Virtual Reality Laboratory in the Munroe Meyer Institute

cometrics

User Guide

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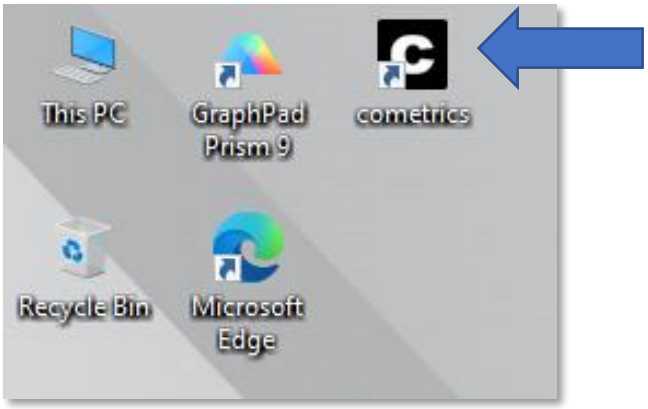
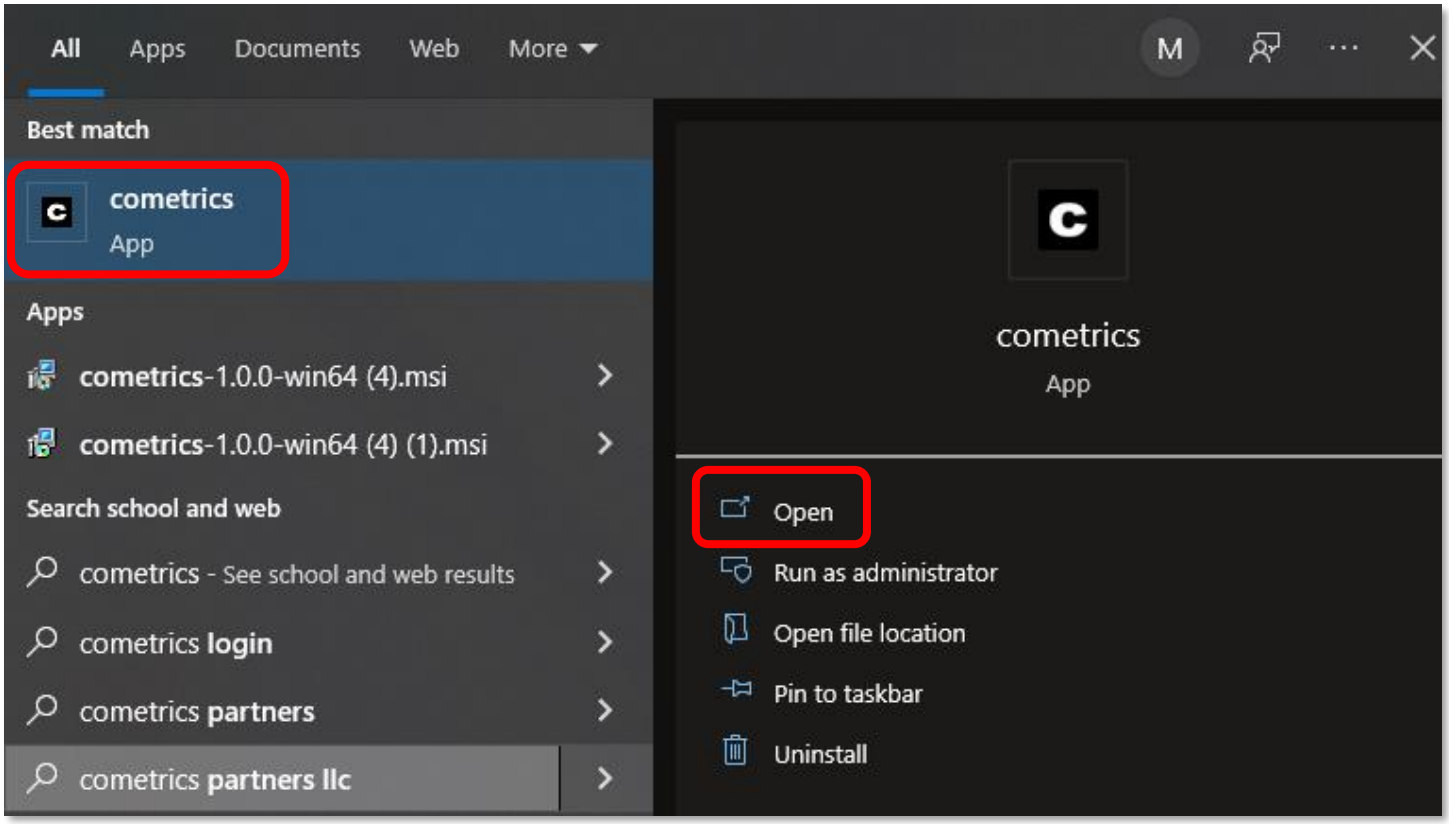
Section 1 Open Program



- Locate the **cometrics** icon on desktop

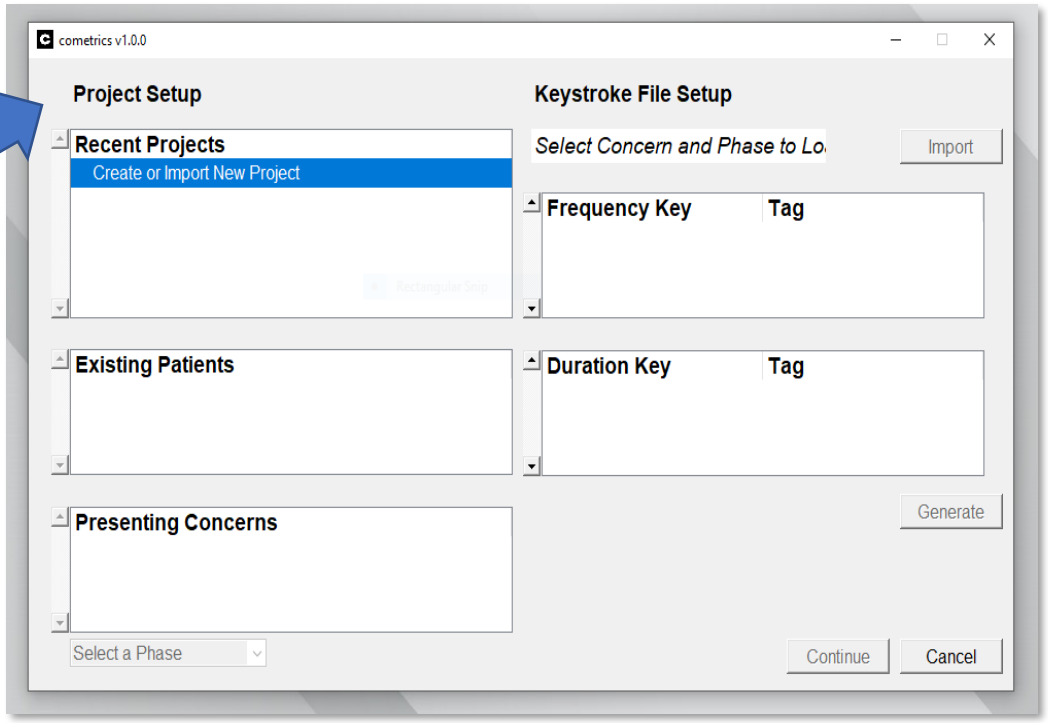
OR

- Search "**cometrics**" in the Windows search bar (bottom left of screen)



Section 1 Open Program (cont.)

- **Start Menu** will open

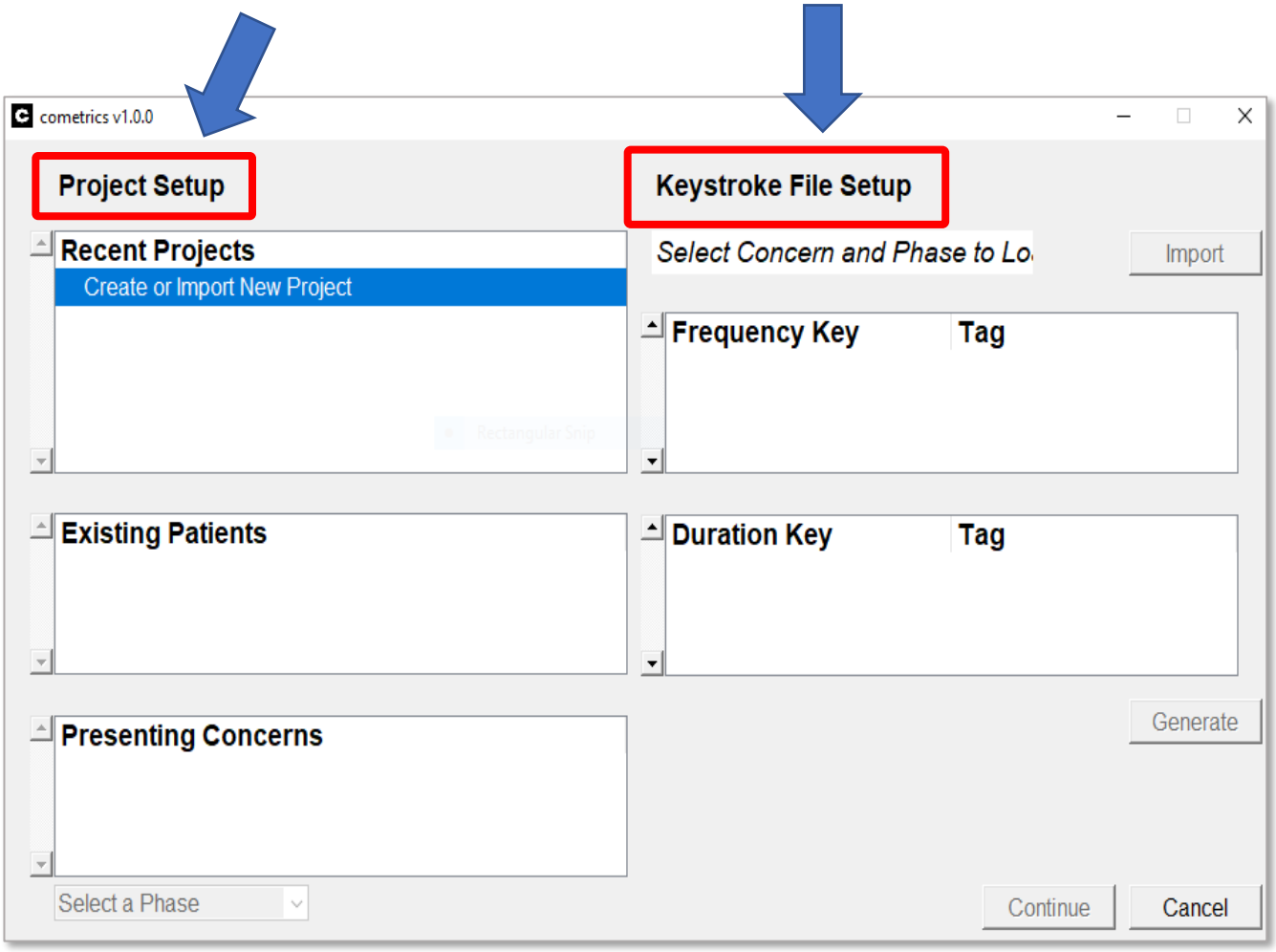


Section 2 Start Menu

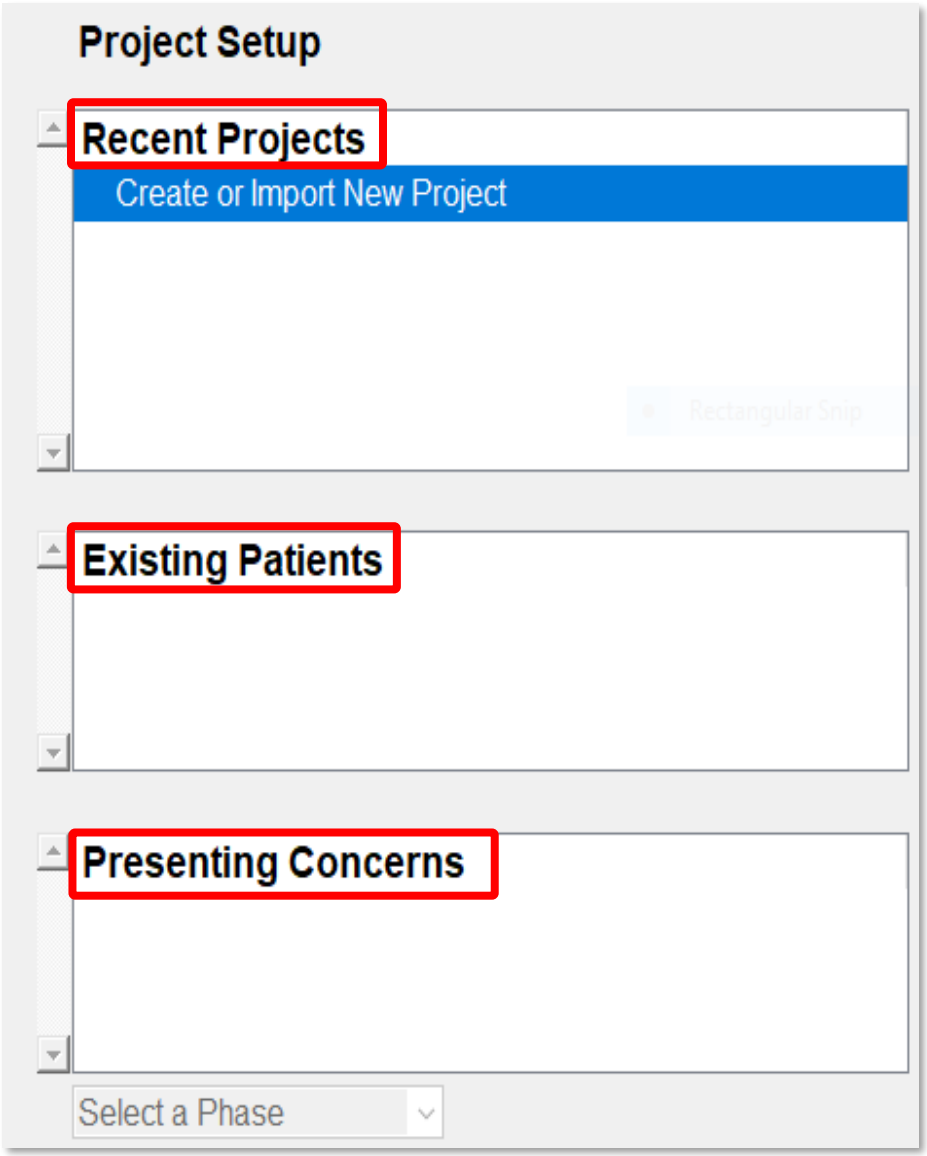
Two Sections of Start Menu:

Project Setup

Keystroke File Setup

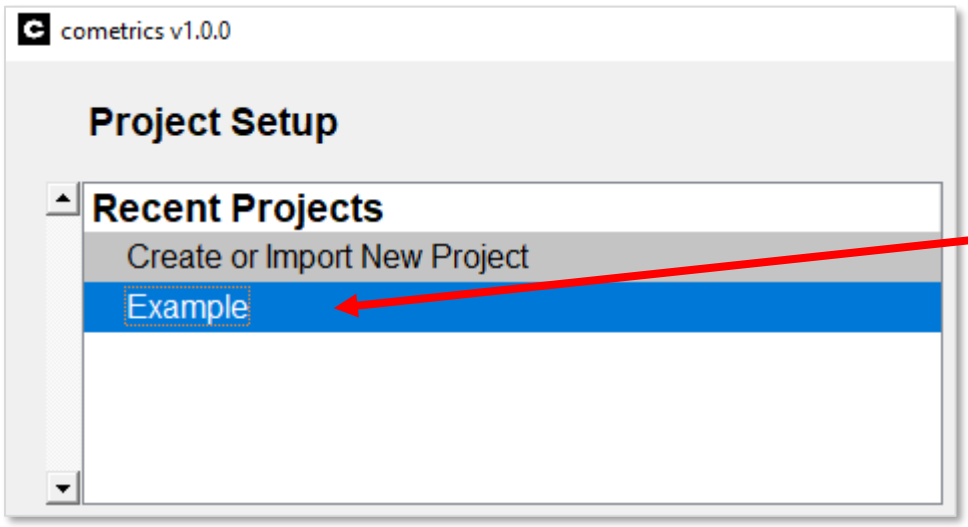


Section 3 Project Setup

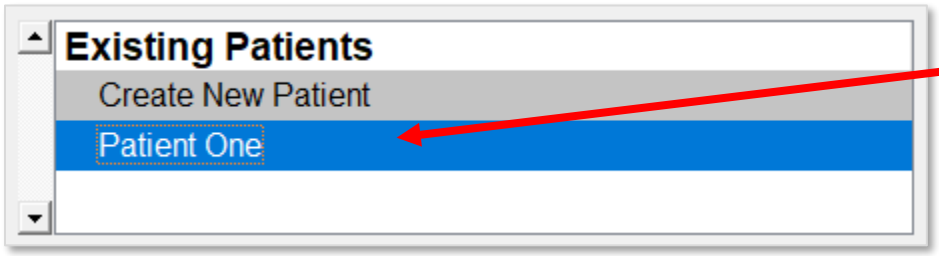


- **Recent Projects** tab is used for creating and importing projects
- **Existing Patients** tab shows which patient is being studied in each session
- **Presenting Concerns** tab shows what behaviors are being recorded / analyzed in the session

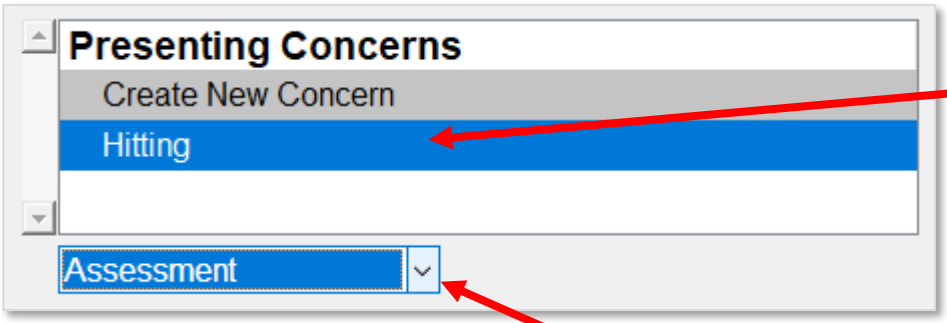
Section 3 Project Setup (cont.)



1) Create or import the session you wish to work on



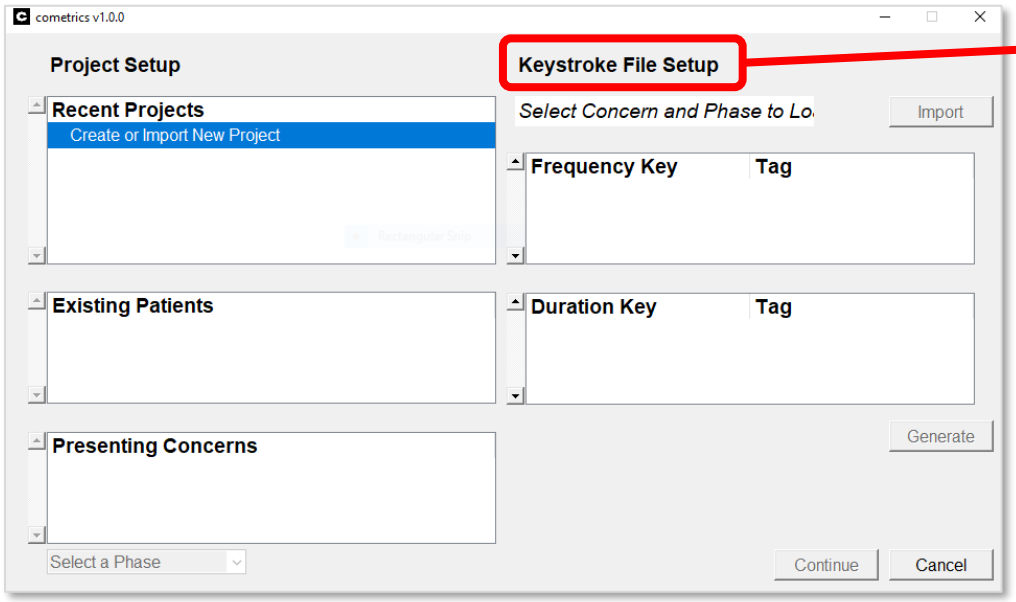
2) Create or select the patient being assessed



3) Create and add the presenting concerns in the session

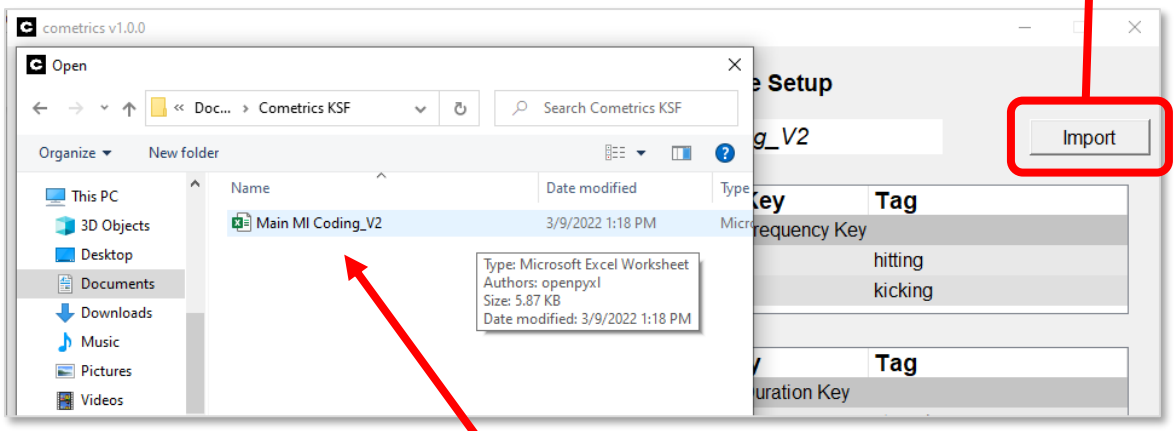
4) Select whether this is an **Assessment** or **Treatment** phase

Section 4 Keystroke File Setup



- **Keystroke File Setup** is used to assign behaviors to keys when coding

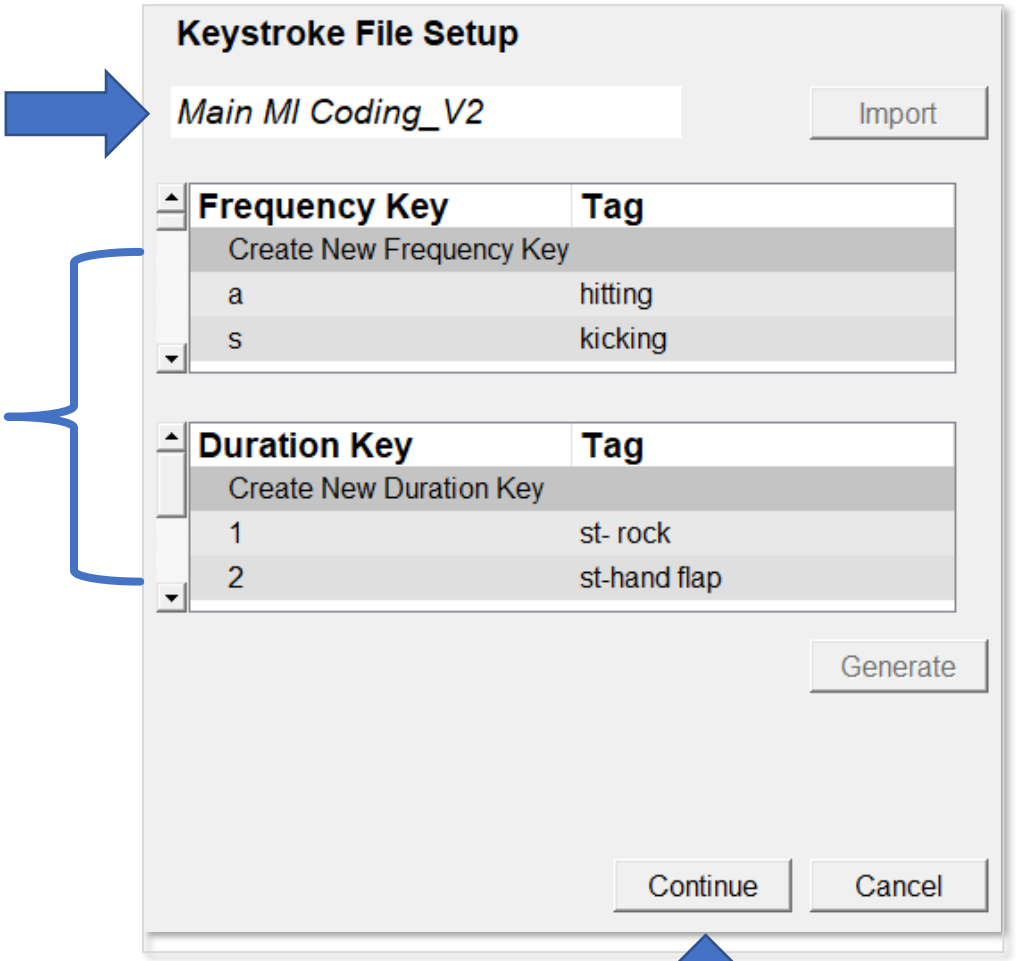
- This is done by **importing** an Excel spreadsheet associated with these codes



- If a file is not already uploaded, press **Import** to find and select the Excel file you wish to use for coding

Section 4 Keystroke File Setup (cont.)

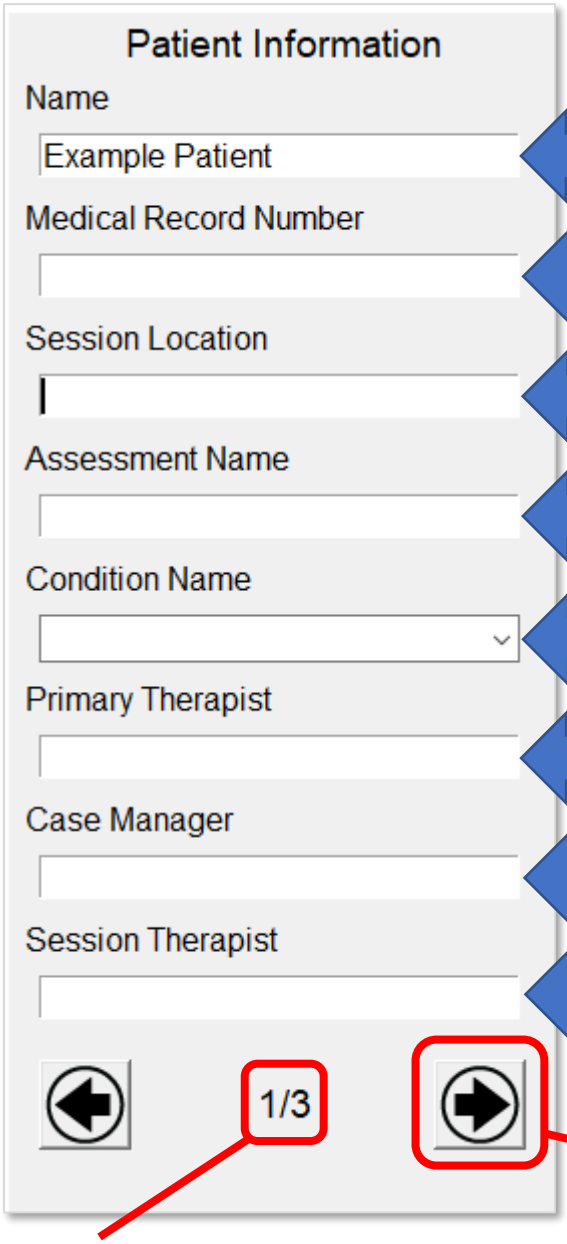
- Name of the selected Excel file
- Preview of the coding keys in the Excel file



- Select **Continue** in the bottom right to begin coding

Section 5 Patient Information (Page 1)

NOTE: You will **not** be able to begin coding until <u>all sections</u> of **Patient Information** are complete (error messages will occur until the spaces are filled)



Patient name

Unique identifier for patient

Where the session is happening

The name of the assessment

Induced stimulus that you are recording measures for

Name of primary therapist

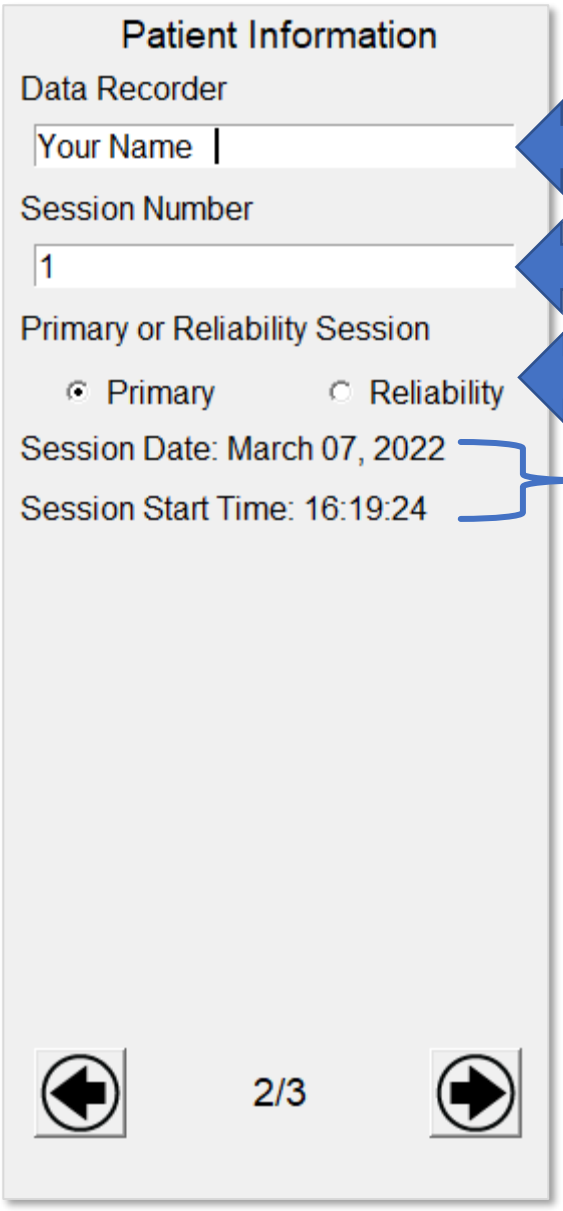
Name of case manager

Name of session therapist

- There are 3 **Patient Information** tabs

- Use the arrows to navigate the **Patient Information** tabs

Section 5 Patient Information (Page 2)



Name of the person coding the video

Identifying number for the session

Select if this is a Primary session (patient video) or a Reliability session (test for coder accuracy)

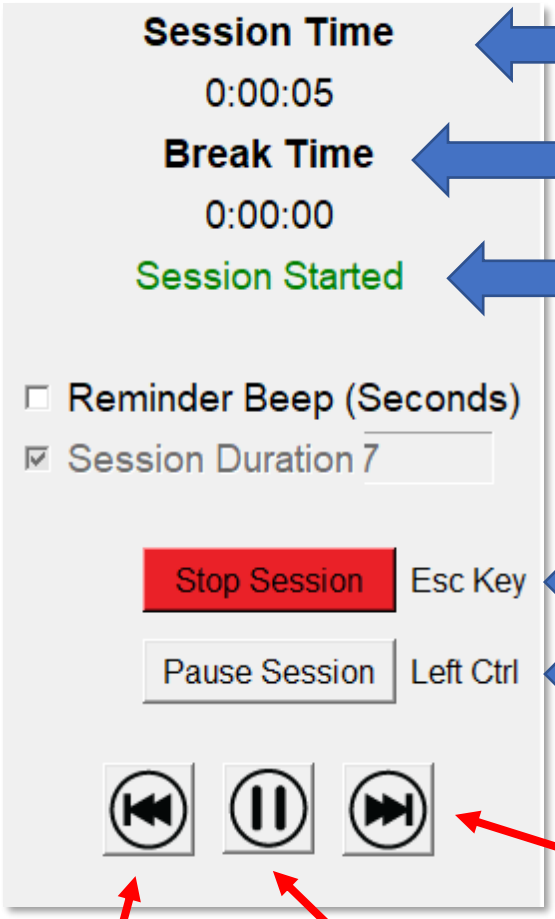
The date and starting time of the coding session

Section 5 Patient Information (Page 3)

Page 3 of the **Patient Information** tab lists the keyboard characters assigned to each behavior tag

This will be automatically shown when the session is started

Section 6 Session Times



Records the amount of time spent coding

Records the amount of time spent paused

Shows if session is Started **(green)**, Stopped **(red)** or Paused **(yellow)**

Start / Stop the session

Pause / Resume the session

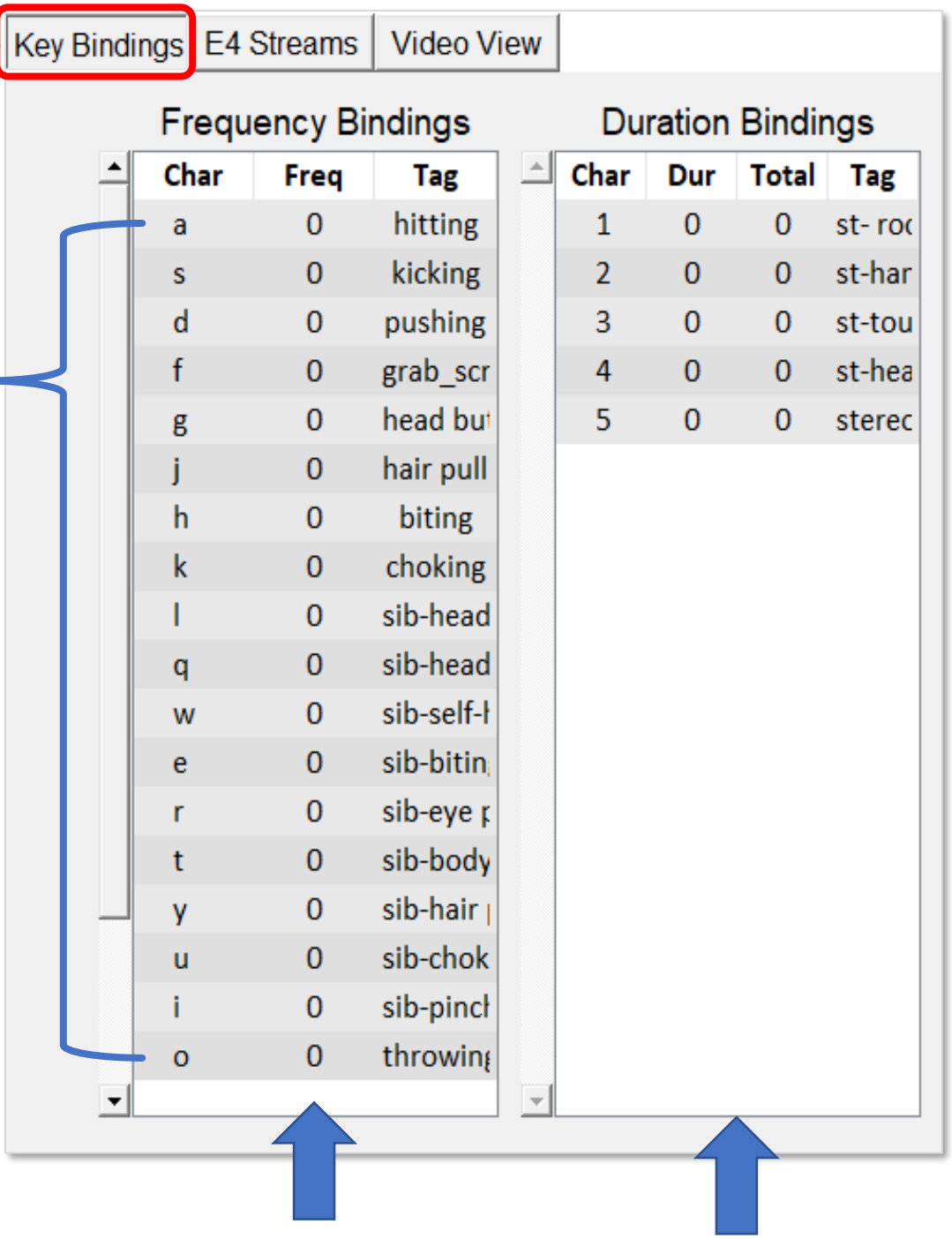
- Used to go **Forward** in video by one second

- Used to go **Backward** in video by one second

- Used to **Play / Pause** video in video tab

Section 7 Key Bindings

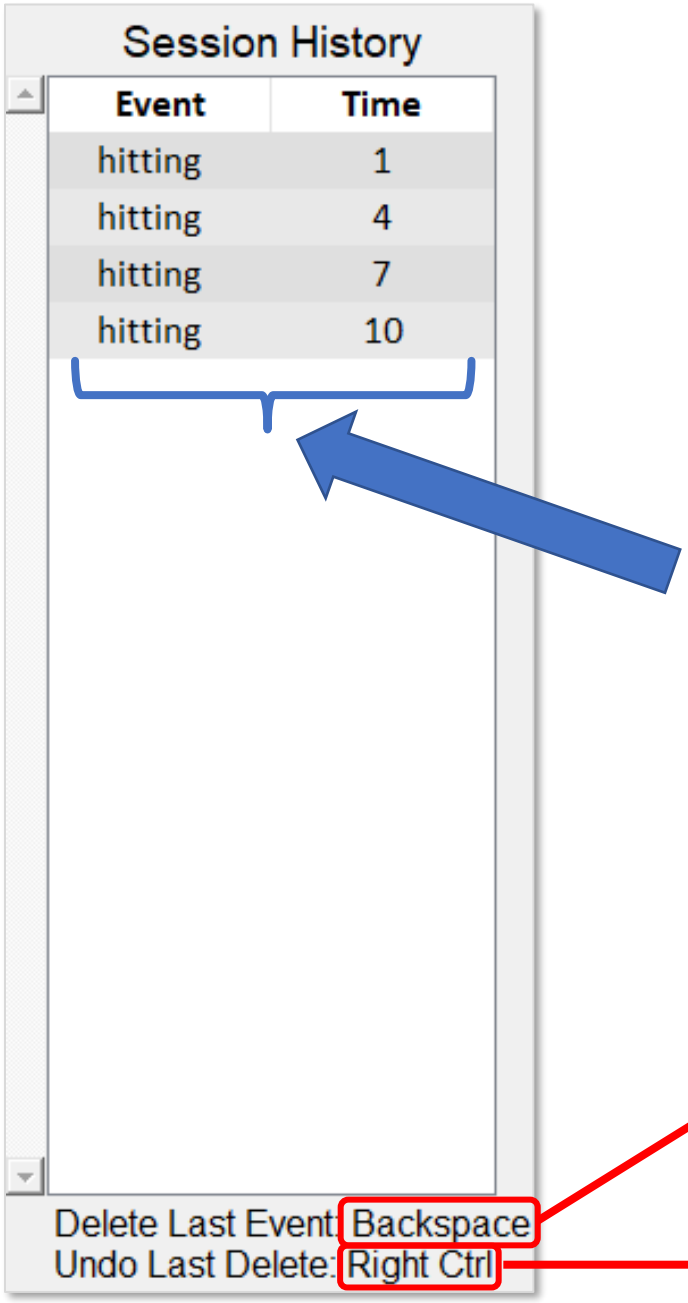
- The **Key Bindings** tab shows the **characters** tied to each behavior



- The **Frequency** column shows the number of times a code has been used in the session

- The **Dur** and **Total** column records how long a code has been active per activation and per session, respectively

Section 7 Key Bindings (cont.)



- The **Session History** tab gives a basic view of what codes have been used and the time (in seconds) at which they occurred

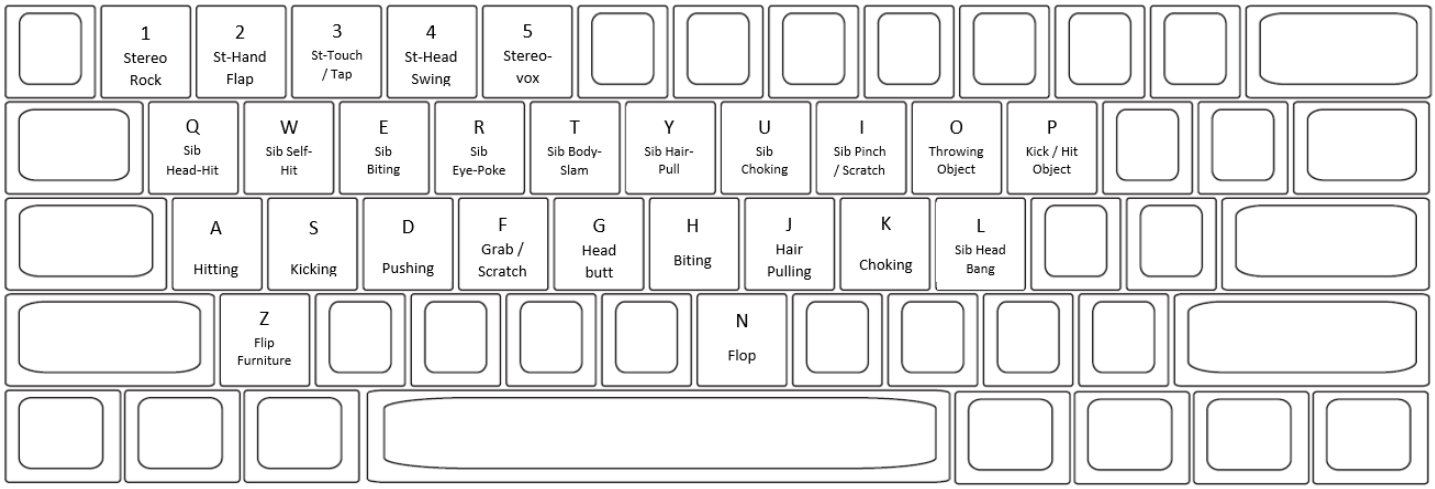
- The **Event** and **Time** columns show what behaviors have been coded during the session and at what time they occurred, respectively

- Press **Backspace** to delete the last coded event

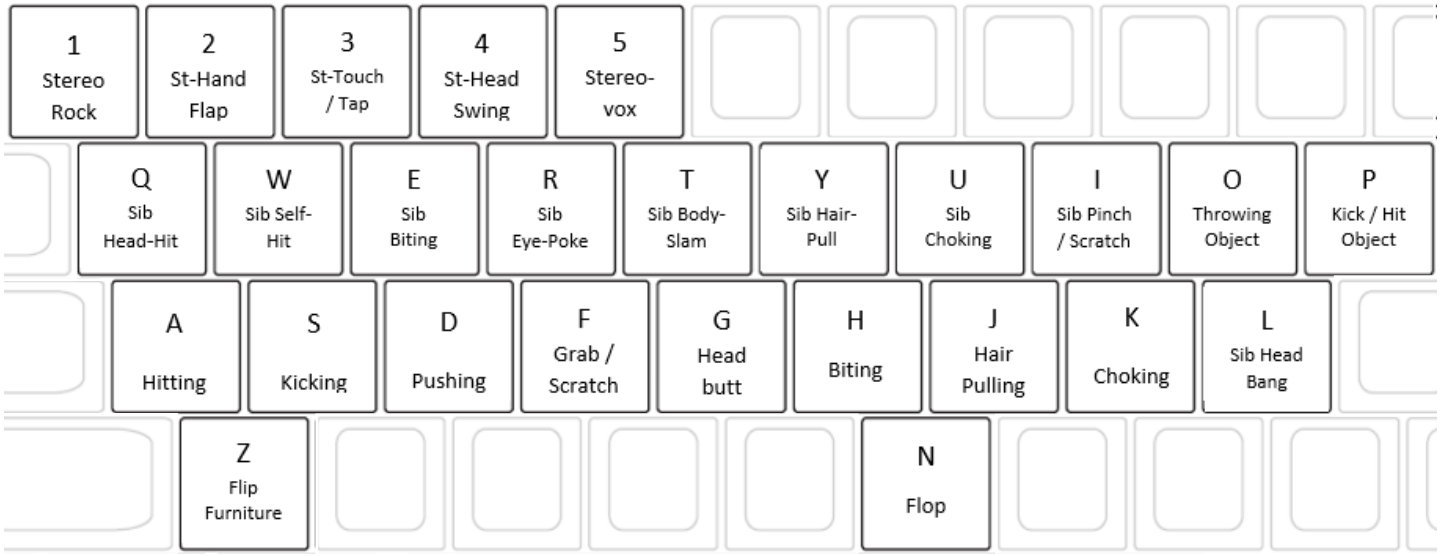
- Press the **Rightmost Control** key to undo the last deleted event

Section 7 Key Bindings (Keyboard)

Keyboard Codes



Keyboard Close Up

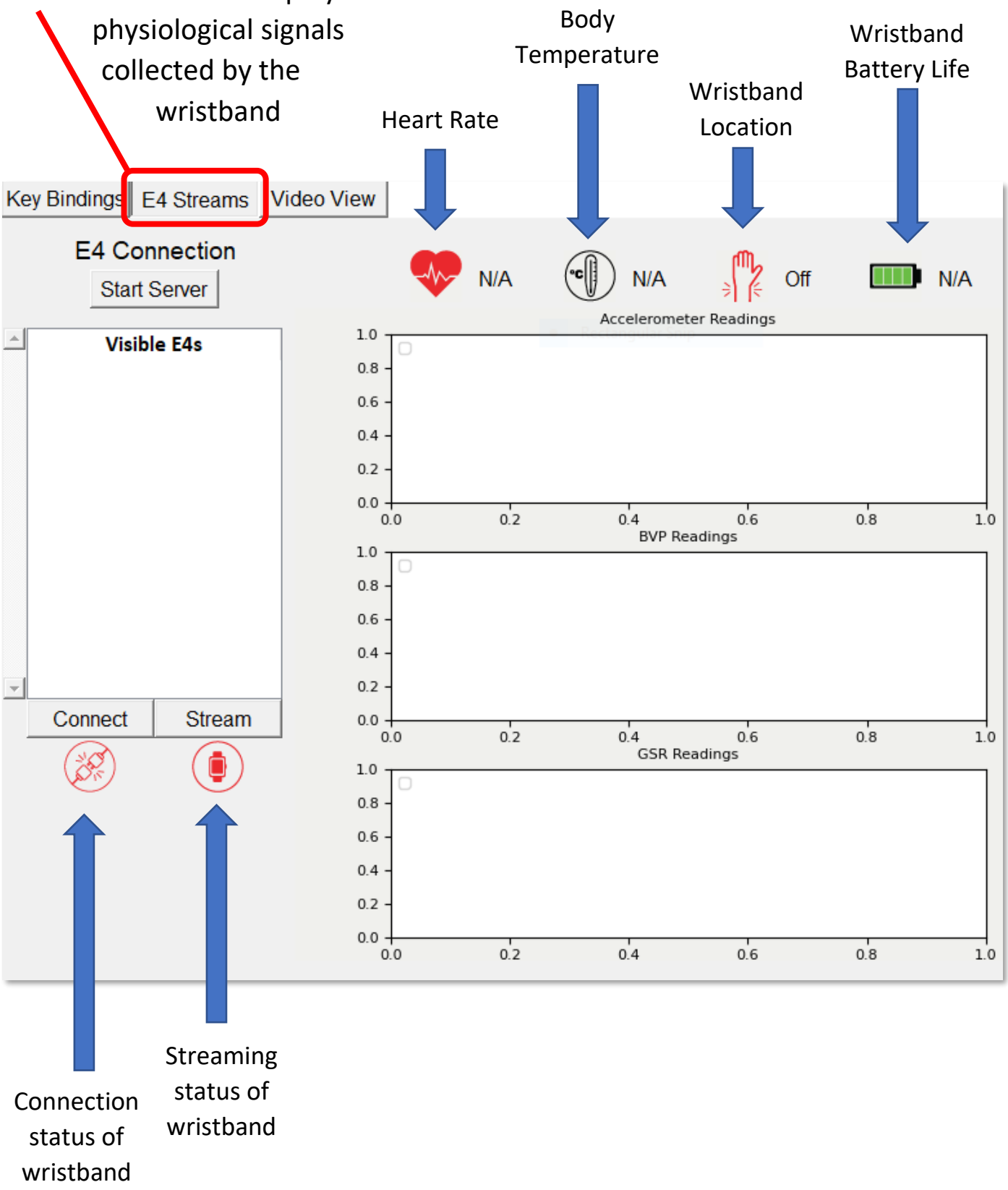


For exact descriptions of each behavior, see **Operational Definitions document

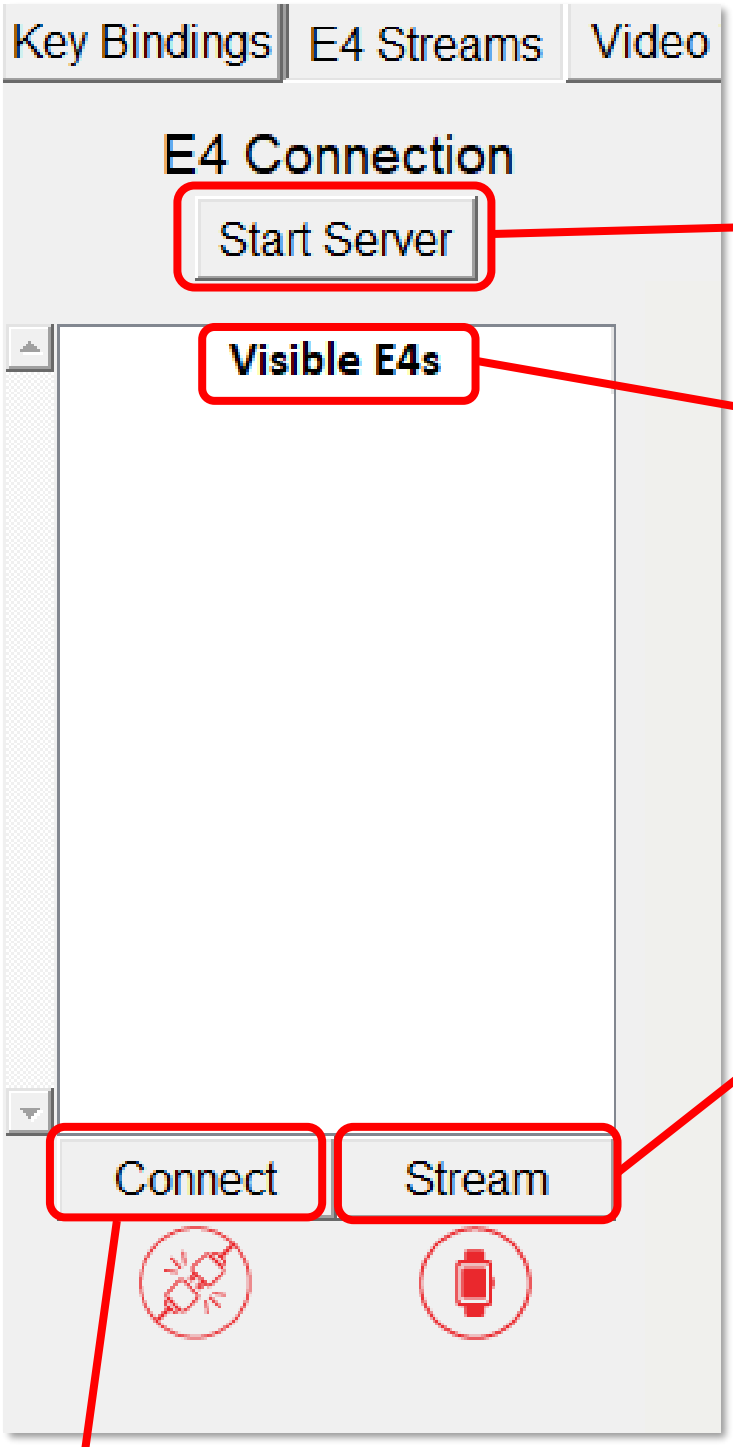
See the **Coding Cheat-Sheet for simplified descriptions of the behaviors and their keys

Section 8 E4 Streams

- **E4 Streams** tab displays physiological signals collected by the wristband



Section 8 E4 Streams (cont.)



- Press **Start Server** to begin utilizing the E4 wristband
- The **Visible E4s** tab shows the available wristbands that can be used to stream data
- Select **Stream** to start streaming the data from the wristband to the cometrics program
- Select **Connect** to connect the wristwatch to the cometrics program

Section 8 E4 Streams (Icons)

Battery Life


≤ 25%


≤ 50%


≤ 75%


≤ 100%

Wristband Location

Wristband **on** arm

Wristband **off** arm

Streaming Status


Streaming

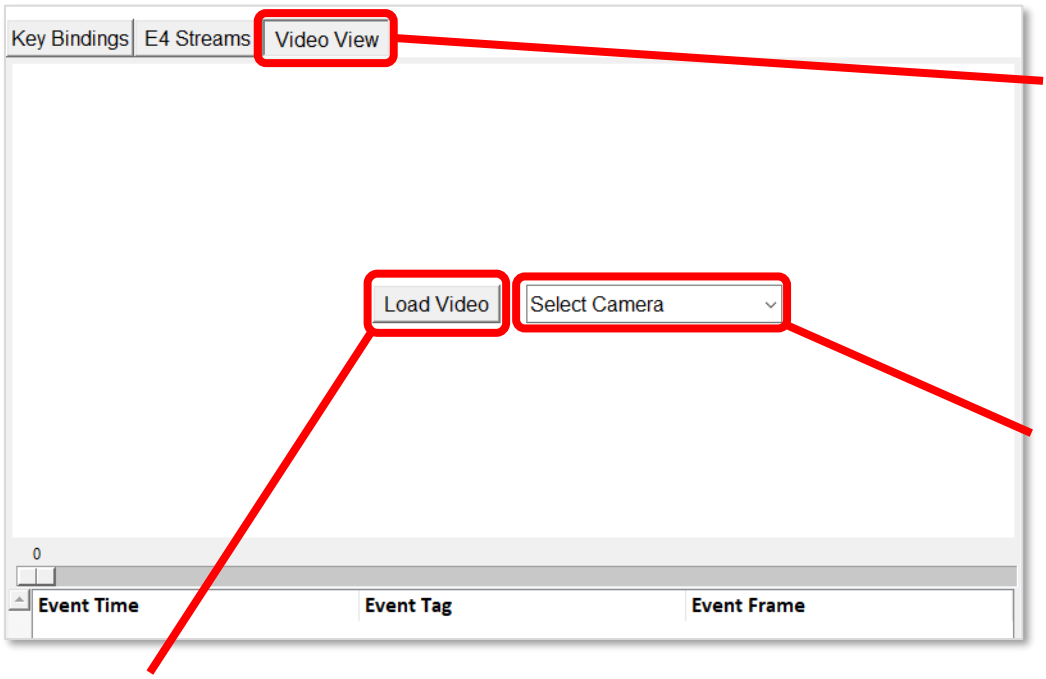

Not streaming

Connection Status

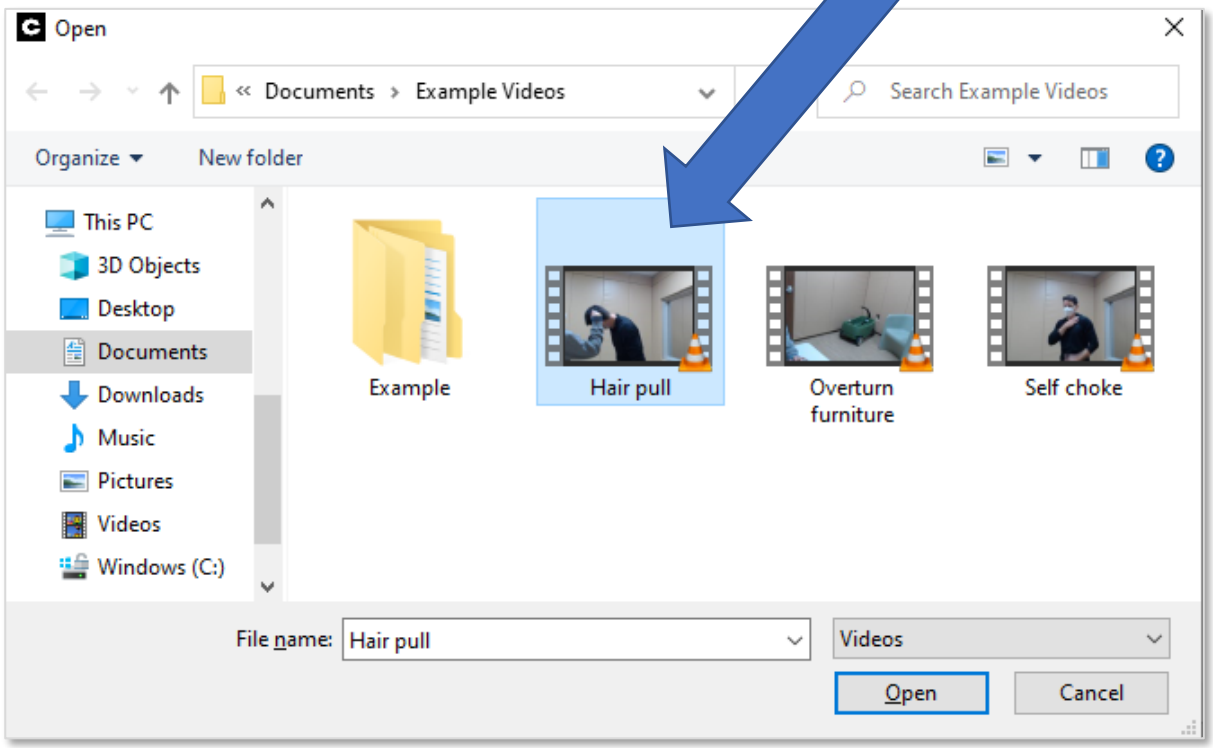

Connected


Not connected

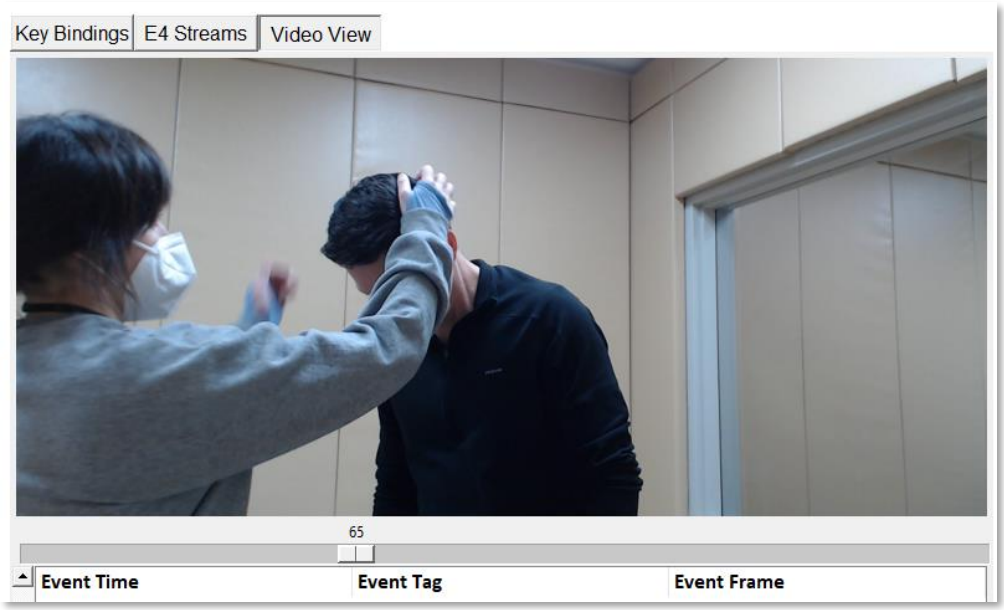
Section 9 Video View



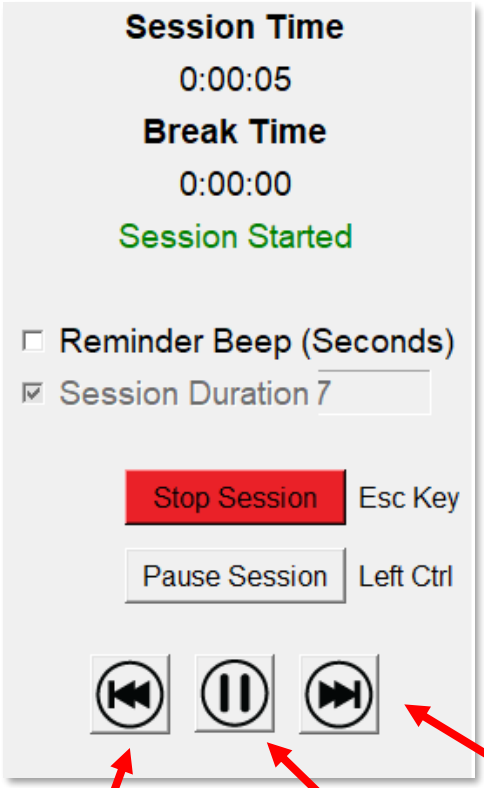
- The **Video View** window shows the video recording of the session
- To record from a connected **Webcam**, use the dropdown to select an input
- The **Load Video** button is used to select and upload the video you want to code
- After pressing **Load Video**, locate the video file you wish to upload



Section 9 Video View (cont.)



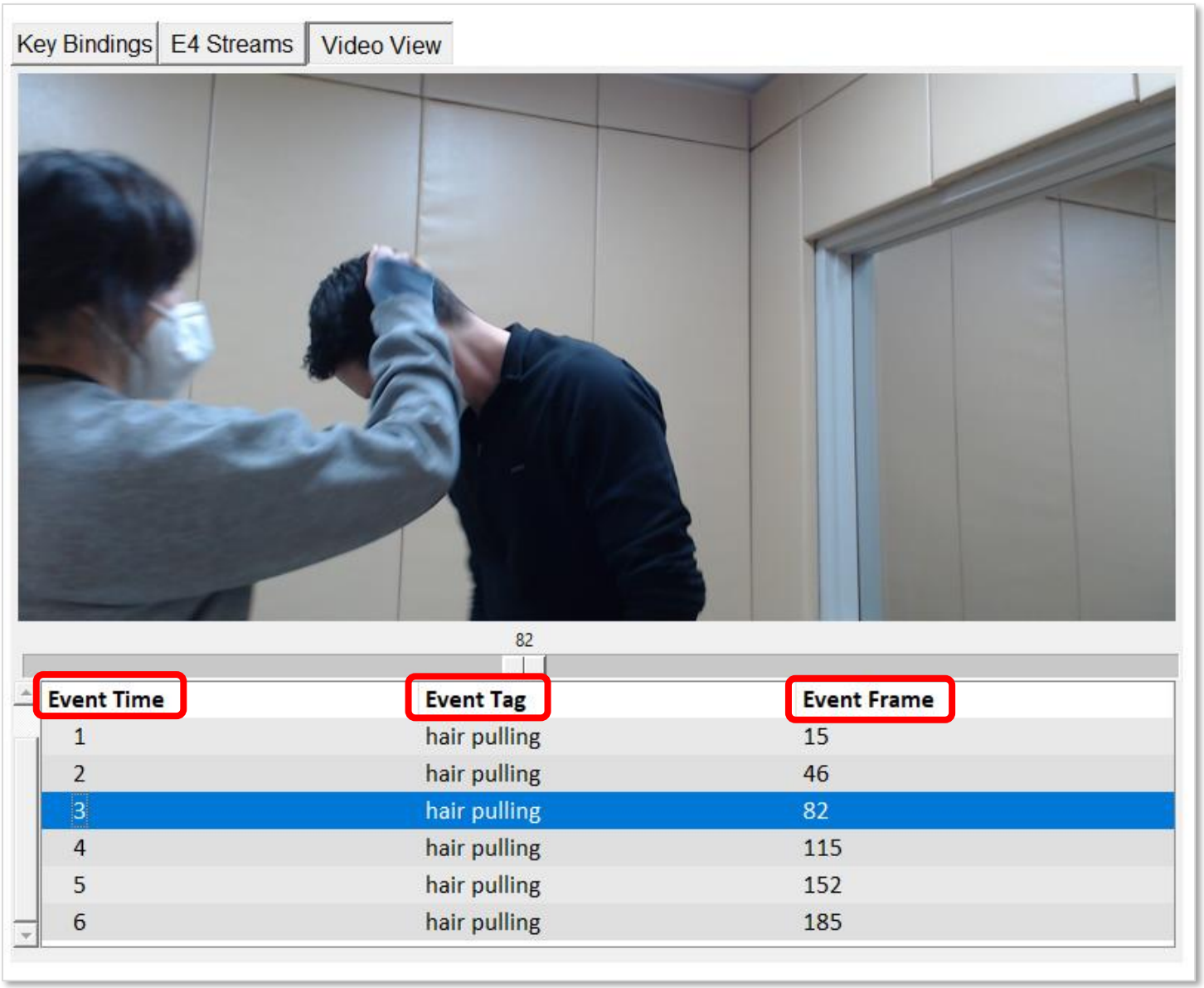
- Selected video will upload and be viewable for coding



- Used to go **Backward** in video by one second
- Used to **Play / Pause** video
- Used to go **Forward** in video by one second

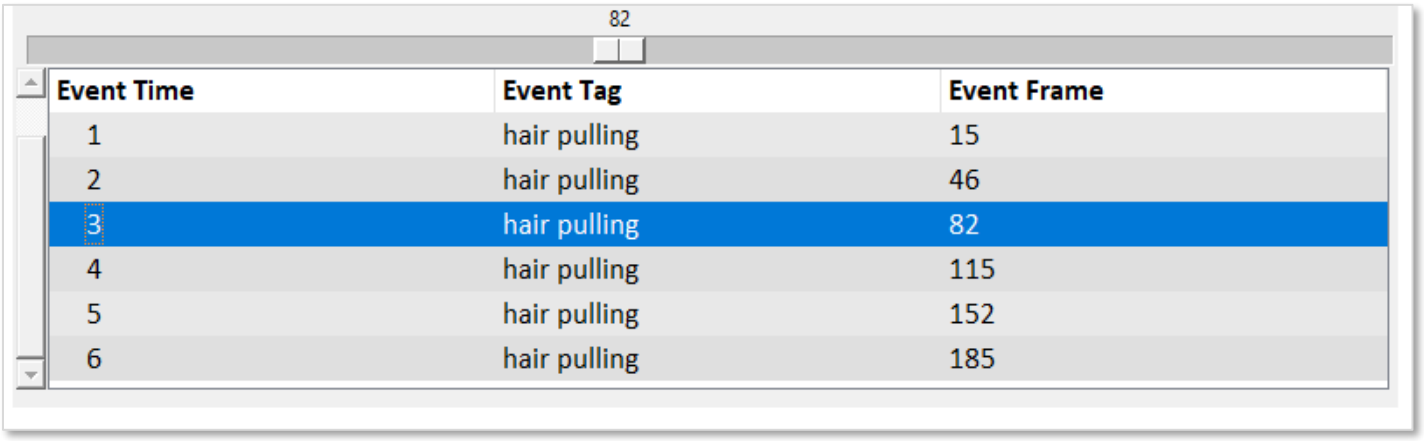
Section 9 Video View (cont.)

- When coding an uploaded video, the **Video View** tab will look like this. The individual codes given to the video are labeled by 3 characteristics: **Event Time, Event Tag, and Event Frame.**



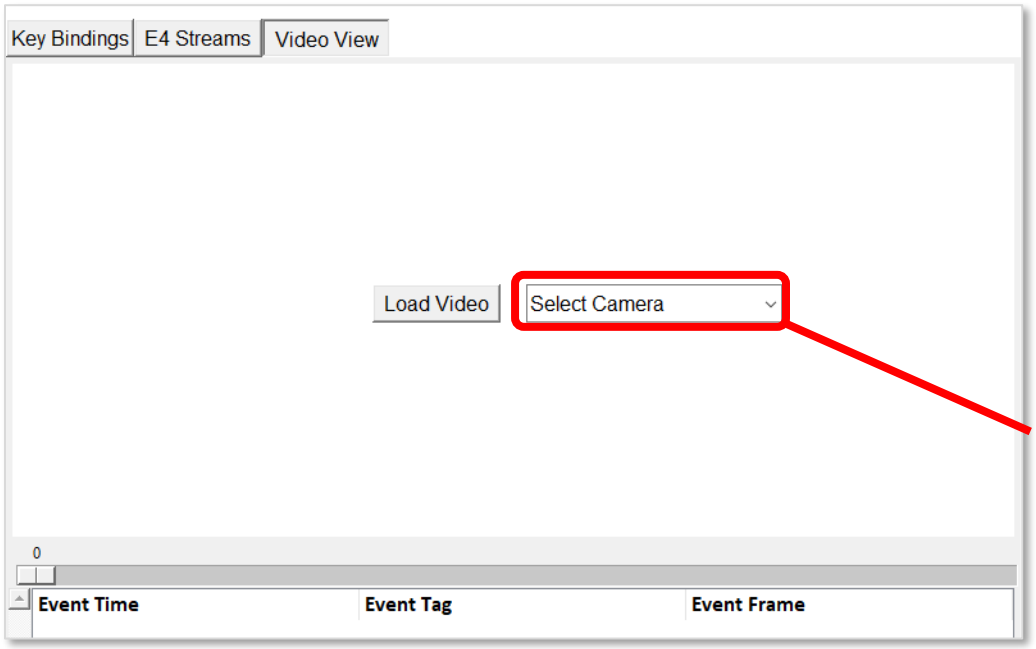
Section 9 Video View (cont.)

- Codes can be viewed underneath the **Video View** Tab



- The **Event Time** column breaks the video into more manageable sections. This makes it easier to recall the general time frame in which events occurred.
- The **Event Tag** column shows the behavior assigned to the given code
- The **Event Frame** tab shows the specific frame where the coded event begins
- This example video has 189 total frames. The **Event Time** column breaks this down into 6 sections.

Section 9 Video View (Select Camera)



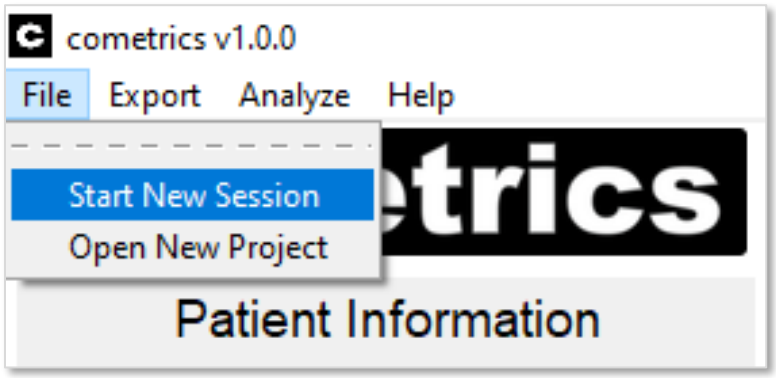
- To turn on the **Webcam** or other connected camera, press **Select Camera** and choose the desired input

- Connected cameras can be selected for use in this tab

- Selected cameras can be used to **view, record,** and **code** sessions **live**

- The order of activation of connected **Webcams** is the order of the inputs on the camera dropdown menu

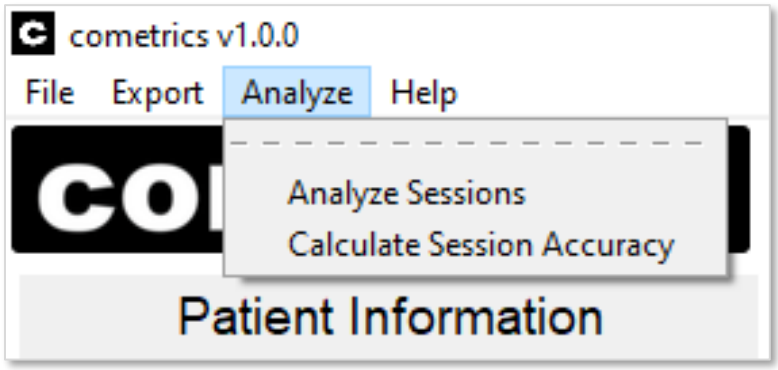
Section 10 Quick Access Menu



Start New Session – Reset the coding UI with the same settings

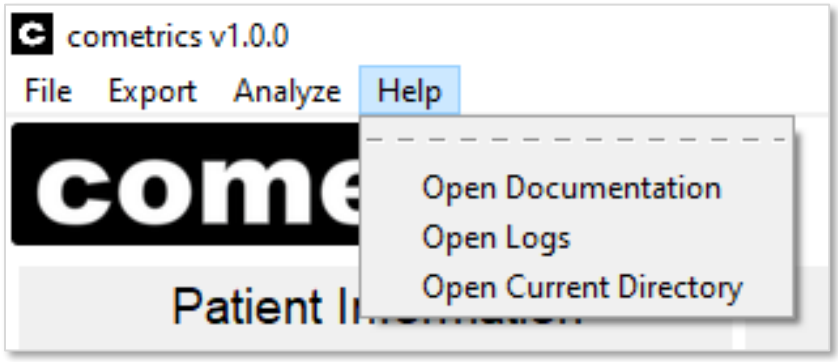
Open New Project – Close the coding UI and restart cometrics

Export CSV – Used to export all existing session data for the patient into CSV files



Analyze Sessions – Plots the session history for the patient into their KSF

Calculate Session Accuracy – Calculate the interobserver metrics between two sessions

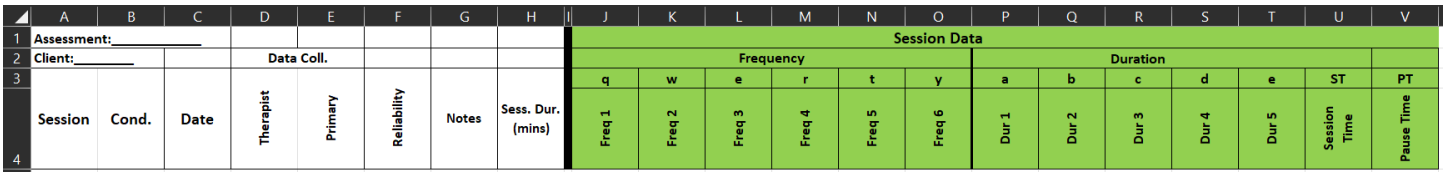


Open Documentation – Opens this guide using default PDF viewer

Open Logs – Opens the log file directory using File Explorer

Open Current Directory – Opens the working directory for the current patient

Section 11 Keystroke File Format

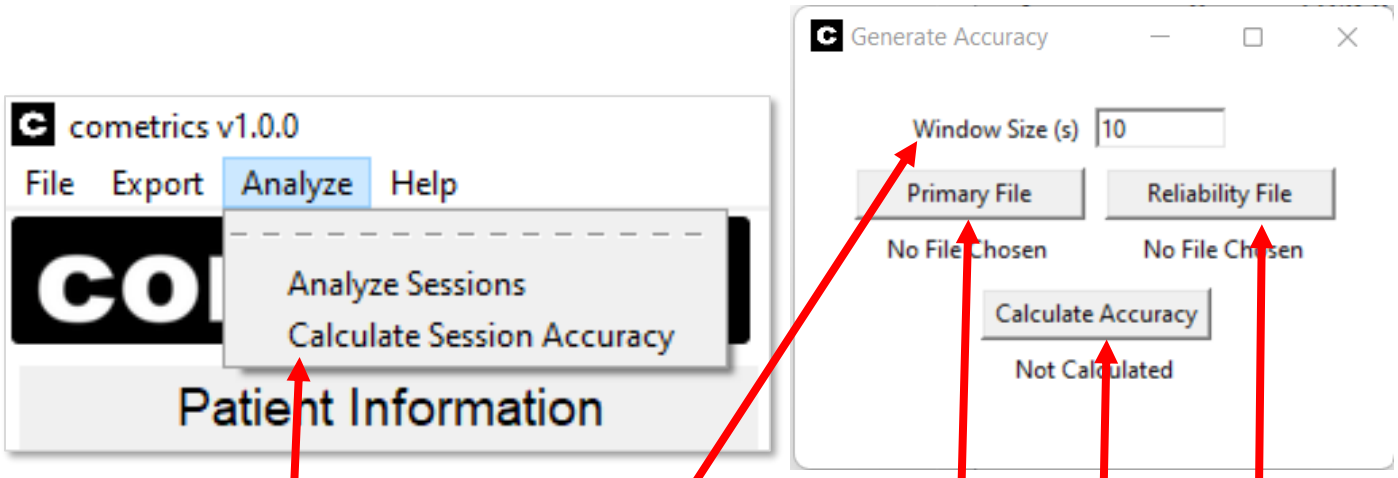


	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	Q	R	S	T	U	V
1	Assessment:_____								Session Data												
2	Client:_____			Data Coll.					Frequency						Duration						
3									q	w	e	r	t	y	a	b	c	d	e	ST	PT
4	Session	Cond.	Date	Therapist	Primary	Reliability	Notes	Sess. Dur. (mins)	Freq 1	Freq 2	Freq 3	Freq 4	Freq 5	Freq 6	Dur 1	Dur 2	Dur 3	Dur 4	Dur 5	Session Time	Pause Time

The keystroke file has a format that needs to be followed, an example of a working keystroke file can be found in the *references* folder of the root directory of the cometrics installation

The fields in the example keystroke file need to be present and when a new revision is created within the cometrics user interface, any custom fields or formatting are **not preserved**

Section 12 Interobserver Agreement Coefficients



The calculation bin size can be adjusted in units of seconds, with 10 seconds as the default

Select which session will act as the primary session

When both sessions are selected the IOA coefficients can be calculated, the output file will be highlighted in the File Explorer

Select which session will act as the reliability session

The 'Analyze' tab in the menu bar will allow the user to calculate the interobserver agreement (IOA) coefficients between two sessions

Pressing this button will open the window to the right

Frequency Keys Partial Interval Agreement Percentage (PIA)

For each interval, x = smaller value / larger value

If both reliability and primary have zero value, then x = 1

Partial Interval Agreement = average all x values * 100

Frequency Keys Occurrence Interval Agreement Percentage (OIA)

Given that one observer scored 1 or more for an interval, agreement if both scored at least 1

If both observers recorded zero responses, the interval is excluded

Occurrence Interval Agreement = agreements / (agreements + disagreements) * 100

Frequency Keys NonOccurrence Interval Agreement Percentage (NIA)

Given that one scored 0 for an interval, agreement if both scored 0

If both observers recorded at least one response in the interval, then the interval is excluded

NonOccurrence Interval Agreement = agreements / (agreements + disagreements) * 100

Frequency Keys Exact Agreement Percentage (EIA)

Agreement is scored if both primary and reli have same value for an interval.

Exact Agreement Percentage = total agreements / total intervals * 100

Frequency Keys Total Agreement Percentage (TIA)

Agreement = # of intervals where both scored zero or > 1

Total agreement = number of agreements / total intervals * 100

Duration Keys Partial Interval Agreement Percentage (PIA)

For each interval, x = smaller value / larger value

If both reli and primary have zero value, then x = 1

Partial Interval Agreement = the average of all x values * 100

Duration Keys Exact Interval Agreement Percentage (EIA)

For each interval the value of the primary and reli is rounded to the nearest second

Agreement is scored if both primary and reli have same value for an interval.

Exact Agreement Percentage = total agreements / total intervals * 100

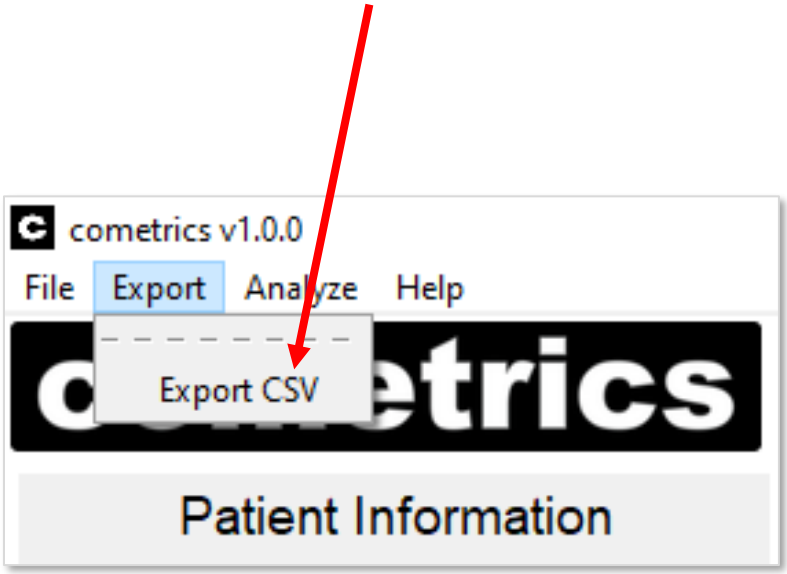
Section 13 Session Output File Format

Each session has an output file that lists all collected information during a session including the Patient Information fields, keystrokes logged with timestamps from the timer, E4 frame, and video frame, where applicable, as well as all E4 data organized into one second windows

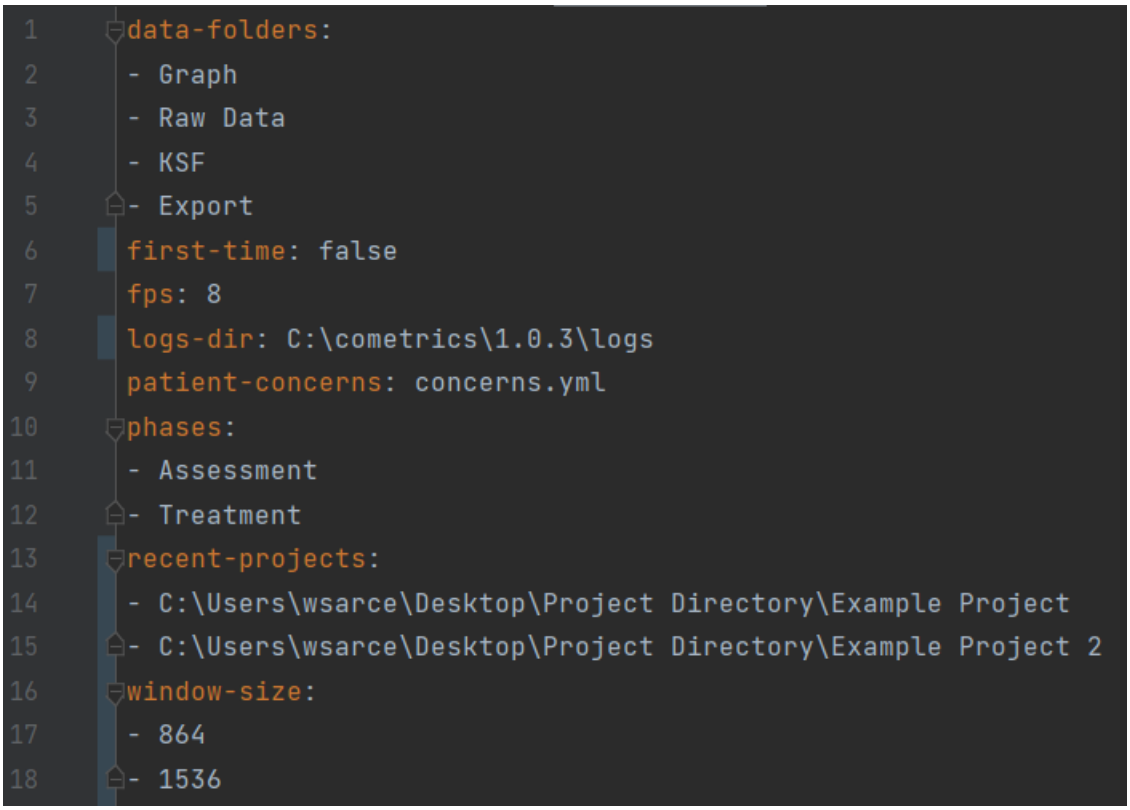
The session file is in JSON format, which is a human-readable file that is easily parsed in various programming languages

The file can be opened and read in a text file editor, such as Notepad

Additionally, sessions can be converted to comma-separated value (CSV) format using the button in the ‘Export’ tab



Section 14 Config File Changes



```
data-folders:
- Graph
- Raw Data
- KSF
- Export
first-time: false
fps: 8
logs-dir: C:\cometrics\1.0.3\logs
patient-concerns: concerns.yml
phases:
- Assessment
- Treatment
recent-projects:
- C:\Users\wsarce\Desktop\Project Directory\Example Project
- C:\Users\wsarce\Desktop\Project Directory\Example Project 2
window-size:
- 864
- 1536
```

In the root directory of the cometrics installation is a file called *config.yml*, which defines several control variables for the software

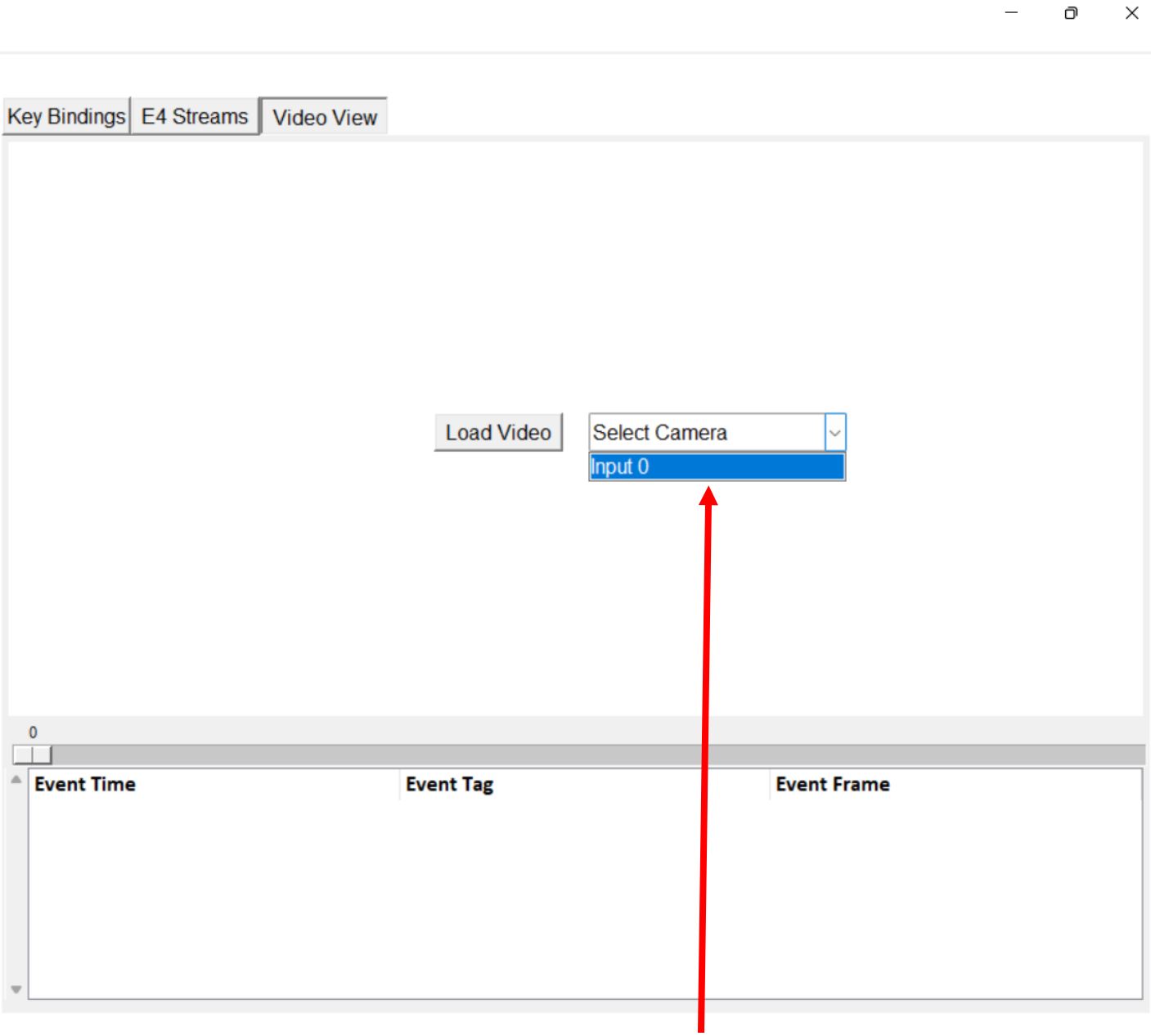
Changing the *fps* variable will change the recording FPS for the webcam recording functionality

Phases can be added or changed by modifying the entries under *phases*, which will cause cometrics to recognize different phases of therapy

Recent projects that are listed when the Project Setup window is opened can be modified, at this time there is no way to delete project references from within the user interface, so the way to delete them is by deleting them from this file

The window size of your monitor is detected at startup and if your monitor size changes these entries can be deleted and replaced with ‘[]’ to have cometrics redetect your window size

Section 15 Understanding Webcam Order

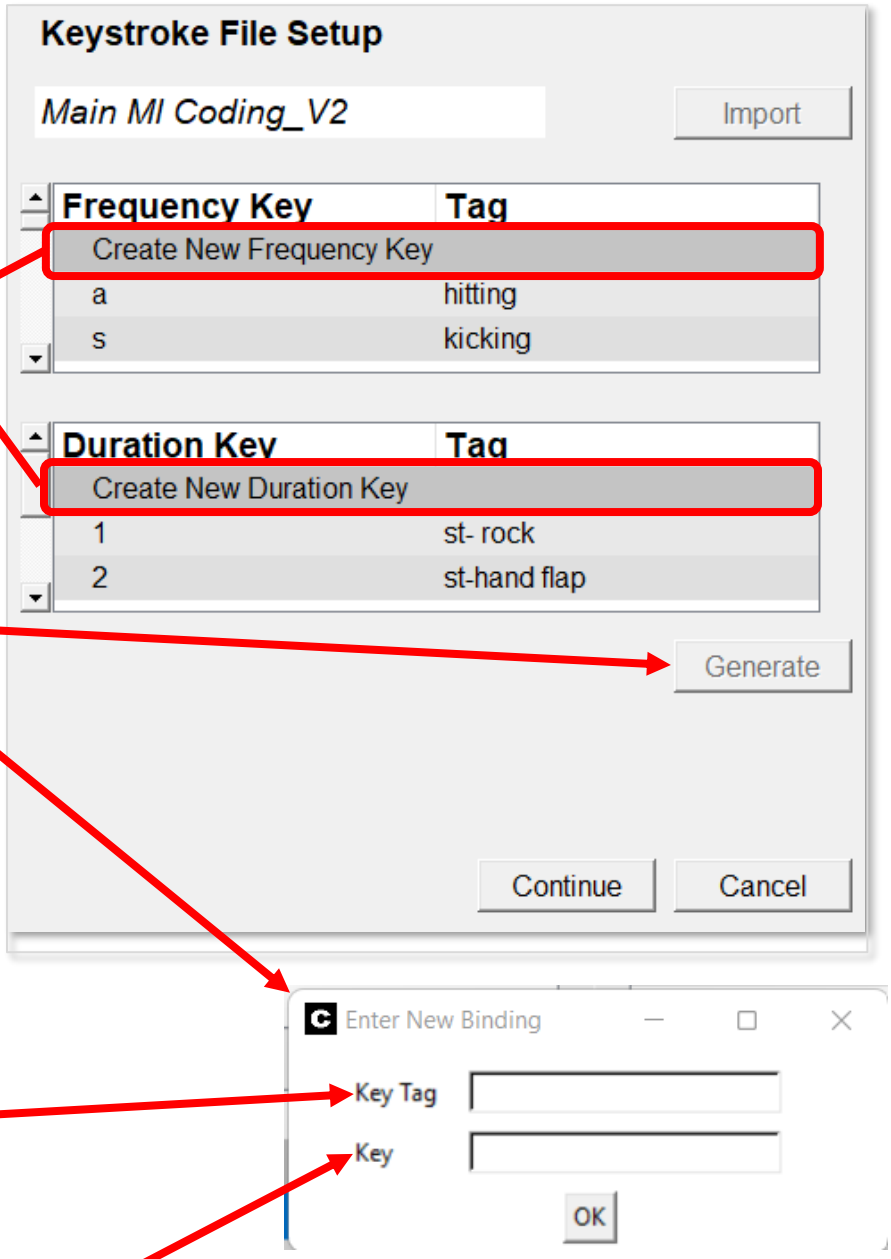


When cometrics starts up it will poll for all connected cameras, either integrated or connected via USB and the list indicated above will be populated in the order that cameras are found

Generally, this order is the same each time given the same cameras being connected, but there is no way to differentiate between cameras

The user will have to test each input to determine which camera is which input

Section 16 Modifying Keystroke Files



Pressing either of the two highlighted buttons will create a new key within the keystroke file

When a new key is created this way, the "Generate" button will be interactable and a popup will show

Key Tag – The tag (behavior, label, etc.) that should be associated with hitting the specified key

Key – The key press that should trigger the recording of the specified tag

Pressing "OK" will add the key to the end of the displayed list