activity_visualization

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[1]:
```
from sensors.activpal import *
from sensors.vyntus import *

from utils import read_functions
from helpers import math_helper
import matplotlib.pyplot as plt
import pandas as pd

activpal = Activpal()
vyntus = Vyntus()
```

[2]:
```
resp = 'BMR002'

activities = read_functions.read_activities(resp)
print(activities.index)
```

```
Index(['springen', 'traplopen', 'fietsen licht', 'fietsen zwaar', 'lopen',
       'rennen', 'zitten', 'staan'],
      dtype='object', name='activiteit')
```

[3]:
```
vyntus_df = activpal.read_data(resp, activities.loc['lopen'].start, activities.
↪loc['lopen'].stop)
```

[4]:
```
vyntus_df.dtypes
```

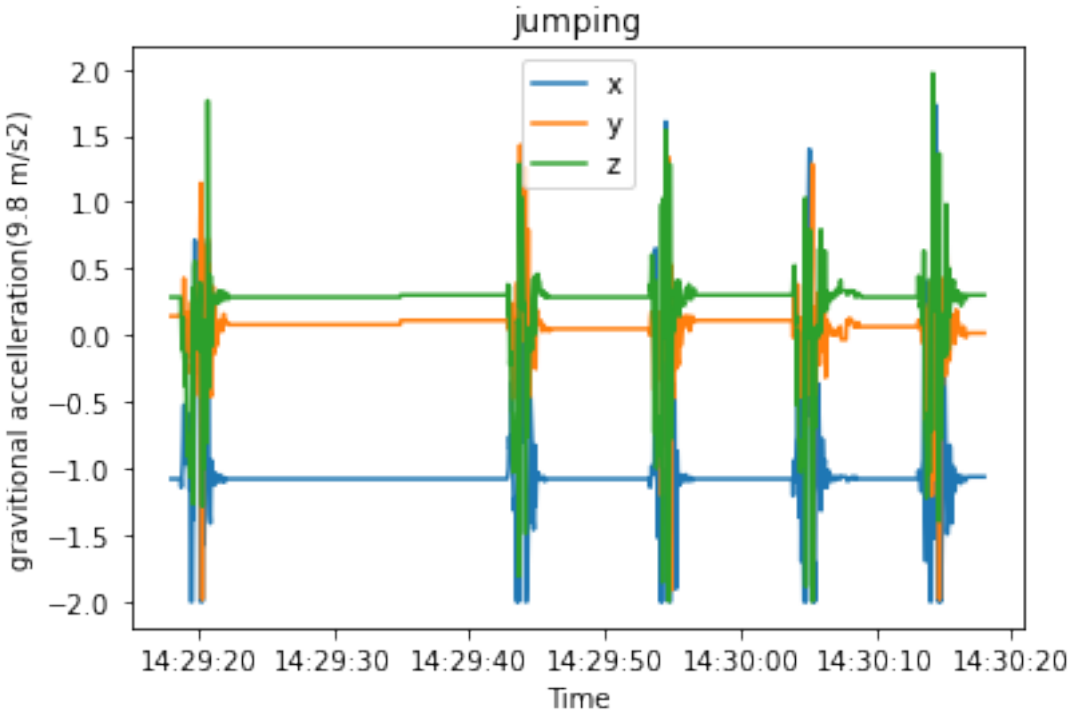
[4]:
```
pal_time    datetime64[ns]
pal_accX             int64
pal_accY             int64
pal_accZ             int64
dtype: object
```

[24]:
```
def plot_activity(activity,title):
    activity_df = activities.loc[activity]
    activpal_df = activpal.read_data(resp, activity_df.start, activity_df.stop)

    activpal_df['x'] = math_helper.convert_value_to_g(activpal_df['pal_accX'])
```

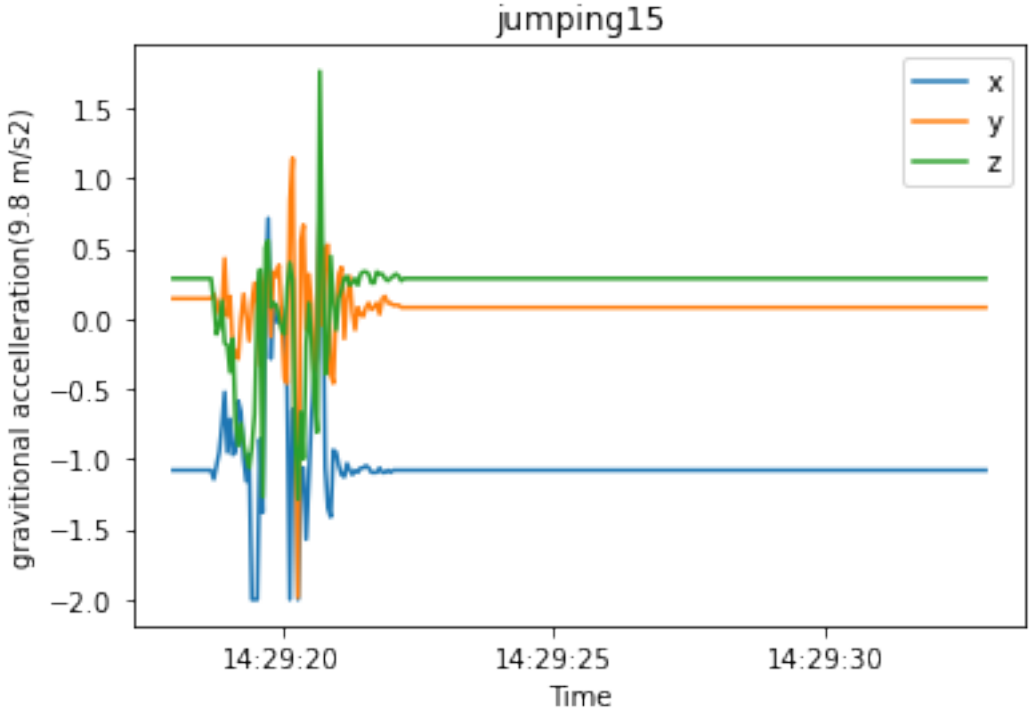
```
    activpal_df['y'] = math_helper.convert_value_to_g(activpal_df['pal_accY'])
    activpal_df['z'] = math_helper.convert_value_to_g(activpal_df['pal_accZ'])

    plt.plot(activpal_df.index, activpal_df.x, label='x')
    plt.plot(activpal_df.index, activpal_df.y, label='y')
    plt.plot(activpal_df.index, activpal_df.z, label='z')

    plt.legend()

    plt.title(title)
    plt.xlabel('Time')
    plt.ylabel('gravitional accelleration(9.8 m/s2)')


def plot_activity_15S(activity,title):
    activity_df = activities.loc[activity]

    activpal_df = activpal.read_data(resp, activity_df.start, activity_df.start␣
 ↪+ pd.DateOffset(seconds=15))

    activpal_df['x'] = math_helper.convert_value_to_g(activpal_df['pal_accX'])
    activpal_df['y'] = math_helper.convert_value_to_g(activpal_df['pal_accY'])
    activpal_df['z'] = math_helper.convert_value_to_g(activpal_df['pal_accZ'])

    plt.plot(activpal_df.index, activpal_df.x, label='x')
    plt.plot(activpal_df.index, activpal_df.y, label='y')
    plt.plot(activpal_df.index, activpal_df.z, label='z')

    plt.legend()

    plt.title(title + "15")
    plt.xlabel('Time')
    plt.ylabel('gravitional accelleration(9.8 m/s2)')
```

Jumping

[20]:
```
plot_activity('springen', 'jumping')
```



[25]:
```
plot_activity_15S('springen', 'jumping')
```



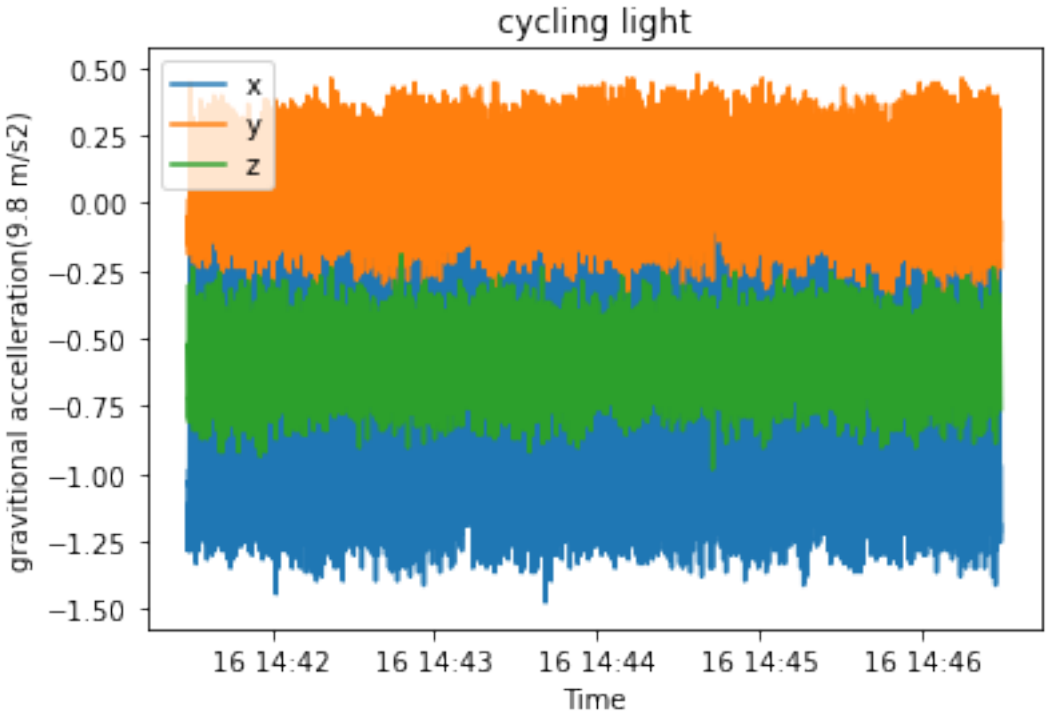
Walking on stairs

[16]:
```
plot_activity('traplopen', 'walking on stairs')
```

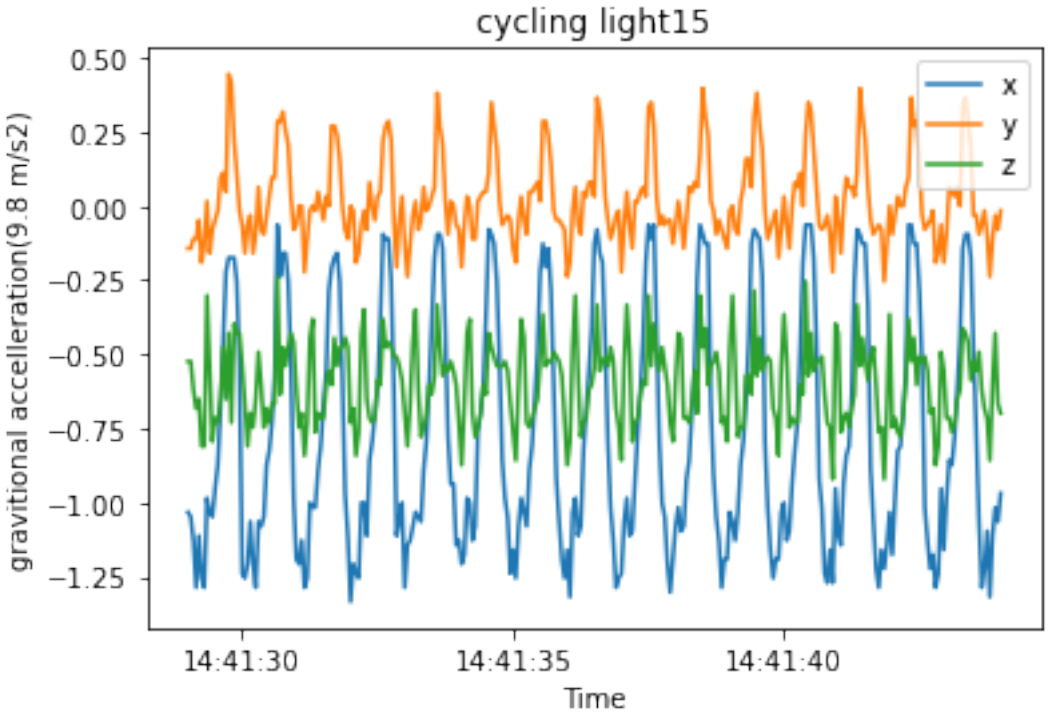
[26]:
```
plot_activity_15S('traplopen', 'walking on stairs')
```

Cycling light

[8]:
```
plot_activity('fietsen licht', 'cycling light')
```

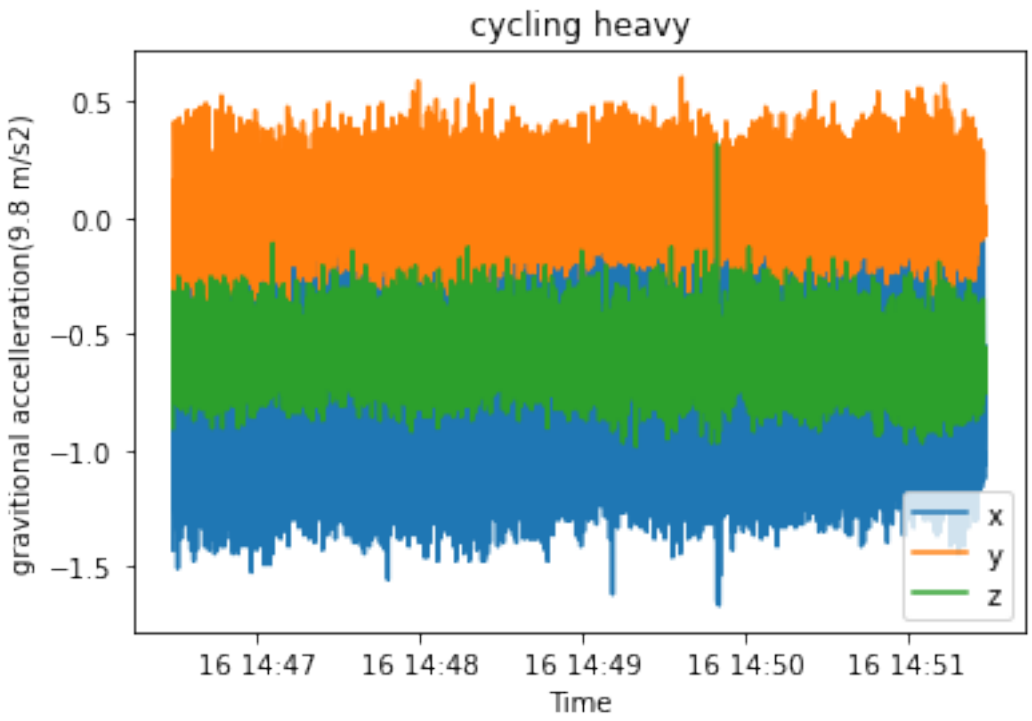


[27]:
```
plot_activity_15S('fietsen licht', 'cycling light')
```

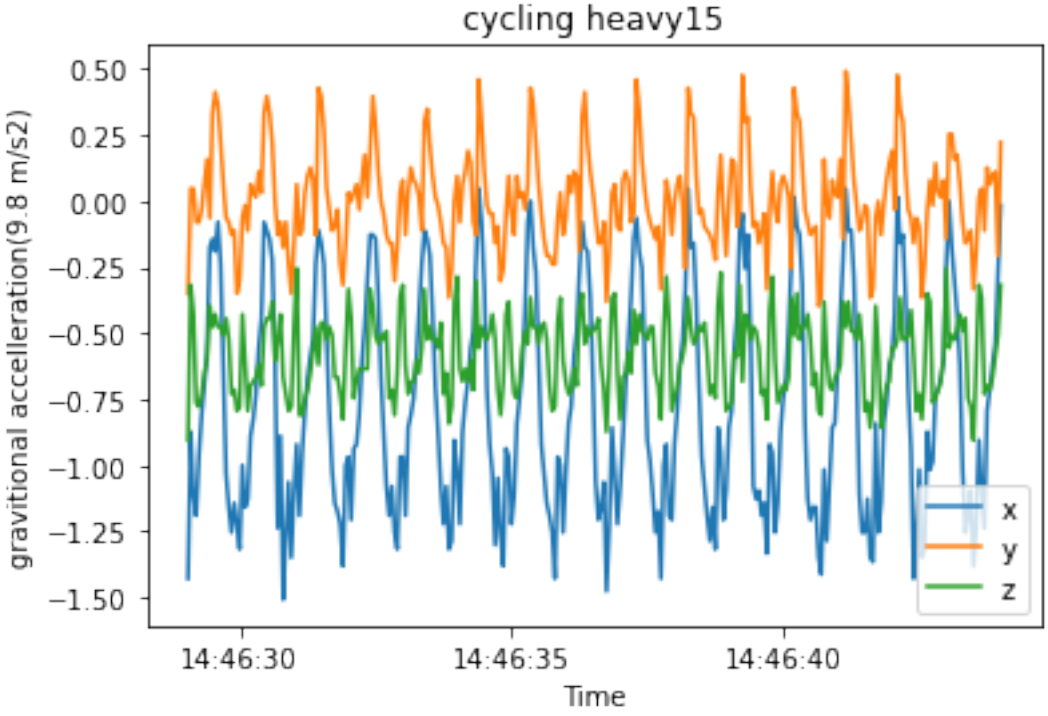


Cycling heavy

[9]:
```
plot_activity('fietsen zwaar', 'cycling heavy')
```

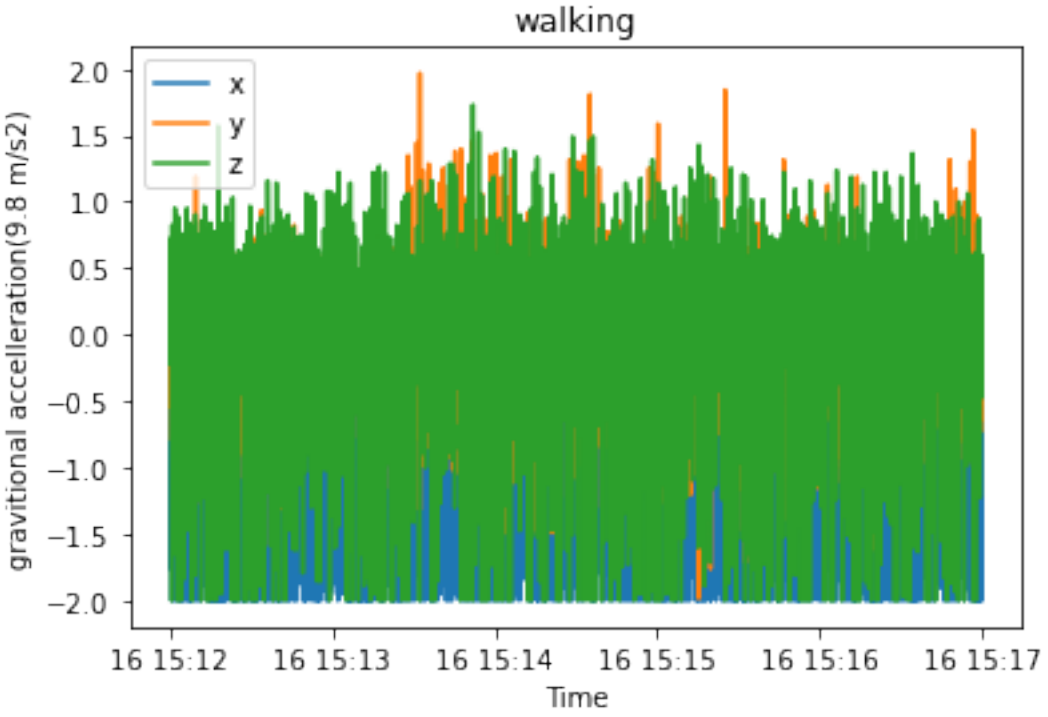


[28]:
```
plot_activity_15S('fietsen zwaar', 'cycling heavy')
```

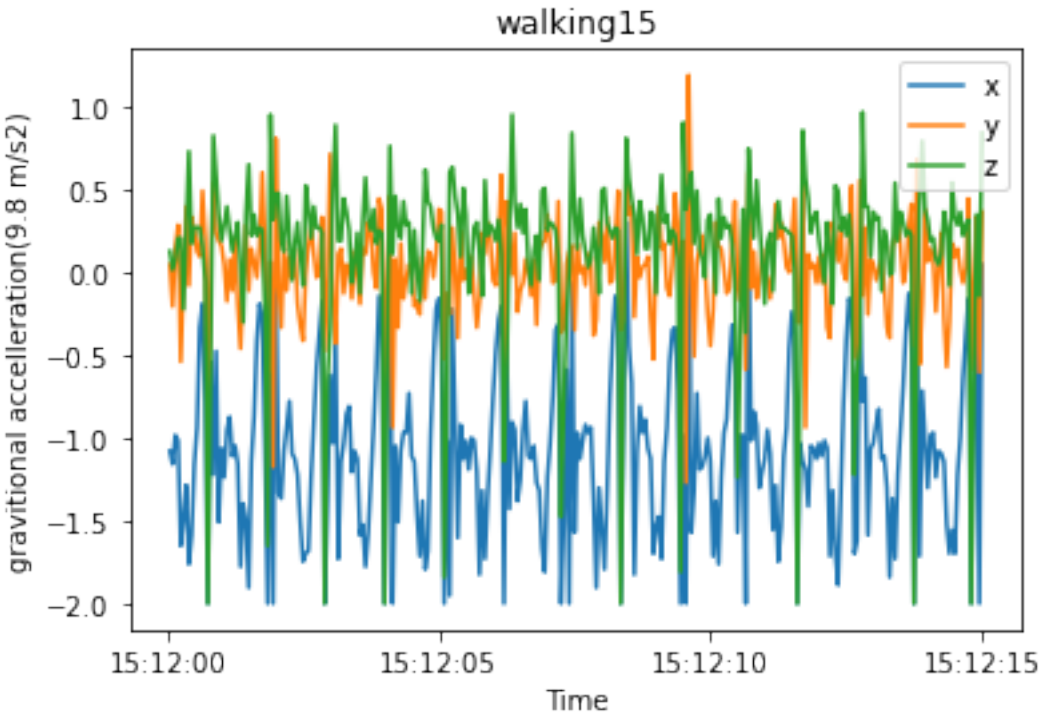


Walking

[10]:
```
plot_activity('lopen', 'walking')
```

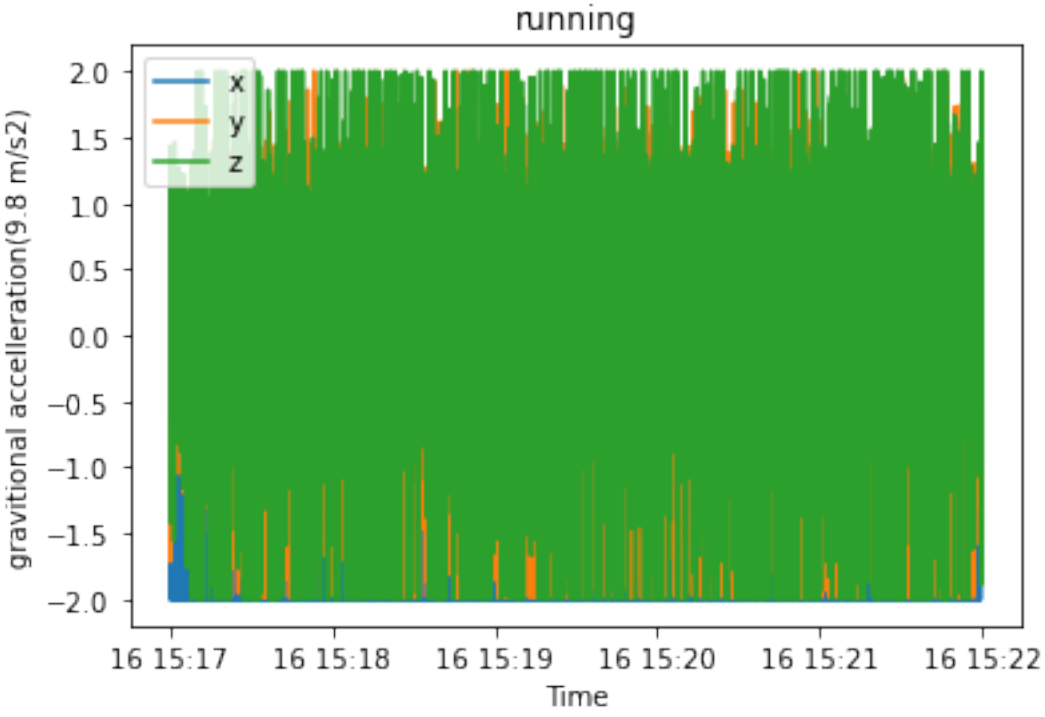


[31]:
```
plot_activity_15S('lopen', 'walking')
```



Running

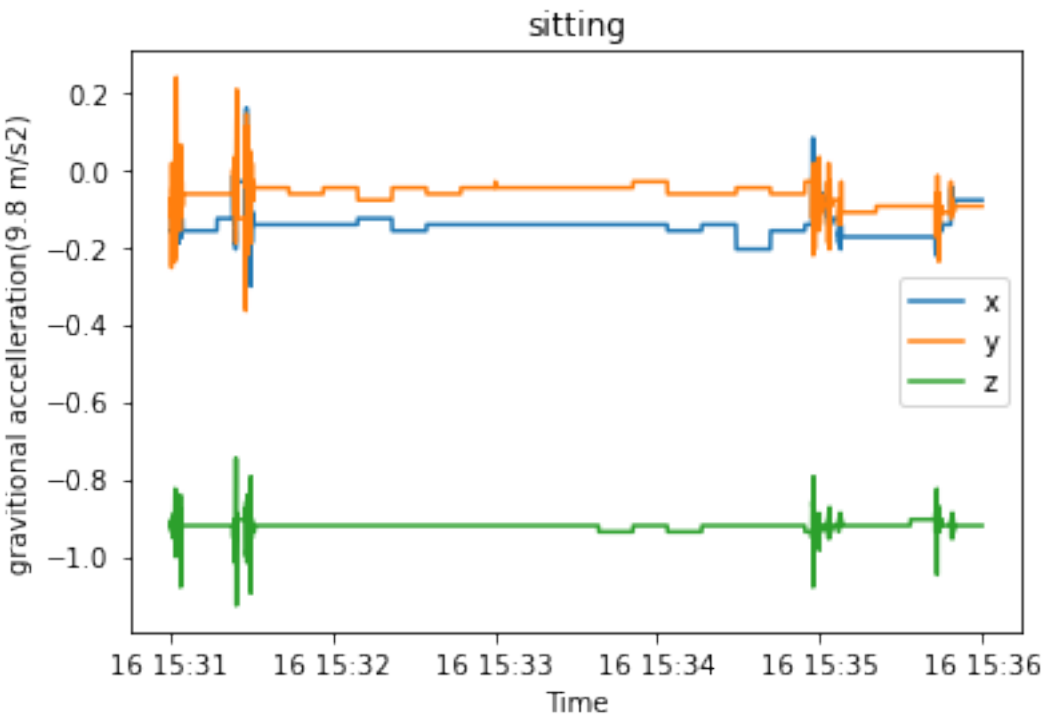
[11]:
```
plot_activity('rennen', 'running')
```



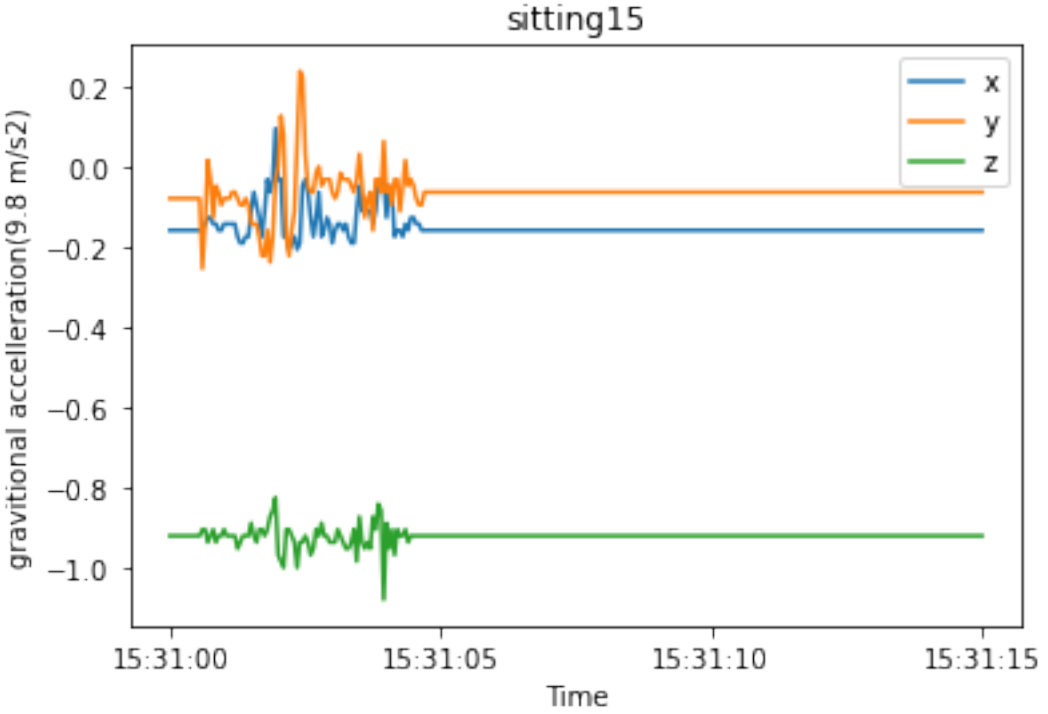
[33]:
```
plot_activity_15S('rennen', 'running')
```

Sitting

[12]:
```
plot_activity('zitten', 'sitting')
```

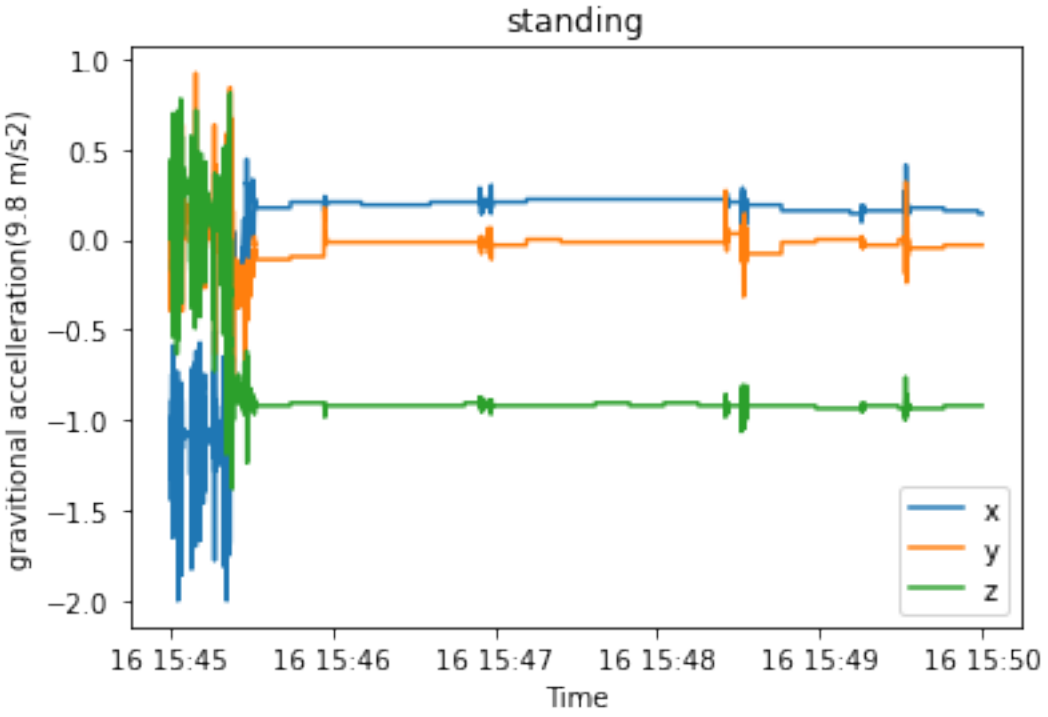


[34]:
```
plot_activity_15S('zitten', 'sitting')
```

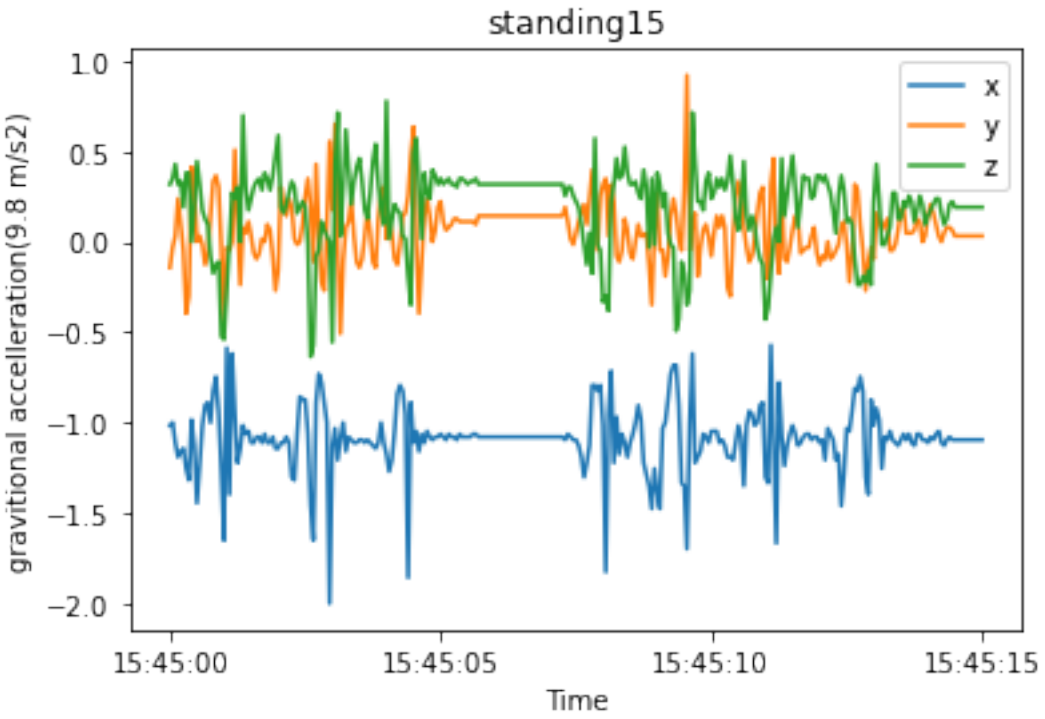


Standing

[13]:
```
plot_activity('staan', 'standing')
```



[35]:
```
plot_activity_15S('staan', 'standing')
```


standing15
gravitional accelleration(9.8 m/s2)
1.0
0.5
0.0
−0.5
−1.0
−1.5
−2.0
15:45:00
15:45:05
15:45:10
15:45:15
Time
x
y
z

[ ]: