

# Storage (.sto) Files

The **.sto** file format was created by the developers of OpenSim. It is very similar to the **.mot** file format, with two main differences:

- The time values in the time column of a **.sto** file do not have to be uniformly spaced
- The first column of a **.sto** file *must* contain time, whereas a **.mot** file can contain other quantities in the first column

There is only one format for the header of a **.sto** file and it is very simple, as shown below:

```
Coordinates
nRows=153
nColumns=24
endheader
```

The first line contains the name with which the **.sto** file will be referred to when it is loaded into OpenSim. The second line is **nRows=** followed by the number of rows of data in the **.sto** file. The third line is **nColumns=** followed by the number of columns of data in the **.sto** file (including the time column). The last line is **endheader**. Immediately following the **endheader** line is the data section of the **.sto** file, which is identical to the data section of a **.mot** file, except that the time column is allowed to have non-uniform spacing.

Example **.sto** files, such as `subject01_walk1_RRA_Actuation_force.sto`, are provided in the `examples/Gait2354_Simbody/OutputReference/ResultsRRA` directory, which is part of the OpenSim distribution. As of version 2.3.2, the **sto** files have a header that includes:

- Version number (`version=1`)
- Whether angular data specified in the file are in radians or degrees (`inDegrees=yes/no`). OpenSim would assume that old **sto** files are in radians, if this is not the case you can manually change this flag in the file or use the `Help->Convert Files` option to set it.

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