User Guide

The PALeventanalysis tool is a Microsoft Excel spreadsheet that can process individual activPAL events files and carry out a range of simple analysis on the events file. The types of analysis that can be carried out by the spreadsheet include

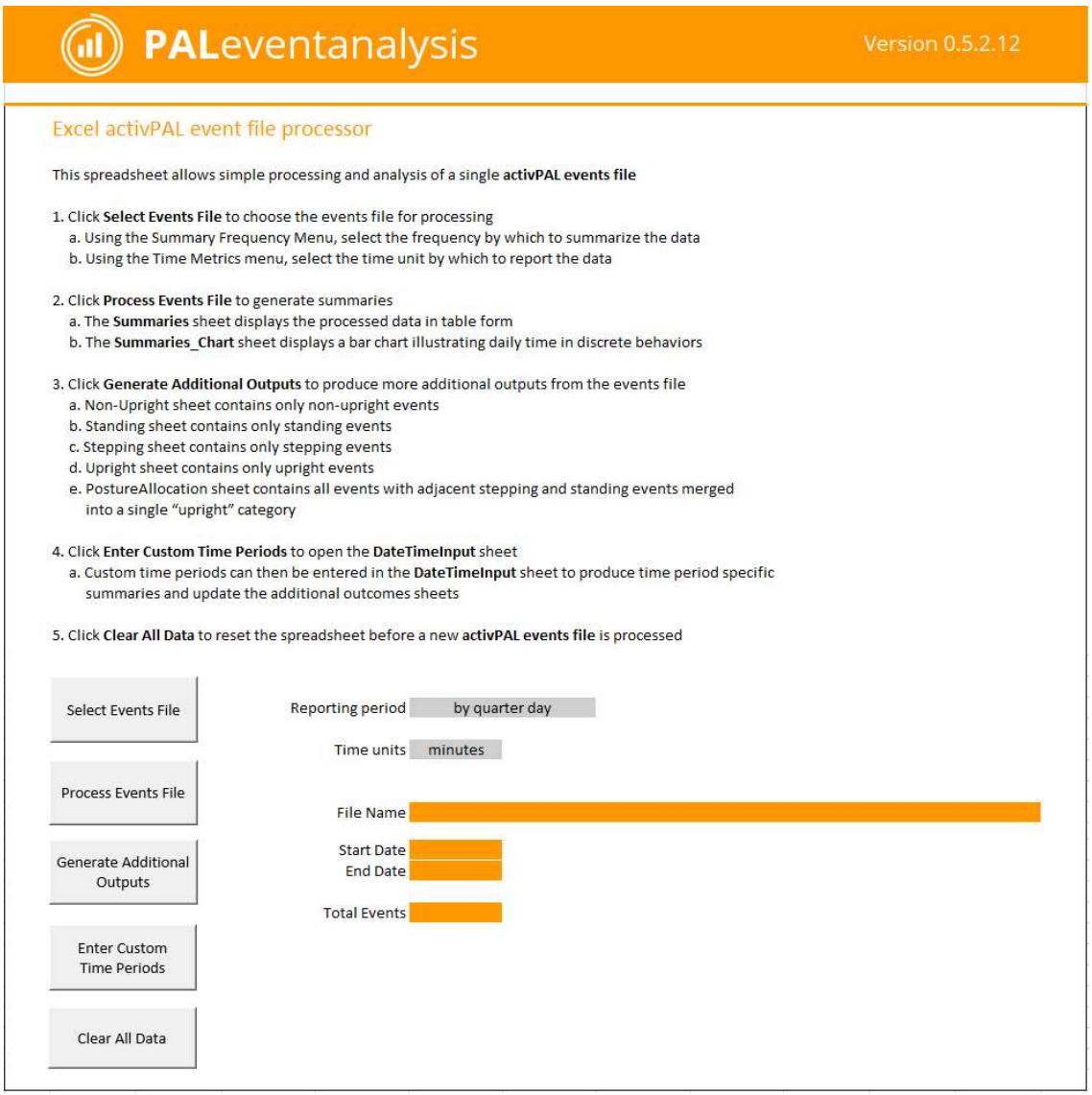
- Production of summary activity data broken down by user selectable period (daily / quarter day / hourly).
- Aggregation of stepping data into stepping bouts, with calculation of stepping cadence
- Extraction of event data relating to a specific activity type
- Production of an event summary showing periods of sedentary and upright activity, showing the proportion of quiet standing and stepping during upright periods
- Generation of standard charts to show the composition of each day by activity type and the breakdown of stepping activity by cadence.

The spreadsheet uses VBA to process and analyse events files so macros must be enabled in order to use the PALeventanalysis tool.

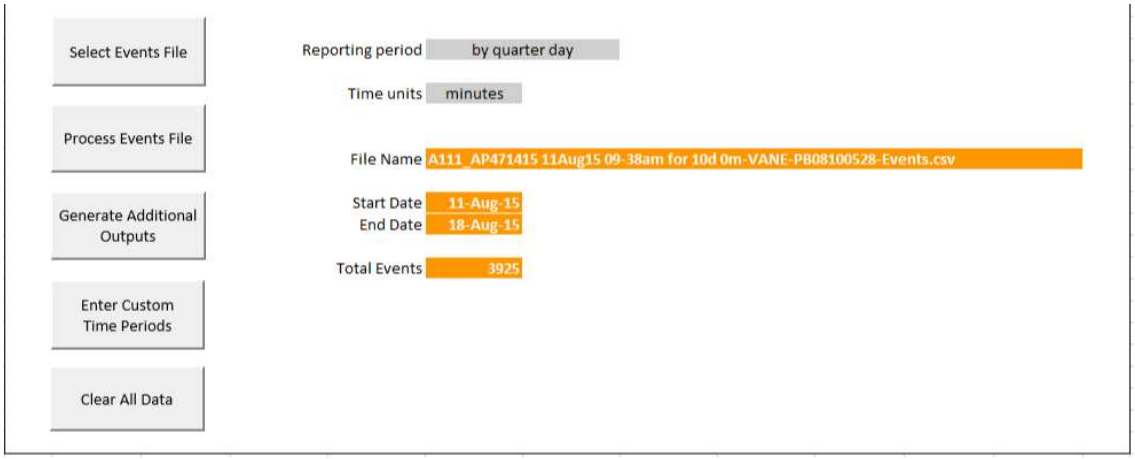
Loading an events file

Upon opening the spreadsheet, the **FileSelect** sheet should be selected. If another sheet is displayed please select the **FileSelect** sheet.

If macros have been disabled an error message will be displayed on the sheet.



To select an events file to be processed, click on the **Select Events File** button to open a file select window. If a valid events or events extended files is selected summary details about the file will be loaded onto the spreadsheet.



Initial processing of an events file

Once a valid file has been loaded, clicking on the **Process Events File** button will process the events file and produce a series of outputs that can be selected from three new sheets.

- The **EventFile** sheet shows the unprocessed events file.
- The **Summaries** sheet shows the summary activity data.
- The **Summaries_Chart** sheet contains that daily activity breakdown chart (see Figure 1 for example chart).

The **Reporting period** menu can be used to select the period over which the summary information is grouped. Activity data can be summarised by hour / quarter day / whole day.

The **Time units** menu can be used to select the time period that is used to output the activity data. Activity data can be reported using hours / minutes / seconds.

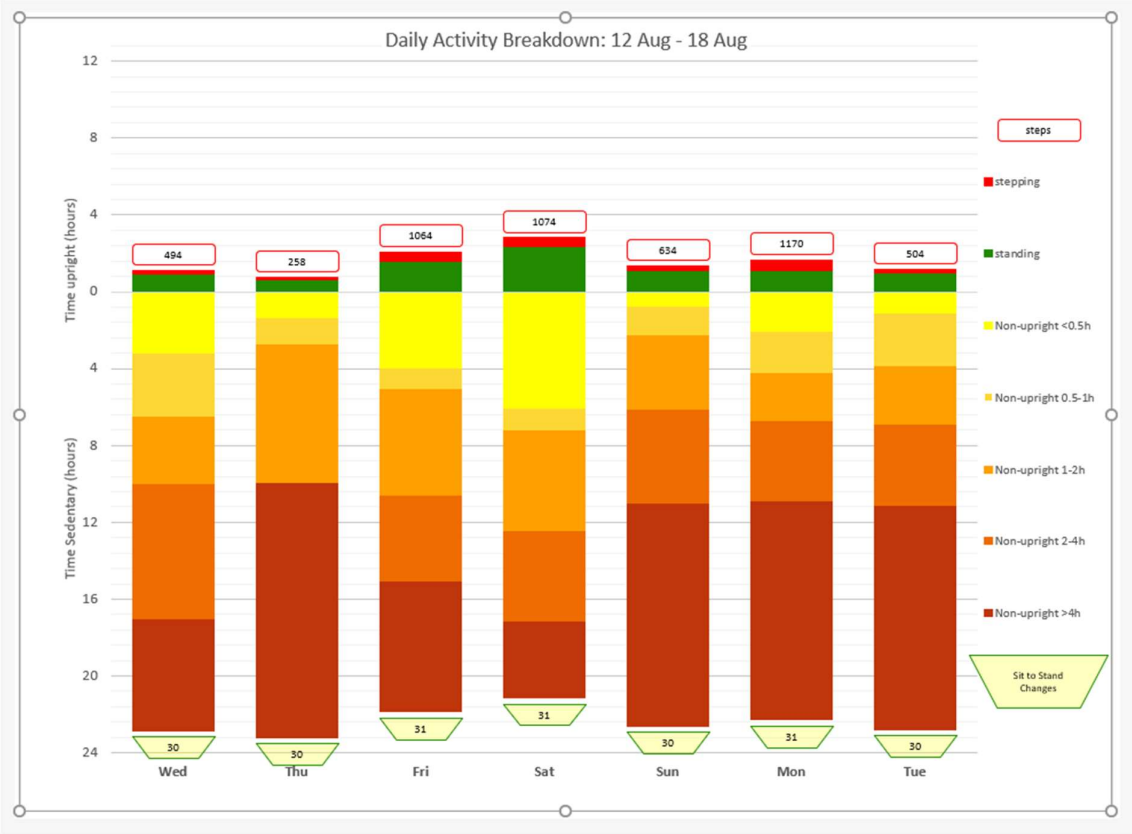


Figure 1: Example Daily Activity Breakdown chart (found in Summaries_Chart sheet)

Generating more detailed events file outputs

In addition to the outputs produced using the **Process Events File** button, additional outputs can be generated by clicking on the **Generate Additional Outputs** button. The outputs can then be selected from six new sheets.

- The **Non-Upright** sheet contains details of all the non-upright events in the events file.
- The **Standing** sheet contains details of all the standing events in the events file.
- The **Stepping** sheet contains a summary of all the bouts of stepping that occur within the events file. Stepping bouts are constructed by joining adjacent stepping events into a single bout. For each stepping bout the cadence and number of steps taken are reported.
- The **Upright** sheets contains details of all the periods of upright activity in the events file. Upright bouts are constructed by joining adjacent stepping bouts and standing events. The number and duration of stepping and standing bouts within each upright period is reported along with the total number of steps taken during the upright period.
- The **PostureAllocation** sheet merges the contents of the **Upright** sheet and the **Non-Upright** sheet to provide details about the distribution and composition of periods of upright and non-upright activity within the events file.
- The **SteppingCadence_Chart** sheet contains a chart that breaks down the stepping that occurs within the events file into cadence bands (see Figure 2 for example chart).

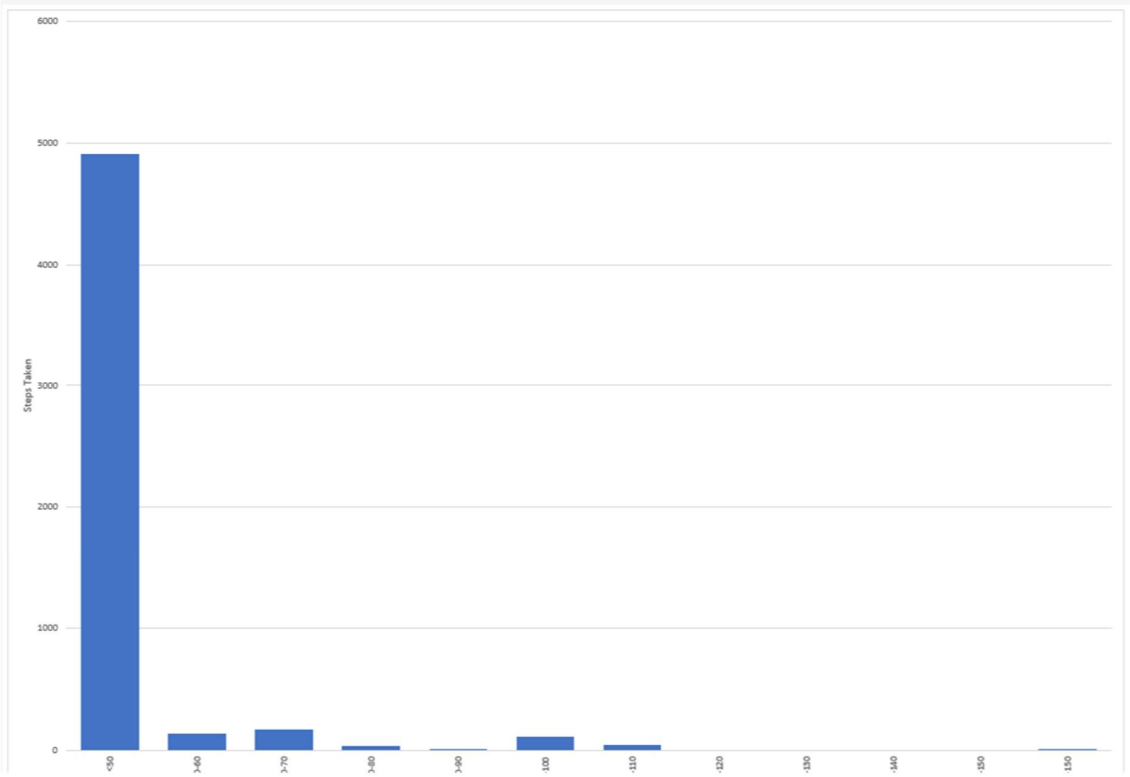
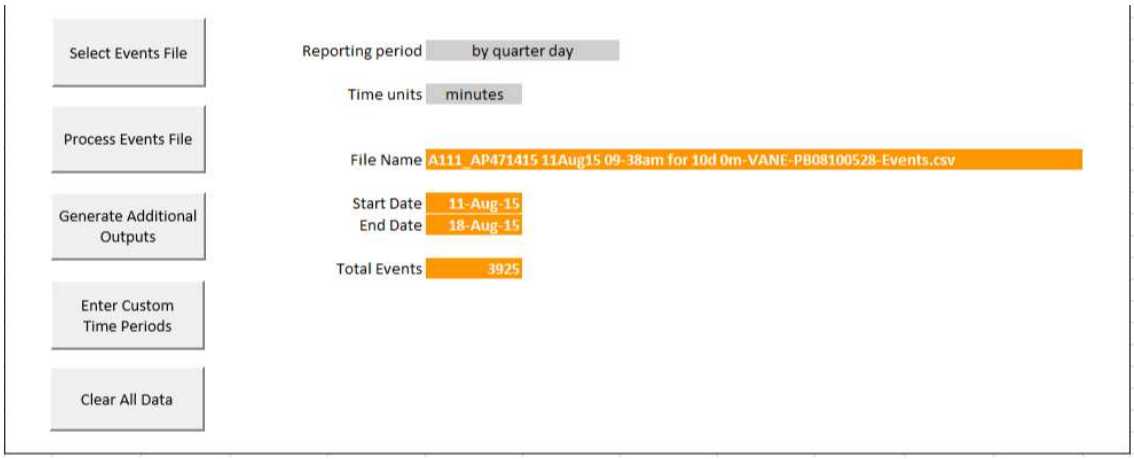


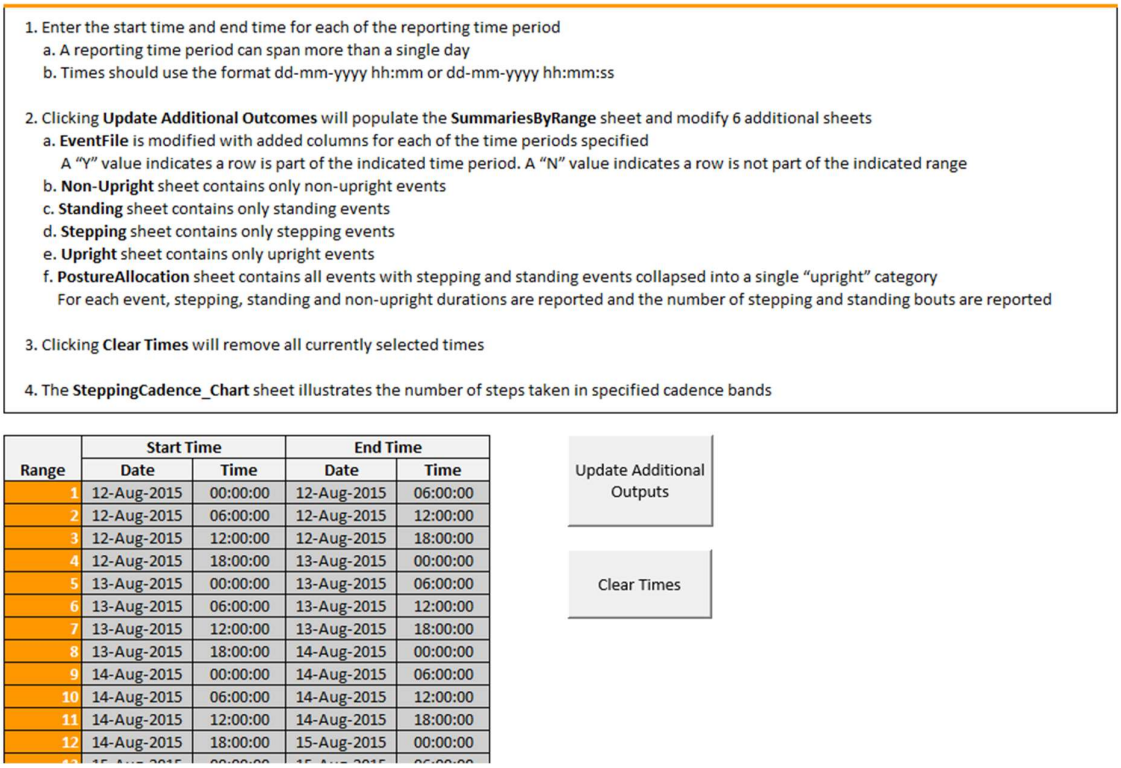
Figure 2: Example Stepping Cadence Distribution chart (found in SteppingCadence_Chart sheet)

Specifying specific time periods for reporting outputs

By default, the PALeventanalysis tool allows events file data to be aggregated over pre-defined time periods. In addition to these pre-defined time periods, the tool also allows the data to be processed using a bespoke range of reporting periods by using the **Enter Custom Time Periods** button.



Clicking on the **Enter Custom Time Periods** button within the **FileSelect** sheet will take you to the **DateTimeInput** sheet.



Range	Start Time		End Time	
	Date	Time	Date	Time
1	12-Aug-2015	00:00:00	12-Aug-2015	06:00:00
2	12-Aug-2015	06:00:00	12-Aug-2015	12:00:00
3	12-Aug-2015	12:00:00	12-Aug-2015	18:00:00
4	12-Aug-2015	18:00:00	13-Aug-2015	00:00:00
5	13-Aug-2015	00:00:00	13-Aug-2015	06:00:00
6	13-Aug-2015	06:00:00	13-Aug-2015	12:00:00
7	13-Aug-2015	12:00:00	13-Aug-2015	18:00:00
8	13-Aug-2015	18:00:00	14-Aug-2015	00:00:00
9	14-Aug-2015	00:00:00	14-Aug-2015	06:00:00
10	14-Aug-2015	06:00:00	14-Aug-2015	12:00:00
11	14-Aug-2015	12:00:00	14-Aug-2015	18:00:00
12	14-Aug-2015	18:00:00	15-Aug-2015	00:00:00

The sheet will be populated using the time periods selected in the **reporting period** menu in the **FileSelect** sheet. By pressing the **Clear Times** button these periods are cleared. You can then enter the start time and end time for the periods of interest.

Once the time periods have been entered clicking on the **Update Additional Outputs** button will create a revised version of the summary data (**Summaries** sheet) using the custom reporting periods that have been specified. This version of the summary can be found in the **SummariesByRange** sheet.

The outputs generated by the **Generate Additional Outputs** button will also be updated with an additional column to show which reporting period an event falls within. If an event spans more than one reporting period, an additional row will be created for each reporting period that the event falls within.

When specifying custom reporting periods there is flexibility in how they can be specified.

- Reporting periods do not need to have the same duration. You can use different lengths of period to meet your reporting requirements (i.e. morning (9am – 12pm), lunch (12pm – 2pm) and afternoon (2pm – 6pm)
- Reporting periods do not have to be continuous. You can leave a gap between adjacent periods (i.e. if you only wish to report on working day activities you can set each period to cover a set time, such as from 8am to 6pm).
- Reporting periods can overlap. The start time of a reporting period can be before the end time of the previous reporting period
- A reporting period can span more than one day.

If the reporting periods you are using are the same for each day during the observation period you only need to enter the time periods once (as shown below).

Range	Start Time		End Time	
	Date	Time	Date	Time
		00:00:00		08:00:00
		08:00:00		16:00:00
		16:00:00		00:00:00

Update Additional Outputs

Clear Times

Clicking the **Generate Additional Outputs** button will update the reporting periods to cover the recording duration and generate the revised summary data using these custom reporting periods. The summary can be found in the **SummariesByRange** sheet.

Range	Start Time		End Time	
	Date	Time	Date	Time
1	02-Mar-2022	00:00:00	02-Mar-2022	08:00:00
2	02-Mar-2022	08:00:00	02-Mar-2022	16:00:00
3	02-Mar-2022	16:00:00	03-Mar-2022	00:00:00
4	03-Mar-2022	00:00:00	03-Mar-2022	08:00:00
5	03-Mar-2022	08:00:00	03-Mar-2022	16:00:00
6	03-Mar-2022	16:00:00	04-Mar-2022	00:00:00
7	04-Mar-2022	00:00:00	04-Mar-2022	08:00:00
8	04-Mar-2022	08:00:00	04-Mar-2022	16:00:00
9	04-Mar-2022	16:00:00	05-Mar-2022	00:00:00
10	05-Mar-2022	00:00:00	05-Mar-2022	08:00:00
11	05-Mar-2022	08:00:00	05-Mar-2022	16:00:00
12	05-Mar-2022	16:00:00	06-Mar-2022	00:00:00

Update Additional Outputs

Clear Times

Specifying specific time periods for reporting outputs

If you wish to process a new events file, you should click the **Clear All Data** button in the **FileSelect** sheet before selecting the new events file. This will ensure that all the outputs and charts produced for the previously processed events file are cleared to prevent possible processing and formatting errors.