

Quintic Software

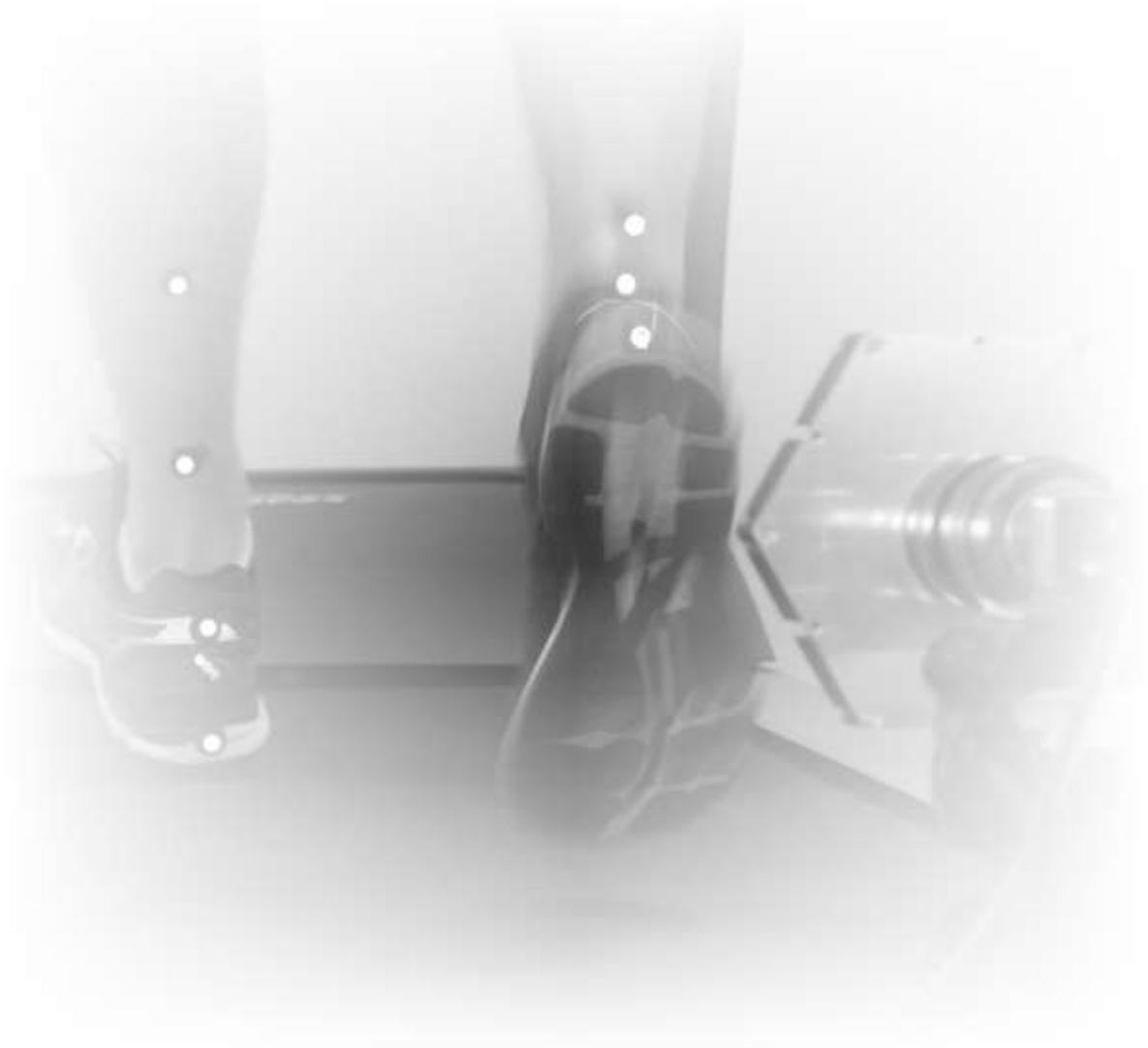
Tutorial 10

Quintic CSV
Synchronisation

v29

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1. Introduction

From Quintic Biomechanics v26 you are able to synchronise data from an external piece of hardware using the CSV synchronisation function.

This function allows synchronisation of data from any hardware that can export to a .CSV file.

For example:

- Pressure plates
- Force plates
- EMG systems
- Cycling power cranks
- Pressure insoles
- And many more...

This tutorial will guide you through the process of synchronising the exported .CSV file with your videos in the Quintic software. It assumes the .CSV file has been exported correctly from your external hardware.

If you require any information on how to export to CSV from your external hardware, please contact the hardware supplier directly.

If your hardware can export data to an Excel file, you can then choose 'save as' and select 'CSV (Comma delimited) (*.CSV)' when saving. This will create an Excel file in the correct format to use for synchronisation.

2. File Name and Location

First ensure that the .CSV file you have exported from your external hardware is located in the same folder as your video file.

Then rename the file so that the name is **EXACTLY** the same as the corresponding video file. For example...

Video file name: 120rpm_Gear 5_Cam1.avi

.CSV file name: 120rpm_Gear 5_Cam1.CSV

You **MUST** ensure that all files related to the video (Eg. .CSV, .MRK, .QDF) are saved into the same folder in order for effective synchronisation and display of frame markers on the graphs.

3. CSV File Contents

In order for Quintic to read the information in the .CSV file it requires a specific file format. The data should be arranged into columns with the first row of each column containing the name of the variable/series.

The first column should always contain the variable "Time" with units as seconds. This is used to synchronise the data with the frames of the video.

The rest of the columns should then contain your data variables (eg. Crank_Torque_R). A maximum of 16 variables can be displayed.

An example of the .CSV file structure can be seen below. This has been exported from a cycling power crank.

	A	B	C	D	E	F
1	Seconds	Crank_Force_L	Crank_Force_R	Crank_Position	Crank_Torque_L	Crank_Torque_R
2	0	55	567	184.3	7	26
3	0.005	55	556	190.5	7	24
4	0.01	62	533	194.6	9	24
5	0.015	45	523	202.7	8	18
6	0.02	52	519	257.2	9	20
7	0.025	37	496	213.7	12	18
8	0.03	8	474	218.1	11	16
9	0.035	-11	453	225.3	11	12

If required, the data can be edited in Excel, to ensure the correct format, and exported as a .CSV file. Click "save as" and select "CSV (Comma delimited) (*.CSV)" from the "Save as type" drop down menu.

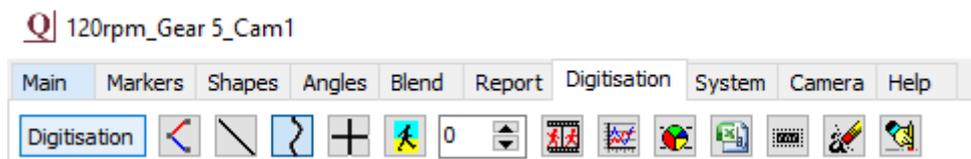
Additional variables can be added (maximum 16) by adding more columns in the same format. For example, if you wish to display data captured from an EMG system simultaneously to the crank shaft data, then add more columns containing the data.

Only **ONE** .CSV file can be synchronised to the video. Therefore, in order to display data collected from multiple pieces of external hardware, all data **MUST** be stored in one .CSV file.

4. Synchronisation

Open the video you wish to analyse in the main Quintic window and determine the key frame for synchronisation. This can be the first key frame (eg. top dead centre) or a form of trigger (eg. a trigger light) depending on your external software.

Once the key frame has been identified, use a Quintic frame marker (Tutorial 2) to highlight the frame. This will make the synchronisation process easier later on.



Click on the “Digitisation” tab and select the  button (CSV function) from the toolbar. A drop down menu will appear giving you a choice of synchronisation methods.

Sync to start of video

Sync to current frame number

Manual Sync

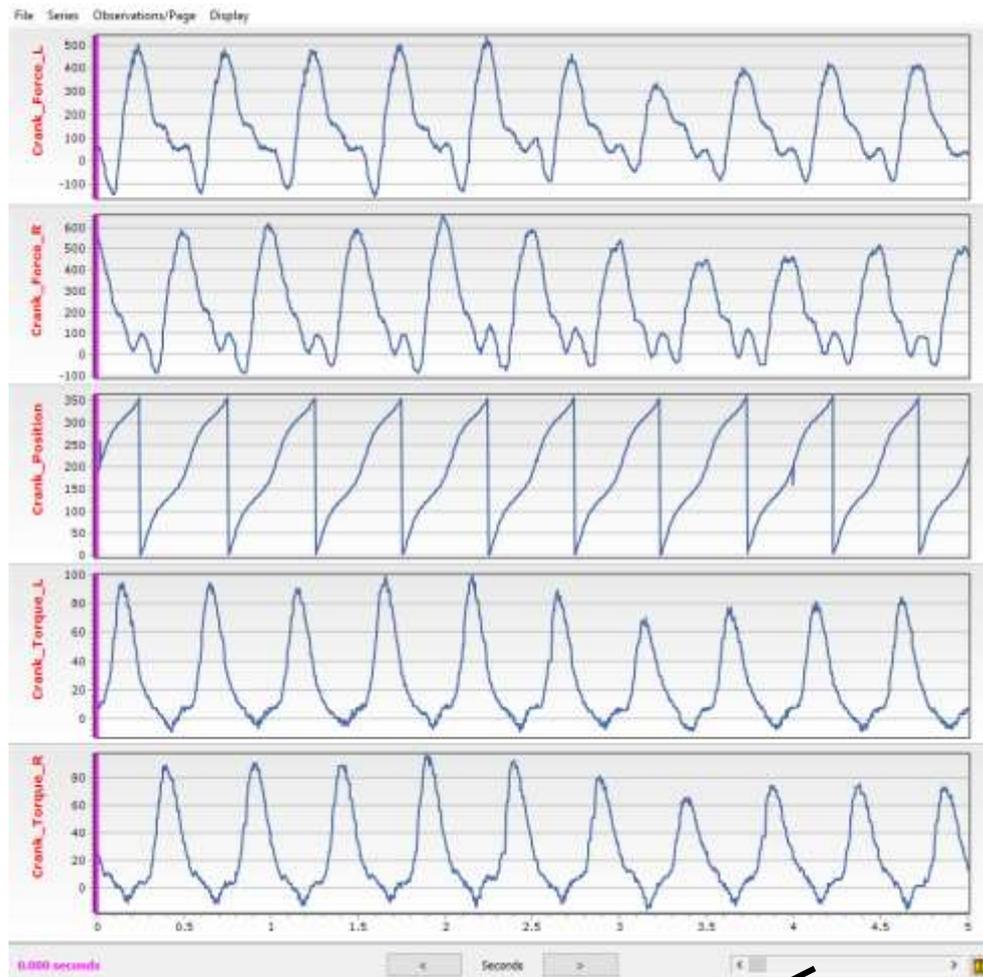
Sync to start of video – This will synchronise time 0 of the CSV trace to frame 1 of the video.

Sync to current frame number - If you wish to synchronise the start of the CSV trace with a chosen key frame, then scroll through the video or click on a frame marker earlier to easily determine the key frame. Click “Sync to current frame number” and time 0 of the CSV trace will synchronise to the current frame of the video being viewed in the main Quintic window.

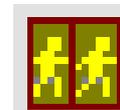
Manual Sync – This function allows you to synchronise any frame of the video with any point of the CSV.

Select “Manual Sync” and the synchronisation window will appear with a pink vertical line displayed on each graph. This pink line represents the point of the CSV trace you wish to sync with the current frame being displayed in the Quintic main window.

Select the frame of the video which displays the chosen time event required for synchronisation. Then, scroll the pink line to the corresponding point of the CSV trace using the scroll bar in the bottom right of the window.



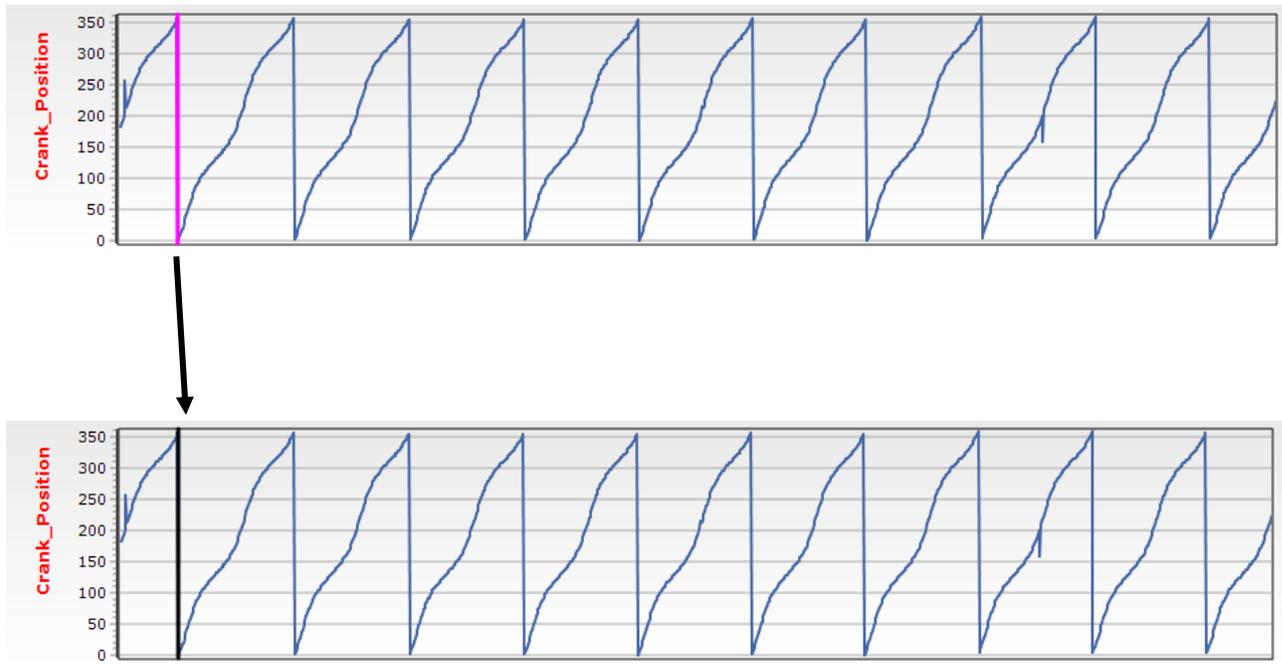
Synchronisation slider – controls the position of the pink line.



Synchronisation button

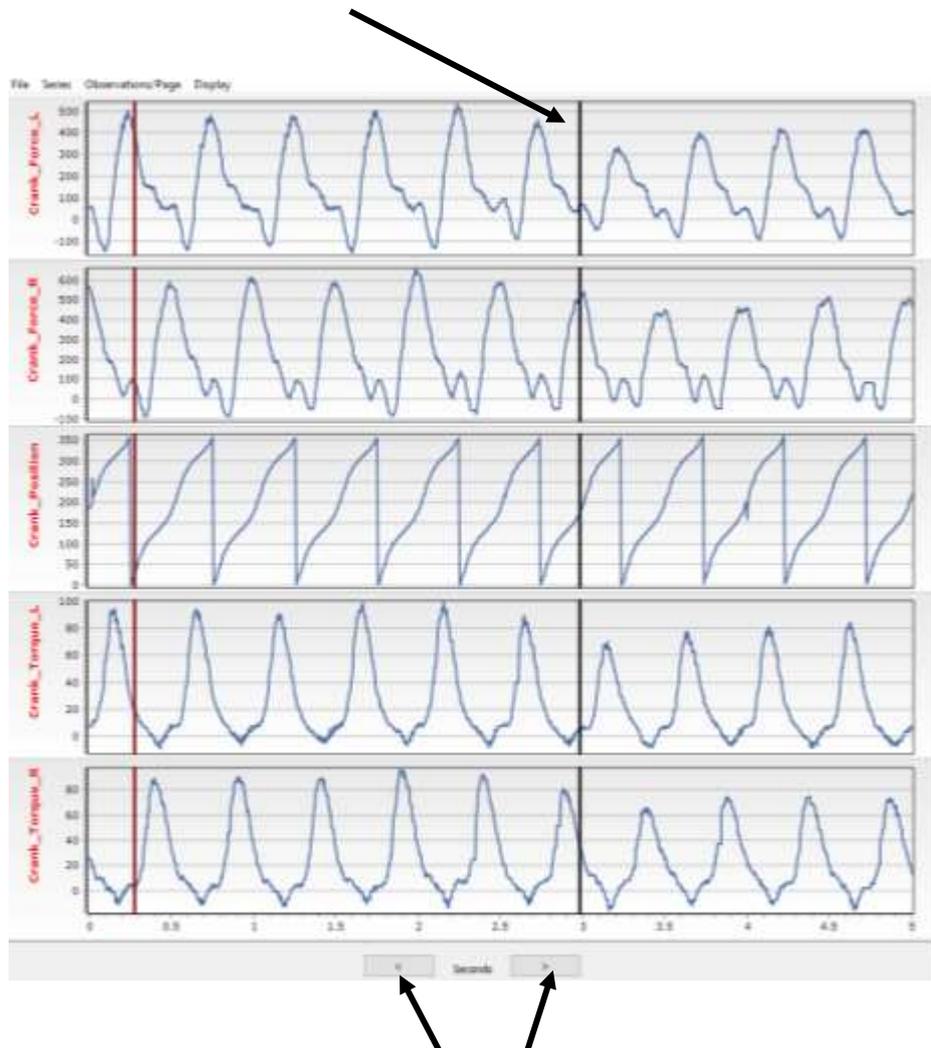
Once you have chosen the point of the CSV trace you wish to synchronise with the frame being displayed in Quintic's main window, click the synchronisation button.

The pink line will now change to black, representing the frame that is displayed in the main window. The video and CSV trace have now been synchronised and the black line will move along the trace according to the frame position of the video being played.



5. CSV Analysis

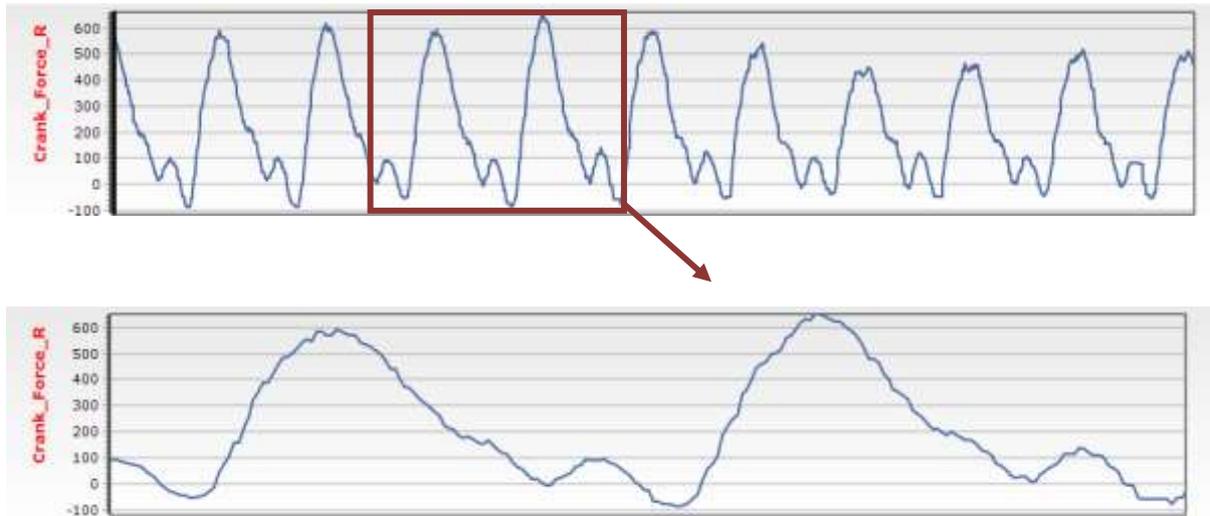
The black interactive line indicates the current frame of the video.



You can scroll through the CSV trace using these arrows.

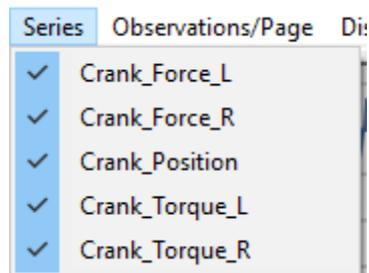
At this point the excel containing the CSV data **MUST** be closed outside of Quintic. If the excel file is being viewed/edited in another program then the .CSV will not open.

Click and drag the cursor over a specific area of the CSV graph to zoom in. The graph will resize in order to fill the graph area.



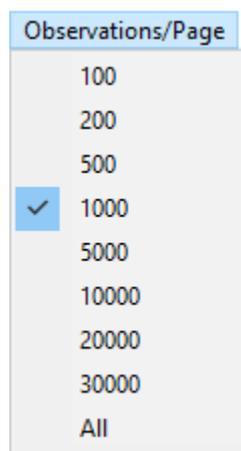
Series – The number of variables chosen from the 16 placed in the .CSV file (max 8).

To select which variables are displayed on the graph, click “Series” from the toolbar and select the appropriate variables from the drop down menu.



You are able to select a maximum of 8 from a possible list of 16. These are the columns of the .CSV file.

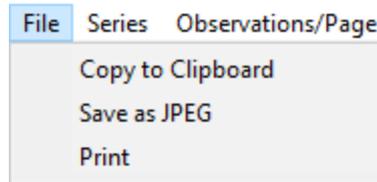
Observations/Page – The number of observations displayed per page.



Click “Observations/Page” and select the number of data points you wish to be shown on the graph/page.

File – Save and Print

Click “File and select the format in which you wish to save the CSV graphs currently displayed.



If you wish to only save a specific graph, then first ensure that you have selected the appropriate series to be displayed.

Alternatively select “Print” to only print the graphs on display.

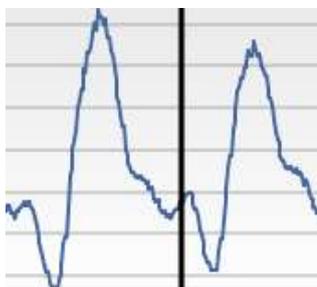
Display – Allows you to select the additional frame markers and values displayed on the graph.

Show Series Value



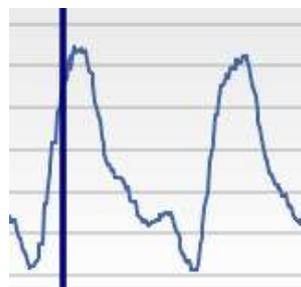
When the cursor is placed over a series, the values are displayed for that data point.

Show Frame Position



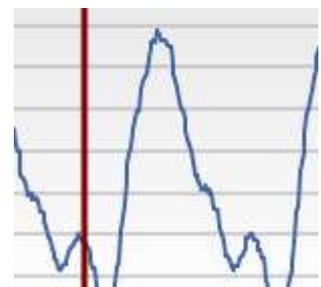
A black bar indicates the current frame displayed in the main Quintic window.

Show Frame Markers



A blue bar indicates the frame where frame markers (max 10) have been placed on the video.

Show Interpolation Markers



A red bar indicates the frame where interpolation markers have been placed on the video.