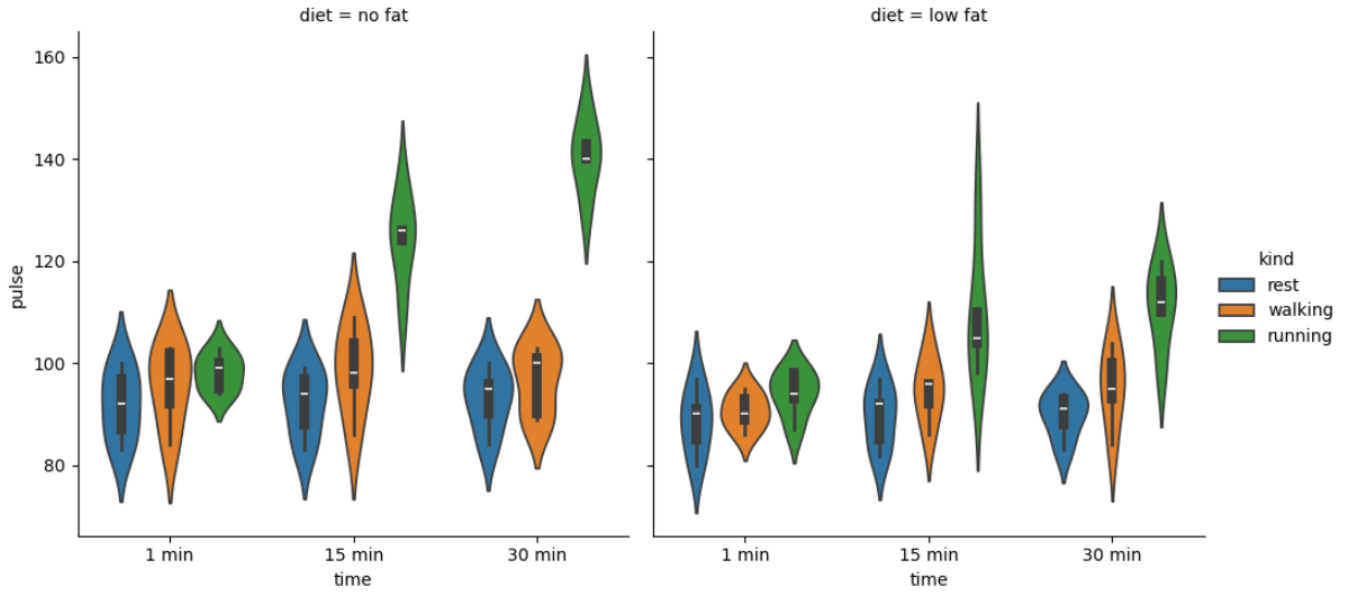
Factor Plot – Old version

Cat Plot – Recent version

```
sb.catplot(x = "time", y = "pulse", hue = "kind", kind = 'violin', col = "diet", data = df1)
plt.show()
```



Cat Plot :

- It is a versatile function used to visualize the relationship between a categorical variable and one or more numerical variables.
- It serves as a general interface for different types of categorical plots, such as bar plots, box plots, point plots, and violin plots.
- By specifying the kind parameter, we can switch the plot types.
- This function is useful for visualizing distributions, comparisons, and trends across categorical variables.

Dataset

	Unnamed: 0	id	diet	pulse	time	kind
0	0	1	low fat	85	1 min	rest
1	1	1	low fat	85	15 min	rest
2	2	1	low fat	88	30 min	rest
3	3	2	low fat	90	1 min	rest
4	4	2	low fat	92	15 min	rest
...	...	...	...	...	...	...
85	85	29	no fat	135	15 min	running
86	86	29	no fat	130	30 min	running
87	87	30	no fat	99	1 min	running
88	88	30	no fat	111	15 min	running
89	89	30	no fat	150	30 min	running

90 rows × 6 columns

- The above graph explains the relationship between Time (1min, 15mins, 30 mins) and Pulse (60 to 160) rate based on their diet (no fat, low fat) in column wise by differentiating with kind (rest, walking, running).

Diet - No Fat

1 min

Rest - Pulse rate ranges between 75 - 110

Walking - Pulse rate ranges between 75 - 115

Running - Pulse rate ranges between 90 - 110

5 mins

Rest - Pulse rate ranges between 75 - 110

Walking - Pulse rate ranges between 75 -120

Running - Pulse rate ranges between 95 – 150

30 mins

Rest - Pulse rate ranges between75 - 110

Walking - Pulse rate ranges between 80 - 117

Running - Pulse rate ranges between 120 - 160

Diet – Low Fat

1 min

Rest - Pulse rate ranges between 73 - 108

Walking - Pulse rate ranges between 82 - 100

Running - Pulse rate ranges between 80 - 105

5 mins

Rest - Pulse rate ranges between 75 - 106

Walking - Pulse rate ranges between 78 -110

Running - Pulse rate ranges between 80 – 150

30 mins

Rest - Pulse rate ranges between 78 - 100

Walking - Pulse rate ranges between 75 - 118

Running - Pulse rate ranges between 90 – 132

Actual Pulse range

1. A normal resting heart rate for adults is between 60 and 100 beats per minute (bpm).

2. A normal heart rate for adults when walking depends on age, and can range from 90–170 beats per minute.
3. The average target heart rate for runners between the ages of 20 and 45 is between 100 and 160 beats per minute (bpm).

Pulse :

- The highest pulse rate is for the person who decided to run for their healthy lifestyle.

Violin Plot :

- Explains about the Density / distribution / spread of the data and how far is the difference between each category based on their activity type (rest, walking & Running).

Box Plot :

- Here the box plot is inside the violin plot which tells the relationship between Mean, Median & mode, and also has a mark in the middle (IQR) that shows the median of the pulse rate for each activity type across both diets.
- We can easily identify if there is any high variability in the pulse range individually

Rest (blue) :

- Shows the lowest pulse rate for both diet.
- All have a narrow distribution which means there is less variability in pulse during rest.

Walk (Orange)

- The pulse rate for walking people overlaps with the resting and running people. Because actively **'walking is better than resting'** & **'walking actively is equal to running'.**
- That is the main reason for the overlap of the pulse range of walking people.

Running (Green) :

- Here, the running category shows consistently the same pulse range for both diets.
- Because running is most powerful physical activity through which we can burn our bad cholesterol level (fat) which will indirectly make our body fit.