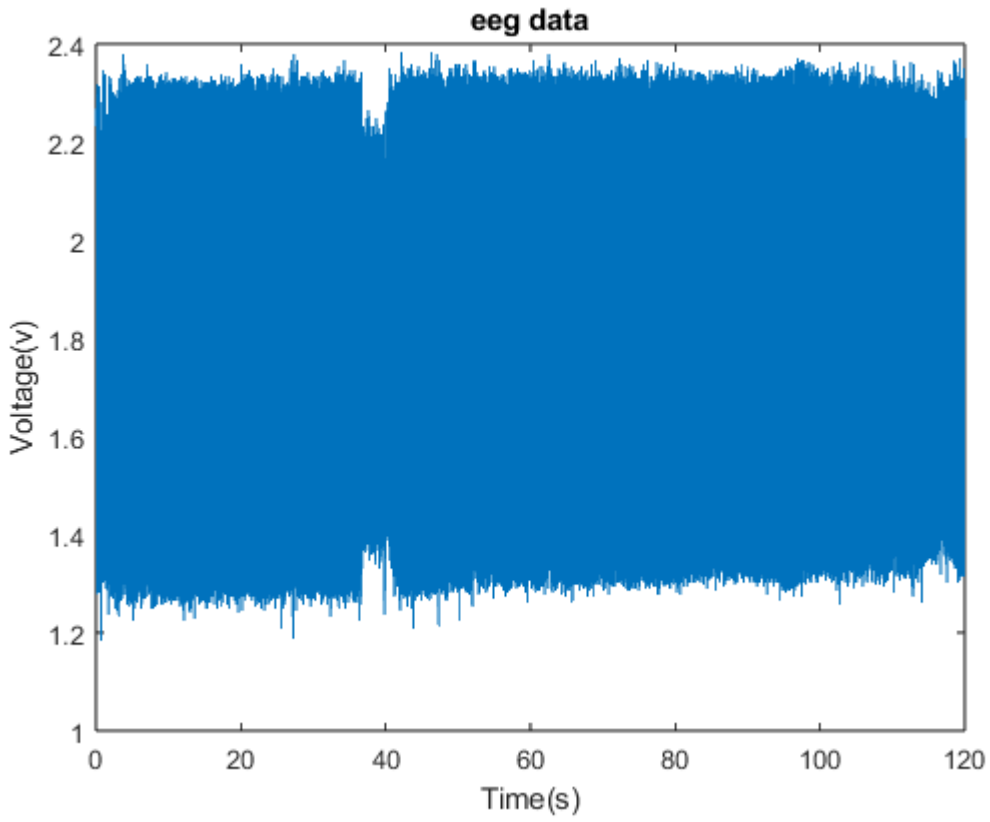
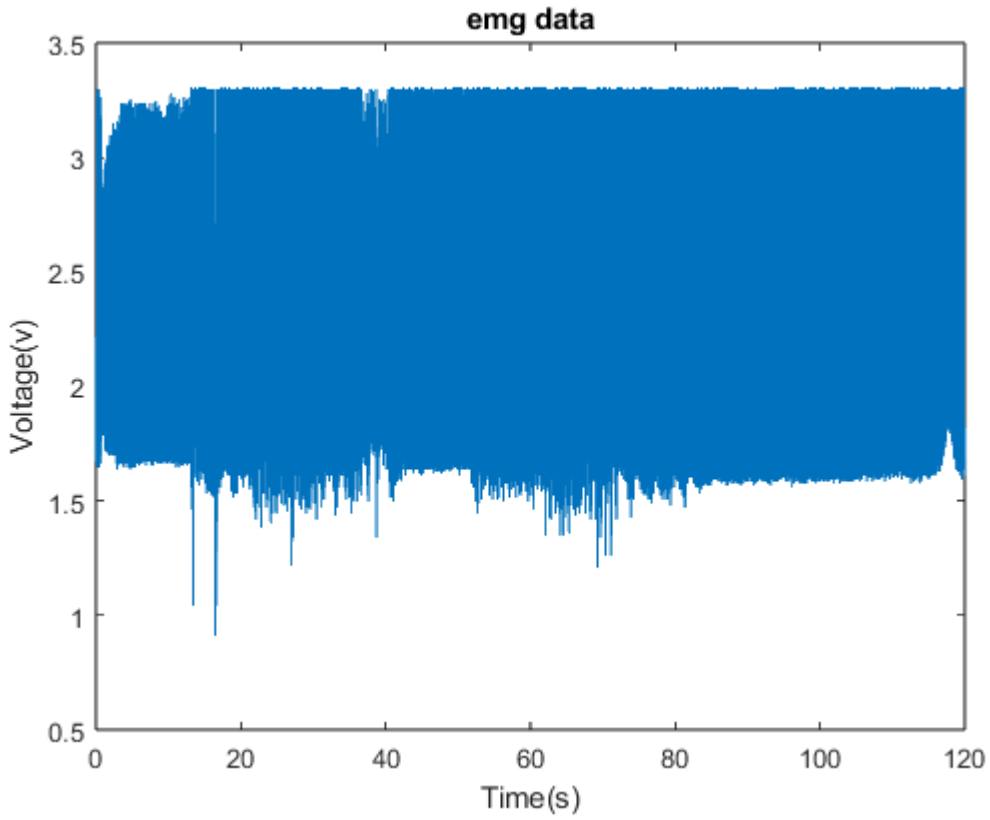
```
eeg2_tr=trial7.eeg1;
emg2_tr=trial7.eeg7;
eeg2_tr=eeg2_tr*(3.3/4096);
emg2_tr=emg2_tr*(3.3/4096);
f_data2=length(emg2_tr)/120;
t_data2=1/f_data2;
Time_d2=[0:1:length(eeg2_tr)-1]*t_data2;
```

```
plot(Time_d2,eeg2_tr)
title('eeg data')
xlabel('Time(s)')
ylabel('Voltage(v)')
```

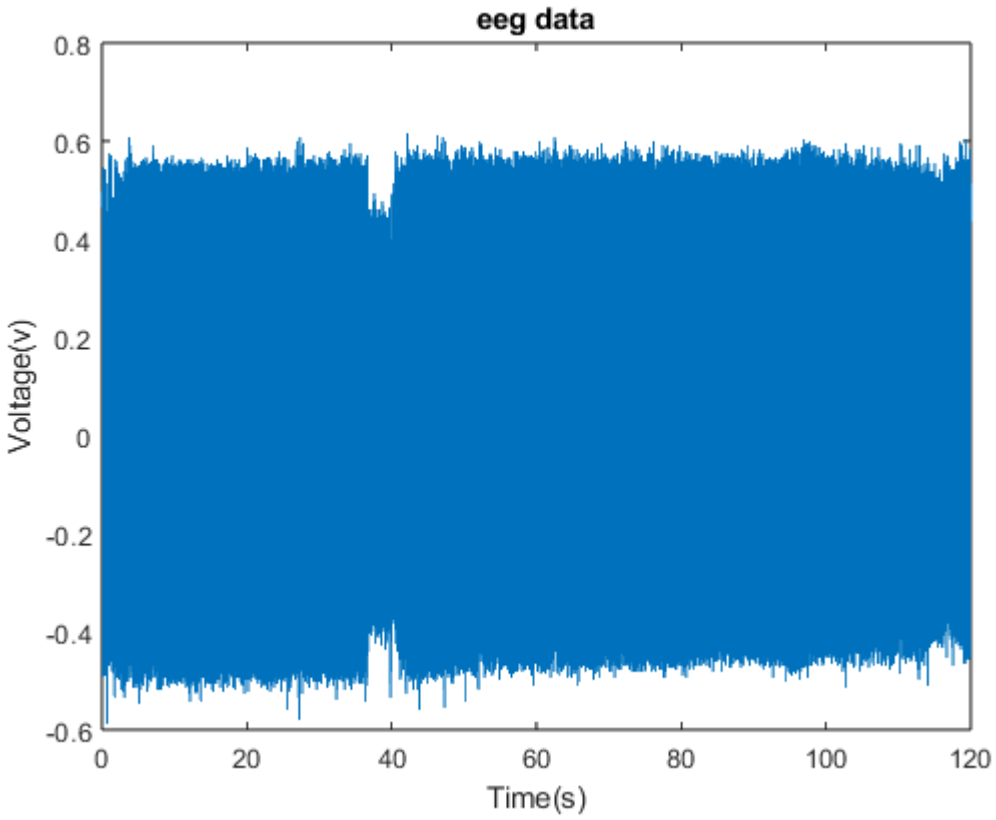



```
plot(Time_d2,emg2_tr)
title('emg data')
xlabel('Time(s)')
ylabel('Voltage(v)')
```



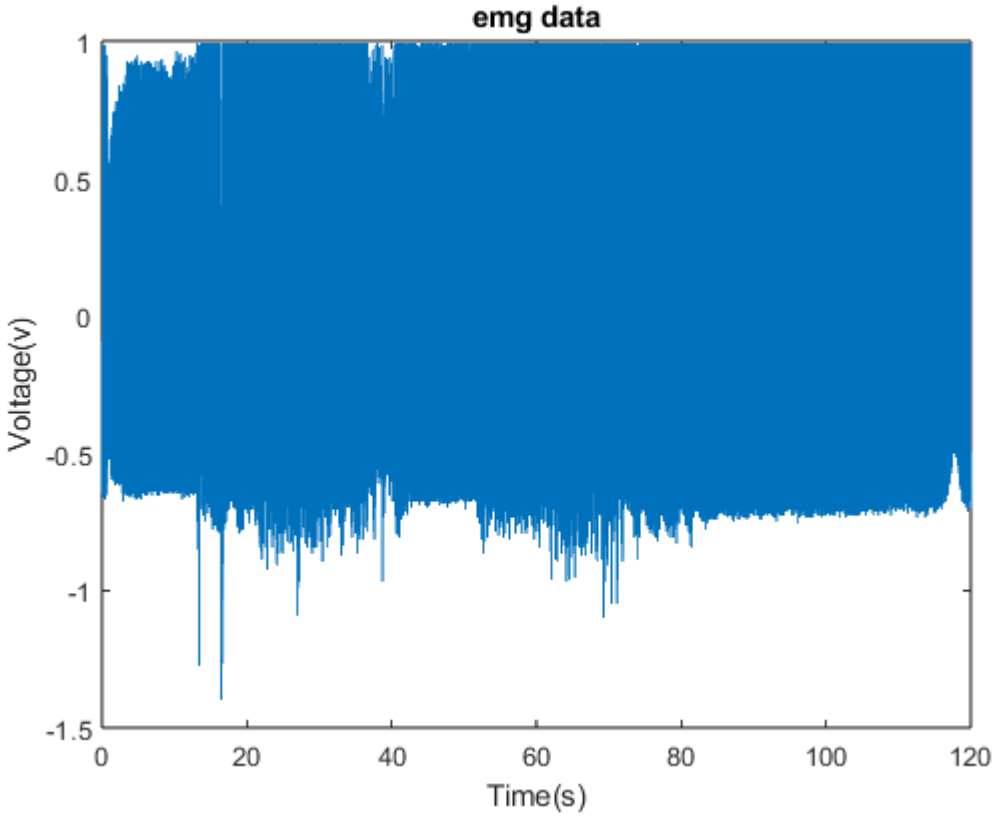

```
eeg2_tr_fft=fft(eeg2_tr);
eeg2_tr_fft(1)=0;
eeg2_tr=ifft(eeg2_tr_fft);
```

```
plot(Time_d2,eeg2_tr)
title('eeg data')
xlabel('Time(s)')
ylabel('Voltage(v)')
```

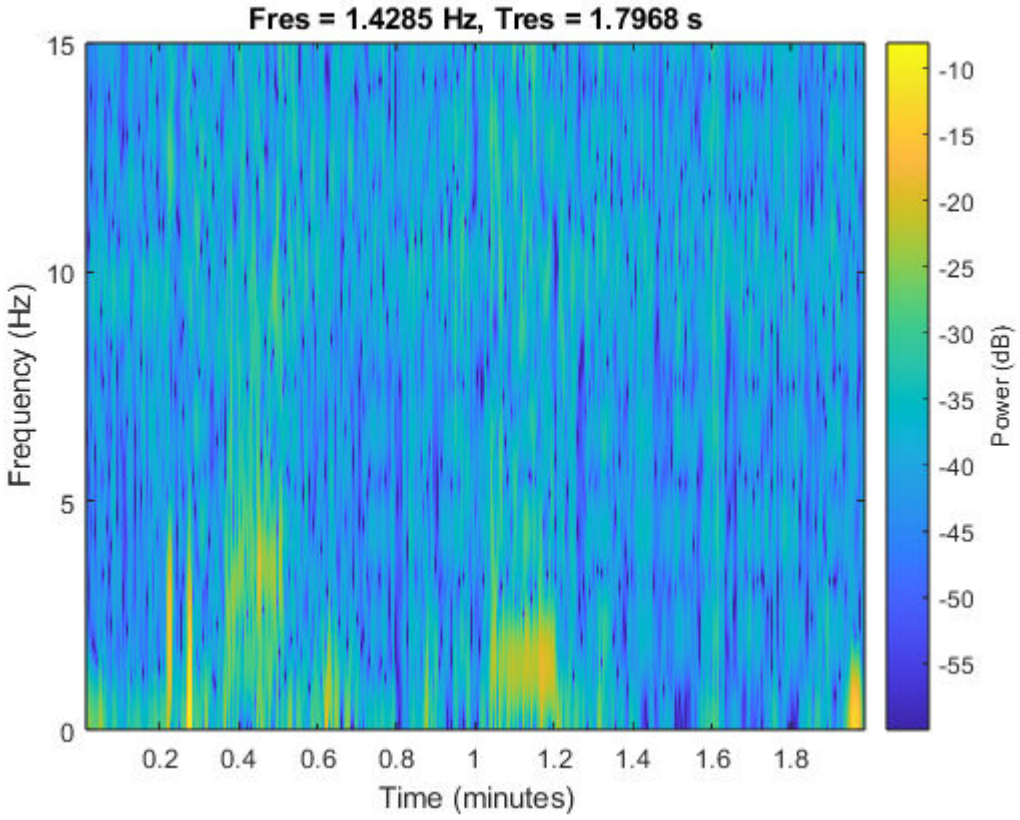



```
emg2_tr_fft=fft(emg2_tr);
emg2_tr_fft(1)=0;
emg2_tr=ifft(emg2_tr_fft);
```

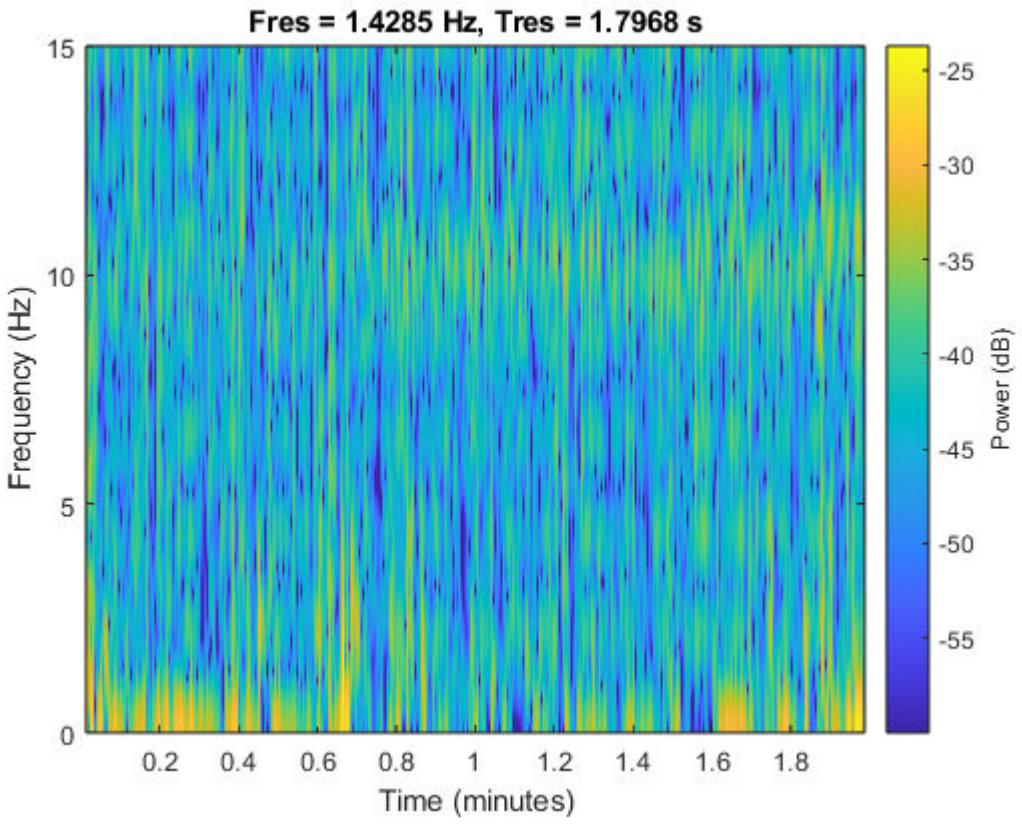
```
plot(Time_d2,emg2_tr)
title('emg data')
xlabel('Time(s)')
ylabel('Voltage(v)')
```



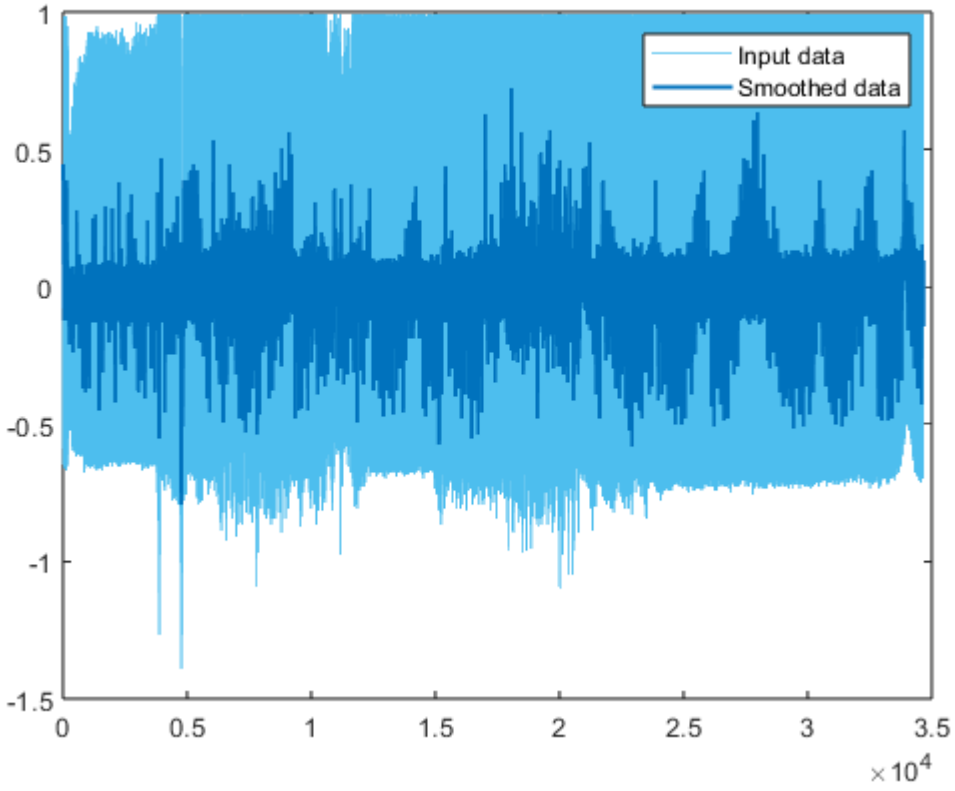

```
pspectrum(emg2_tr,f_data2,"spectrogram","FrequencyLimits",[0,15],"MinThreshold",-60,"OverlapPer
```



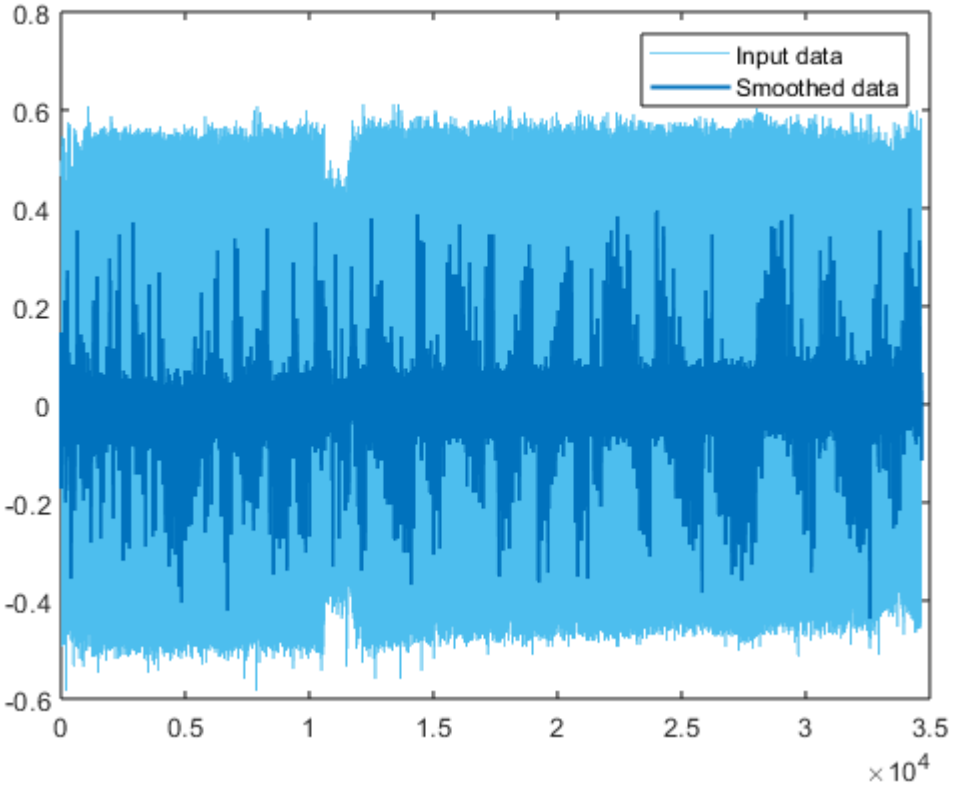
```
pspectrum(eeg2_tr,f_data2,"spectrogram","FrequencyLimits",[0,15],"MinThreshold",-60,"OverlapPer
```



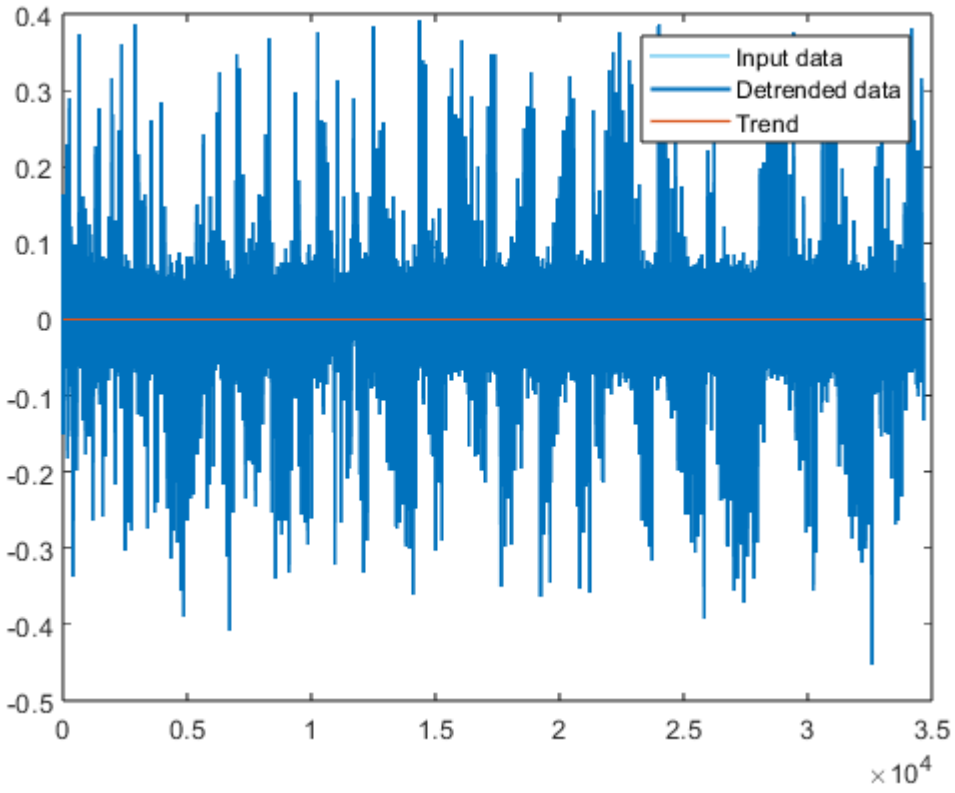

```
% Smooth input data
emg_smooth2 = smoothdata(emg2_tr,"movmean",[3 2]);

% Display results
clf
plot(emg2_tr,"Color",[77 190 238]/255,"DisplayName","Input data")
hold on
plot(emg_smooth2,"Color",[0 114 189]/255,"LineWidth",1.5,...
    "DisplayName","Smoothed data")
hold off
legend
```



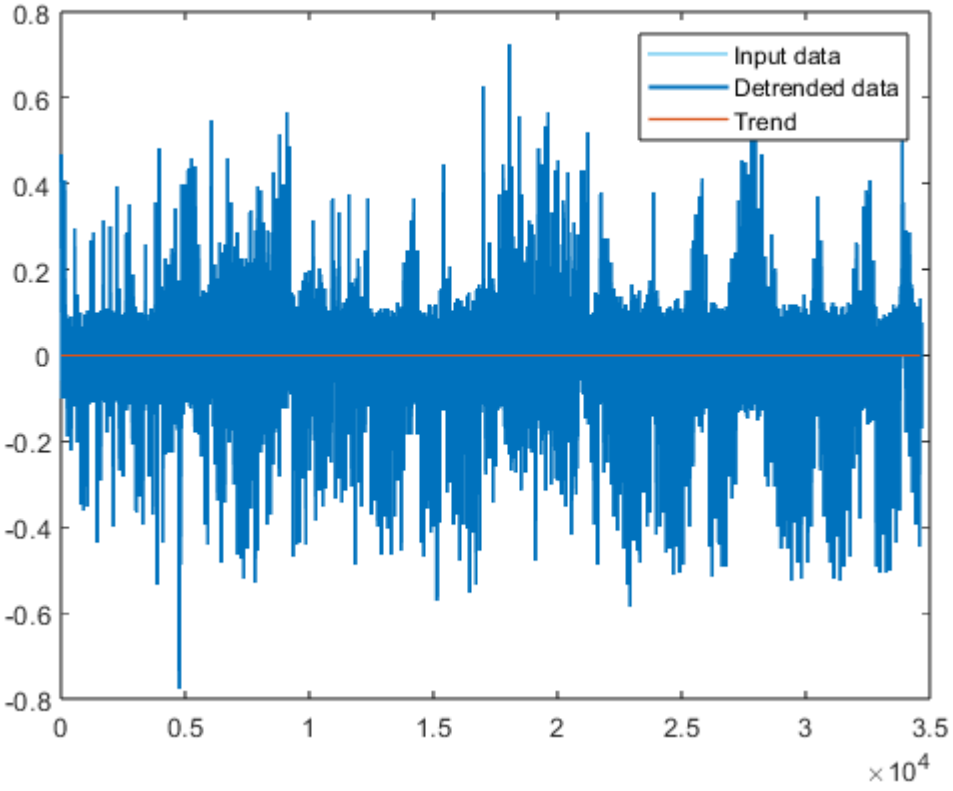

```
% Smooth input data
eeg_smooth2 = smoothdata(eeg2_tr,"movmean",[4 1]);

% Display results
clf
plot(eeg2_tr,"Color",[77 190 238]/255,"DisplayName","Input data")
hold on
plot(eeg_smooth2,"Color",[0 114 189]/255,"LineWidth",1.5,...
    "DisplayName","Smoothed data")
hold off
legend
```



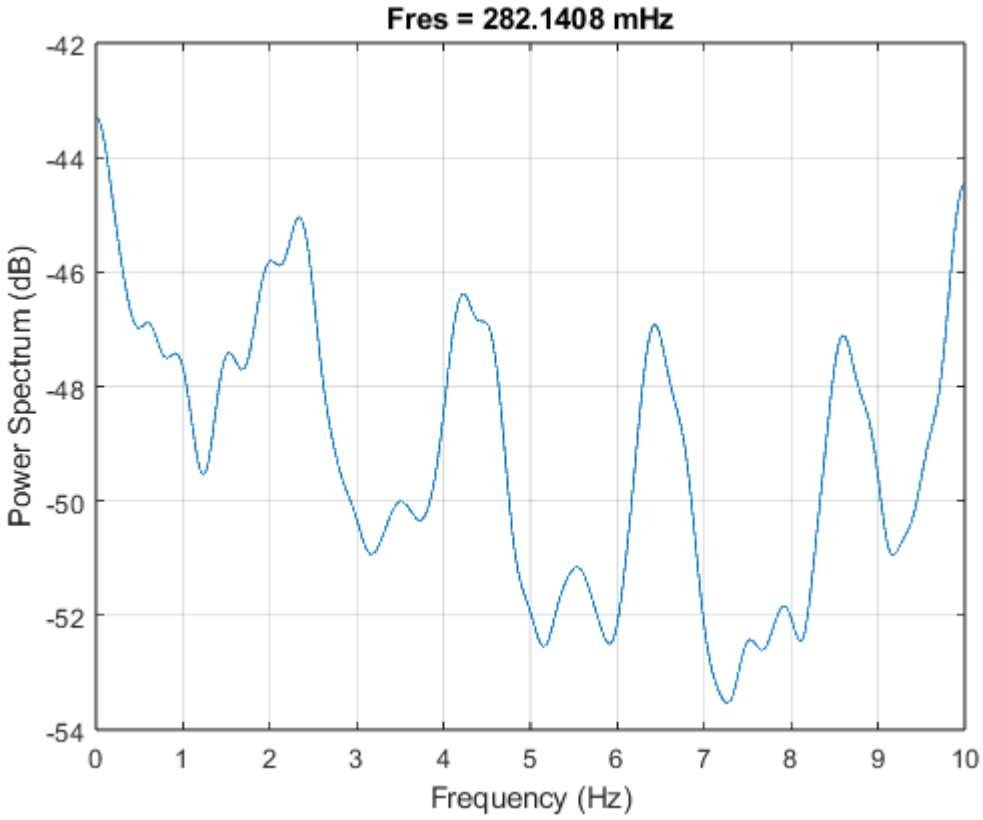

```
% Remove trend from data
eeg_smooth2 = detrend(eeg_smooth2);

% Display results
clf
plot(eeg_smooth2,"Color",[77 190 238]/255,"DisplayName","Input data")
hold on
plot(eeg_smooth2,"Color",[0 114 189]/255,"LineWidth",1.5,...
    "DisplayName","Detrended data")
plot(eeg_smooth2-eeg_smooth2,"Color",[217 83 25]/255,"LineWidth",1,...
    "DisplayName","Trend")
hold off
legend
```



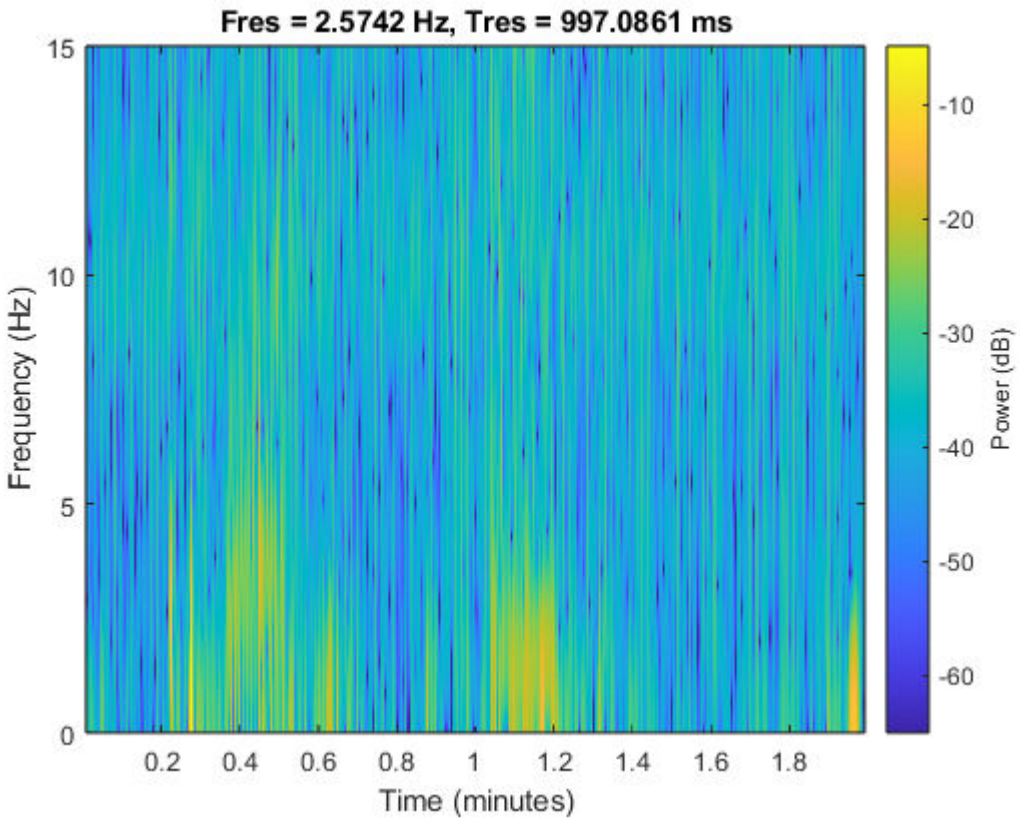

```
% Remove trend from data
emg_smooth2 = detrend(emg_smooth2);

% Display results
clf
plot(emg_smooth2,"Color",[77 190 238]/255,"DisplayName","Input data")
hold on
plot(emg_smooth2,"Color",[0 114 189]/255,"LineWidth",1.5,...
    "DisplayName","Detrended data")
plot(emg_smooth2-emg_smooth2,"Color",[217 83 25]/255,"LineWidth",1,...
    "DisplayName","Trend")
hold off
legend
```



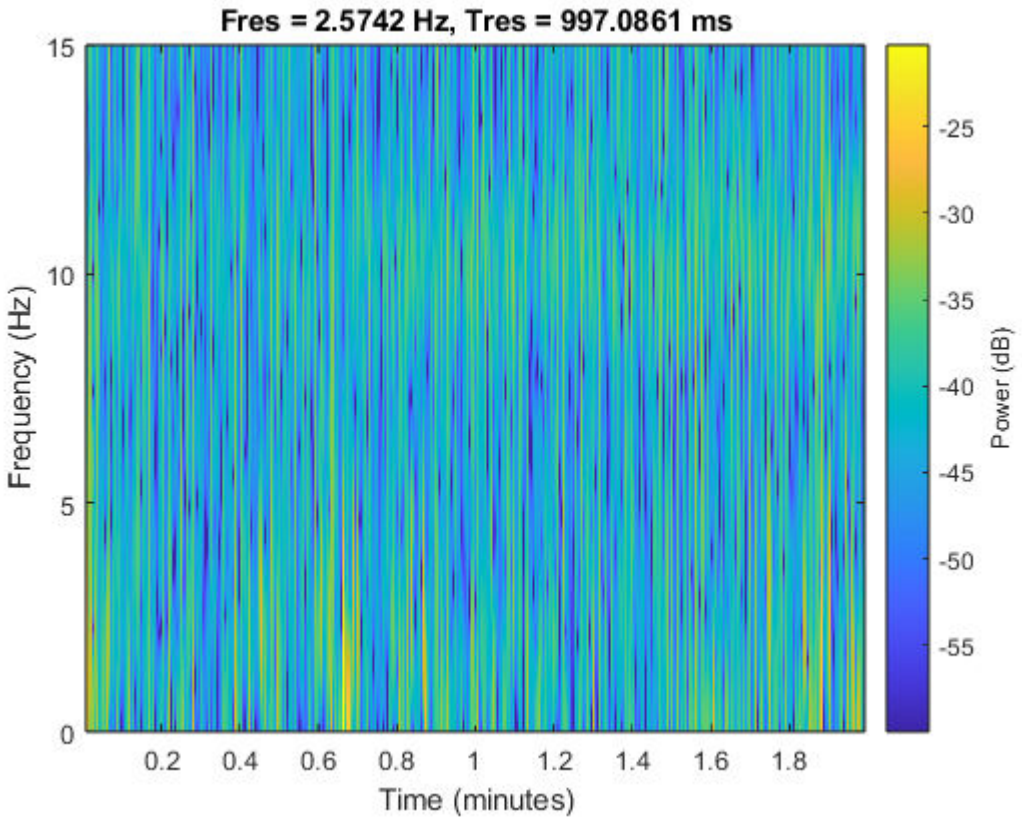

```
pspectrum(eeg_smooth2,f_data2,"power","FrequencyLimits",[0,10])%"FrequencyLimits",[0,15],"MinTh
```



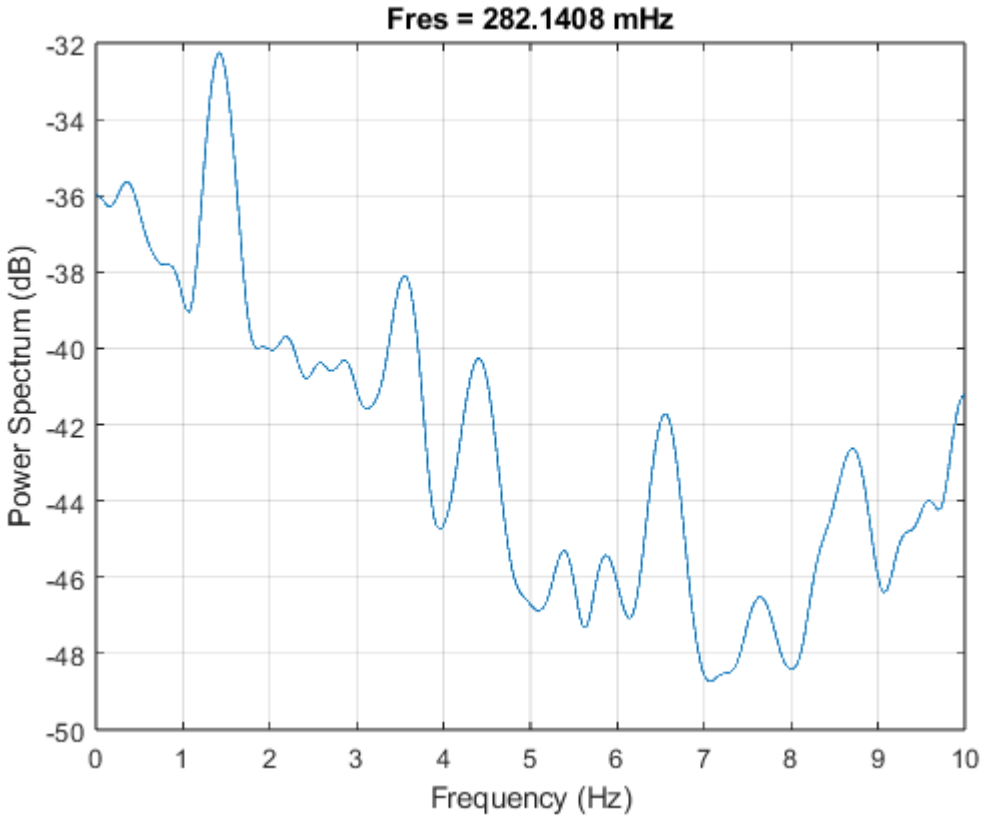
```
pspectrum(emg_smooth2,f_data2,"spectrogram","FrequencyLimits",[0,15],"MinThreshold",-65,"Overla
```



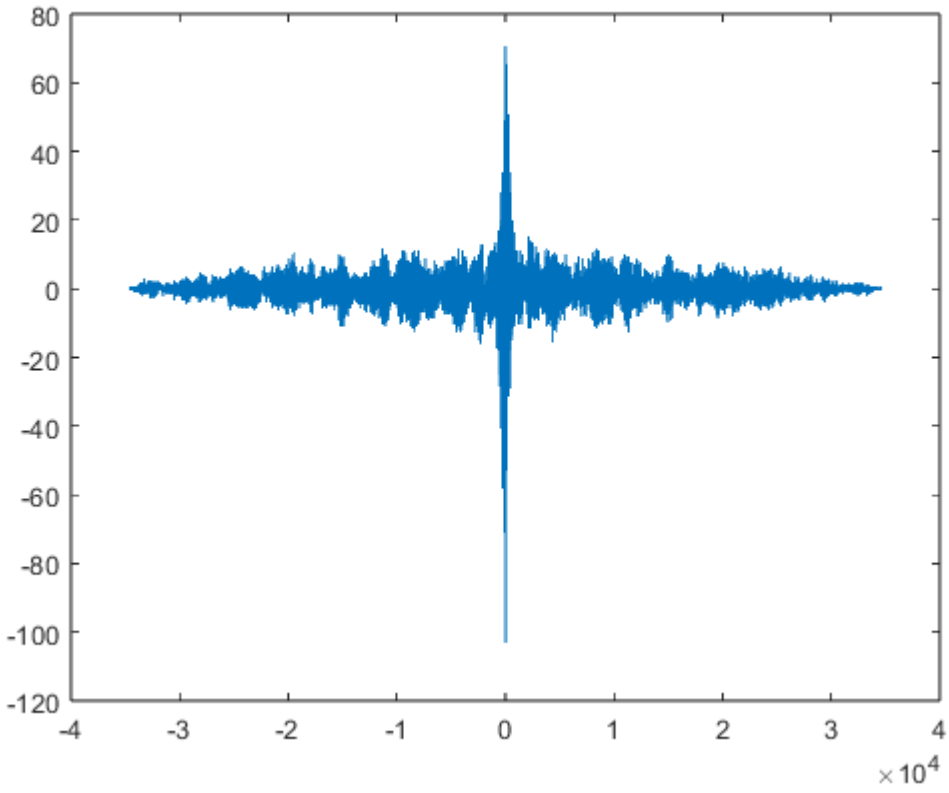

```
pspectrum(eeg_smooth2,f_data2,"spectrogram","FrequencyLimits",[0,15],"MinThreshold",-60,"Overla
```




```
pspectrum(emg_smooth2,f_data2,"power","FrequencyLimits",[0,10])
```



```
[correlated_eeg_emg2,lags2]=xcorr(eeg_smooth2,emg_smooth2);

plot(lags2,correlated_eeg_emg2);
```




```
output_eeg_emg_7=[eeg2_tr,emg2_tr];
output_eeg_emg_7_smooth=[eeg_smooth2,emg_smooth2];
```

```
writematrix(output_eeg_emg_7_smooth,'D:\matlab\ymaps_code\data\output_eeg_emg_7_smooth.csv');
writematrix(output_eeg_emg_7,'D:\matlab\ymaps_code\data\output_eeg_emg_7.csv');
```

```
figure;
windowsize=288
```

```
windowsize = 1006
```

```
for i=1:windowsize:length(eeg_smooth2)-windowsize
    eeg_smooth2_seg=eeg_smooth2(i:i+windowsize-1);
%     [p_seg,f_Seg,t_seg]=pspectrum(eeg_smooth2_seg,f_data2,"power");
%     plot(f_Seg,10*log(p_seg));
%     xlim([0,40]);
%

   [p_seg,f_Seg,t_seg]=pspectrum(eeg_smooth2_seg,f_data2,"spectrogram","FrequencyLimits",[0,20]
```

```
   view([-52.98308 53.48453])
%     aterfall(t_seg,f_Seg,p_seg)
% Create waterfall of t_seg, f_Seg, and p_seg
p = waterfall(t_seg,f_Seg,p_seg,p_seg);

% Add xlabel, ylabel, zlabel, and title
xlabel('t_seg')
ylabel('f_Seg')
zlabel('p_seg')
title('t_seg vs. f_Seg vs. p_seg')

    title(sprintf('Power spectrum at t=%.2f seconds',i/f_data2));
    pause(1/1200);


end
```