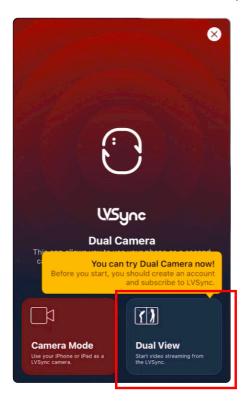
# **How to Subscribe to LVSync**

To subscribe to LVSync you have to

- Subscribe
- Create a user profile on our app.
- Launch LVSync

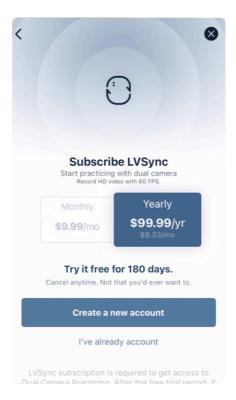
#### a. Subscribing to LVSync

LVSync is a paid add-on that is billed through the Apple App Store. The cost is \$99.99 per year with a 6 month free trial. You can cancel your LVSync subscription at any time before the first billing without any cost. In order to start your subscription you have to be connected to the Internet. Please disconnect from the LVPro camera if you are already connected.



LVSync prompts you to subscribe the first time you open LVSync. Please remember you must have an active Internet connection during your intial sign-up.

Tap "Dual View" to start the subscription process.



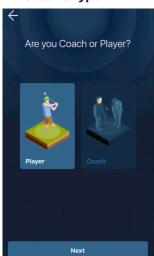
To access the free 6 month trial choose the "Yearly" billing option and create a new account.

If you already have a registered LVStudio "Profile" select "I already have an account".

#### b. Create a LVStudio Profile

Follow the prompts and provide your profile information including (1) account type (2) email address, (3) Name, (4) Password. Once the main data has been entered, you will receive a verification code via email to the registered account. Please enter the verification code.

#### 1. Account Type



There are 2 account types. At this time the two accounts act the same.

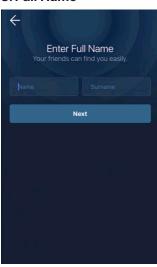
There may be additional options and costs for "Coach" accounts in the future.

#### 2. Email Address

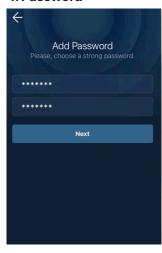


The email address is used for verification and also password recovery.

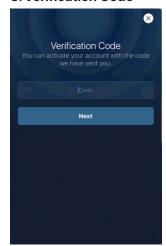
#### 3. Full Name



#### 4. Password



#### 5. Verification Code

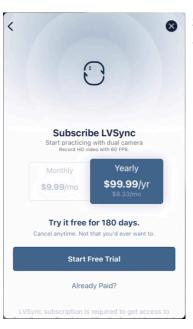


Your verification code will be sent to your registered email address. If you do not receive it within 1 minute of registering, please check your "spam" folder.

#### c. Subscribe

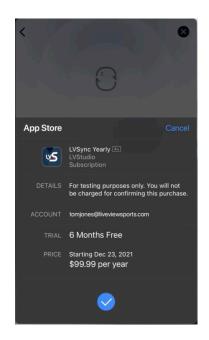
To subscribe to LVSync you will need your Apple App Store login with a payment method on file. If you are subscribing for the first time, you will not be charged until the 6 month trial expires and you can cancel any time prior to the end of the trial without incurring any charges.

#### **App Store Payment**



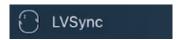
Select the annual subscription to access the 6 month free trial.

#### **App Subscription Confirmation.**



Your payment method is tied to the Apple App Store and your subscription has to be manged from there.

#### d. Launch LVSync



Once you have completed your subscription on your viewing device, reconnect you LVPro or LVPro2 camera and open LVSync by tapping on the LVSync Icon.

#### 1. Camera Setup

LVSync requires use of Portrait Mode. This means that the LVPro camera must be turned sideways during LVSync use. The LVPro2 operates in Portrait mode by default and can be used in regular vertical mode.





#### 2. iOS Camera setup.

To activate the LVSync camera, open the LVStudio App, open LVSync and select "Camera Mode". It is not necessary to connect the camera client to the LVPro2 because LVPro2 only supports one client connection to the Viewer device.



WARNING: **Do NOT connect** the LVSync camera device to the LVPro Wifi.



Select "Camera Mode" on your iPhone.



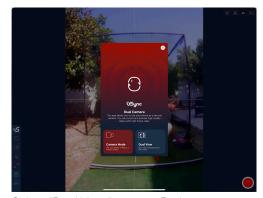
Your iPhone is now waiting for a Viewer connection.

# Waiting For Connection Plants, was the styling a streaming of the first beauting store of the first beauting store

LVSync Camera waiting for connection from iPad Viewer.

#### 3. iPad Viewer Setup.

Once the LVSync camera has been activated, it can be found on the iPad by going into "Dual View". and then looking for your iPhone device name in the right display pane. Tap on the device and it will move into the center and turn green when the connection is established. Once the LVSync camera has been connected, it will start streaming video after a few seconds of connection.



Select "Dual View" on your iPad.



Once the device has been selected, it will turn green and move into the center to start the connection process.

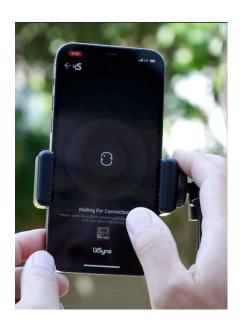


You can see the LVSync camera by device name in the right viewing pane. Tap on your device to activate it.



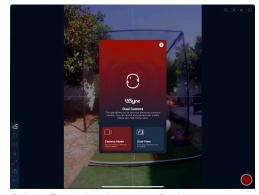
Video will display once the connection is complete.

#### e. Password Recovery.



LVSync Camera waiting for connection from iPad Viewer

Once the LVSync camera has been activated, it can be found on the iPad by going into "Dual View". and then looking for your iPhone device name in the right display pane. Tap on the device and it will move into the center and turn green when the connection is established. Once the LVSync camera has been connected, it will start streaming video after a few seconds of connection.



Select "Dual View" on your iPad.



Once the device has been selected, it will turn green and move into the center to start the connection process.



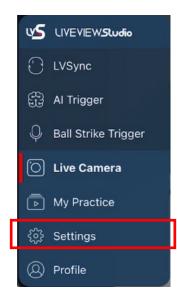
You can see the LVSync camera by device name in the right viewing pane. Tap on your device to activate it.

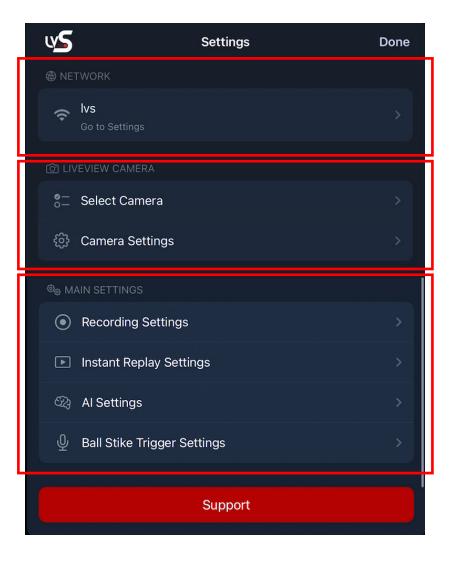


Video will display once the connection is complete.

# 9 Content Download

"Settings" provide a central place to modify the camera and camera functions to suit your preferences. In general the Settings break into three sections:





#### **Network Settings**

Display the current WiFi status. In order to function properly, your device must be connected to a LVPro or LVPro2 hotspot. Selecting this setting will take you to the iOS App Settings and device WiFi settings.

#### **Camera Settings**

Set the streaming protocol based on your LVPro camera type. Also enables camera setting modifications.

#### **App Settings**

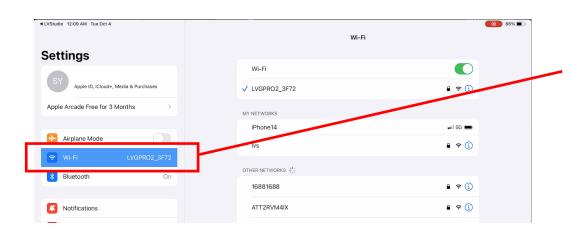
Change the App behavior for things like recording length, instant replay speed and number of loops, Al settings and Ball Strike trigger recording settings.

#### Support

If you need help, the in-app support button allows you to contact our technical team directly.

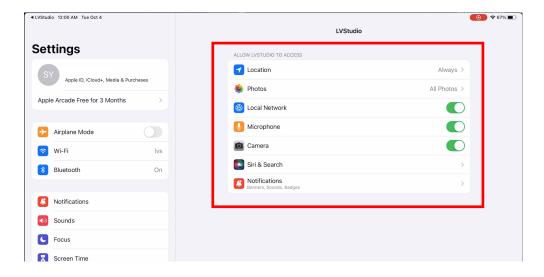
#### a. iOS Settings

LVStudio needs access to some permissions from iOS. These are set in the standard iOS Settings.



Set device Wifi to camera hotspot. This will be a WiFi with the name of:

"LVGPRO2\_XXXX" or "LiveViewGolf XXXXX"



The key settings for LVStudio in the iOS App settings require: Location: "When Using" (allows LVSync Connection)

**Photos: "All Photos"** (enables 'save-to' and 'read-from'

access from the iOS Photos App

**Local Network: "On"** (allows video streaming from the

LiveView Camera)

**Microphone: "On"** (Sound Trigger needs microphone

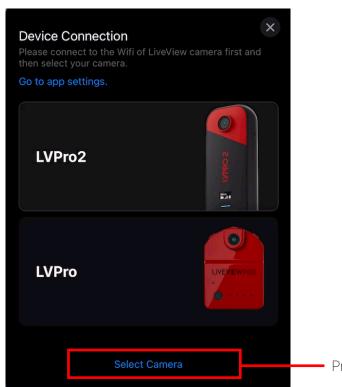
to listen for swing events)

Camera: "On" (Required for LVSync camera

mode)

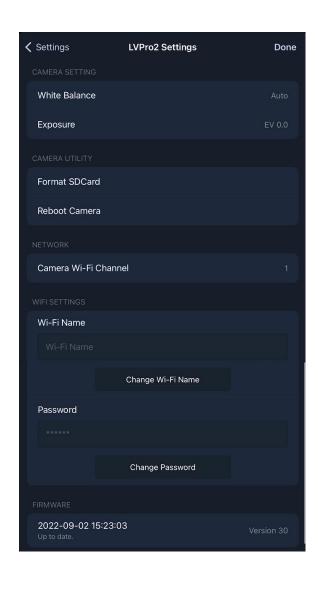
#### b. Select Camera

LVPro2 uses a completly different streaming protocol from the LVPro. As a result it is necessary to set the App to the correct camera client to view the video streaming from the Live View Camera. Select your camera in the "Select Camera" setting and set "Select Camera" to apply.



Press "Select Camera" to apply your setting.

#### c. Camera Settings



#### **Camera Settings offers the following options:**

White Balance: (LVPro2 Only)

Changes color temperature point to make video look more "yellow" or "blue". Default is set to "auto" automatic adjustment.

**Exposure** (LVPro2 Only)

It is possible to increase or decrease automatic brightness by increasing exposure from -2 (darker) to +2 (brighter). Please note that it may not be possible to increase brightness in dim lighting situations as the automatic exposure may already be at the limit. Exposure brightness is limited by the amount of available light and the camera's native 120FPS frame rate.

Format SDCard (LVPro2 Only)

In case of SDCard errors, it may be necessary to clear and reformat the SDCard. We recommend formatting all new SDCards prior to use.

**Reboot Camera** 

Reboot the LVPro2 camera following setting change of

- WiFi Channel - WiFi Name

- Camera Password

Wi-Fi Channel

Changing WiFi channel can improve video quality by moving away from interfering devices that are broadcasting on the same or near WiFi frequencies. We recommend at least 4 channel band separation for best effect. (i.e. from 1 -> 5 or 6->10).

Reboot camera after Channel change.

Wi-Fi Name

It is possible to customize the camera WiFi name from default "LVPro2" or LiveViewGolf" to any other name. Make sure to apply the change by tapping the "Change WiFi Name" button.

Reboot camera after WiFi Name change.

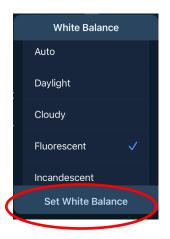
**Change Password** 

The default camera password on the LVPro2 is "1234567890", there is no default password on the LVPro. You can change the password using this function. Make sure to apply the change by tapping the "Change Password" button.

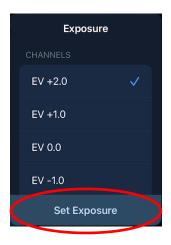
Reboot camera after Password change.

It is possible to reset the camera Password back to default by using the reset button for the LVPro2 or LVPro. Please consult your manual for the location of the reset button.

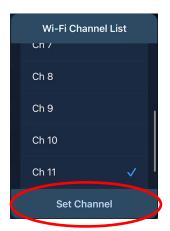
#### **White Balance**



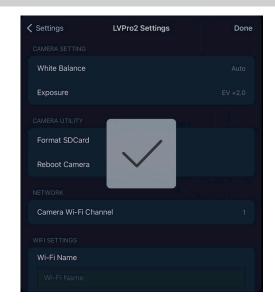
#### **Exposure**



#### WiFi Channel

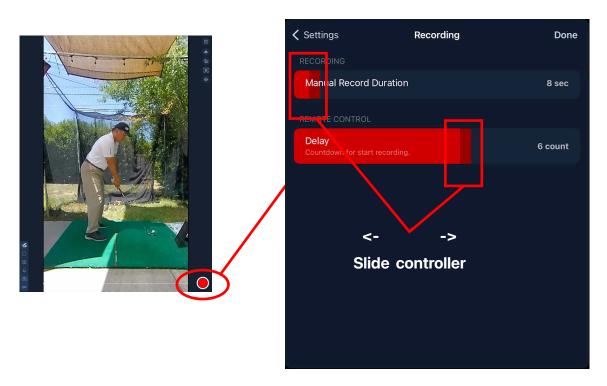


Following camera settings changes, makes sure to use the button at the bottom to apply the changes. You will see a check mark if the change is successful



#### d. Recording Settings

"Recording Settings" apply to manual recordings made using the red recording button.



#### **Manual Record Duration**

Can be set from 1-59 sec maximum. Slide the controller left or right to increase or decrease recording time.

#### Delay

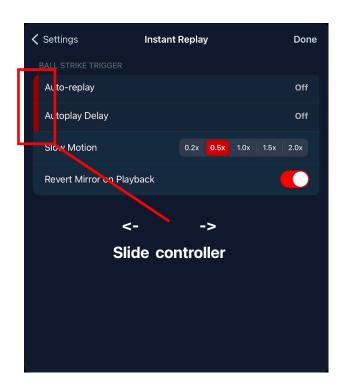
Provides a countdown timer to allow ready time prior to start of swing recording.

For **single swing capture** use a 3-4 second countdown followed by 6-7 seconds of recording. Manual recordings can be viewed in the MyPractice library or using the Instant Replay feature.

**Multiple swing** recordings should use "0" delay countdown with "45"-"59" seconds of duration.

#### e. Instant Replay Settings

Instant Replay sets LVStudio to play back recorded videos automatically after capture. Using instant replay with automatic swing capture using Ball Strike Trigger or Al Trigger makes reviewing swings effortless.



**Auto Replay** [Off - 9x] determines how many times a recorded video loops before the App goes back to ready mode. Replay can be set from "Off" (no replay) to "9x" (9 video loops of recorded swing).

**Autoplay Delay** [Off - 11] LVStudio can wait before starting replay to give you time to prepare. Wait time can be set from "off" up to 11 seconds.

**Slow Motion** applies a speed reduction to slow down action for easier viewing. Slow motion factors are:

0.2x - 20% normal speed. Greatest slow motion.

0.5x - 50% normal speed

1.0x - Normal Speed

1.5x - Accelerated playback

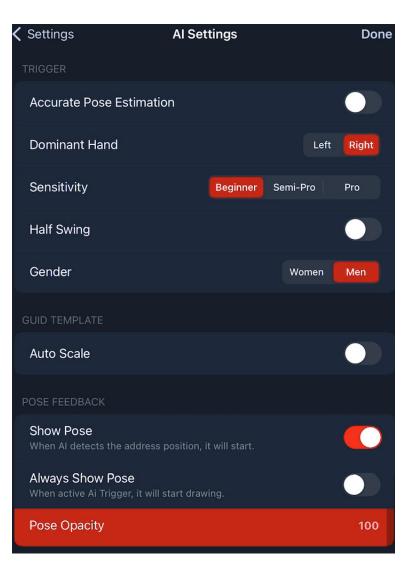
2.0x - Double speed playback.

#### **Revert Mirror on Playback**

If this is "On", when using "Mirror" mode during live preview, video is flipped back to normal mode during instant replay. This prevents right handed golfers flipping to left handed golfers in the recorded video.

#### f. Al Settings

Al Settings controls how the Al works when the Al trigger is used



**Accurate Pose Estimation** - provides more accurate pose feedback. It is also much more CPU intensive and should be left "Off" on all but the latest Apple CPU devices (M1 or M2 processor)

**Dominant Hand** - Left handed golfers should adjust the model to "left" hand for the Al model to switch directions on all movements. (this function is not yet supported, we recommend left handed golfers use Sound trigger to capture recordings)

**Sensitivity** - The Al model will set more strict parameters when analyzing swing motion if the "Pro" model is selected. This means it will be more difficult to trigger a swing. If you find that the Al trigger is missing swings, set the model lower to "Semi-Pro" or "Beginner". Conversely if you are getting many false triggers, try setting the model stricter.

**Half Swing** - The model requires a full take away to trigger a recording. if you are practicing half shots, setting the model to "half-swing" will make the model easier to trigger. "Half-Swing" will also cause more false and accidental triggers. (this function is not yet supported)

**Gender** - This settings enables slightly different model variations that can follow some gender specific swing variations to improve swing trigger. (this function is not yet supported)

**Auto Scale** - Because the Al recognizes body dimensions and position, Auto Scale can scale and place line templates automatically to match your position and camera setup. Auto Scale is designed only for Templates created during Al recording.

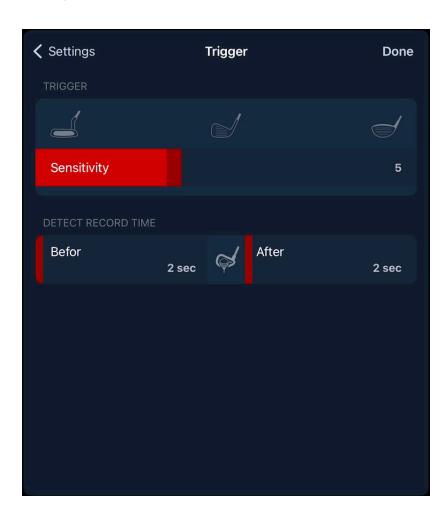
**Show Pose** - The set up pose triggers the Al to begin motion tracking for Al trigger recording. You can turn off the Al pose lines if you find them distracting.

**Always Show Pose** - Pose lines are turned off after the initial setup. It is possible to keep lines on at all times. If your App is not performing smoothly and you are using an older iOS device, the Pose display may be placing excessive strain on your CPU. In those cases turn Always Show Pose "off".

**Pose Opacity** - the lines can be made darker or more transparent using "Pose Opacity".

#### g. Ball Strike Trigger Settings

"Settings" provide a central place to modify the camera and camera functions to suit your preferences. In general the Settings break into three sections:



#### **Sensitivity**

Microphone sensitivity determines the volume of sound necessary to trigger a recording. Setting the sensitivity lower, towards the putter means a softer sound can trigger a recording. Low sensitivity will lead to more false positive recordings.

Setting the sensitivity higher towards driver means a louder sound is required and may lead to some missed recordings.

Use a higher sensitivity at the driving range to avoid false triggers from surrounding golfers.

For normal at home use we recommend a sensitivity of 5-7.

#### **Detect Record Time**

Record times are set by time before and after ball impact

Before - captures the time in seconds before impact.

After - captures the time after impact.

The minimum settings are 2 seconds for each of these settings.