

# HC & PD nodes comparison

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## 1. Function Implementations

1.1 function 1: *ReadFile* and attach packages

1.2. function 2: *Wave*

1.3. function 3: *fourier\_smooth*

1.4. function 4: *fPCA.nodes*

1.5. function 5: *node.scaler*

1.6. function 6: *row.check*

1.7 function *pc.df*

it's to put variance on 1st and 2nd Principle Components into dataframe. It is the same.

1.8 function *nodes.compare*

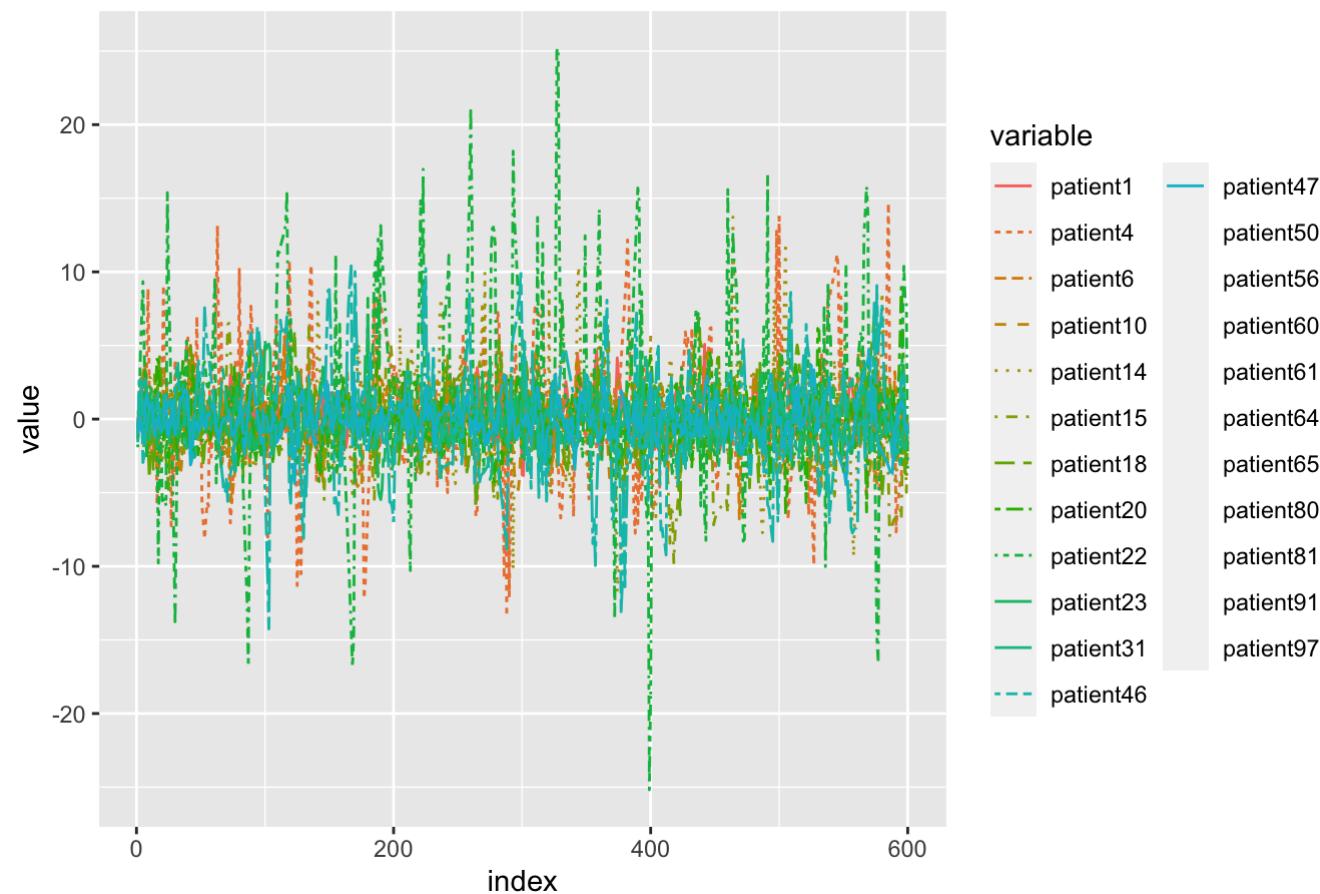
## main script

### 1. Compare same node across different patients from PD-placebo group

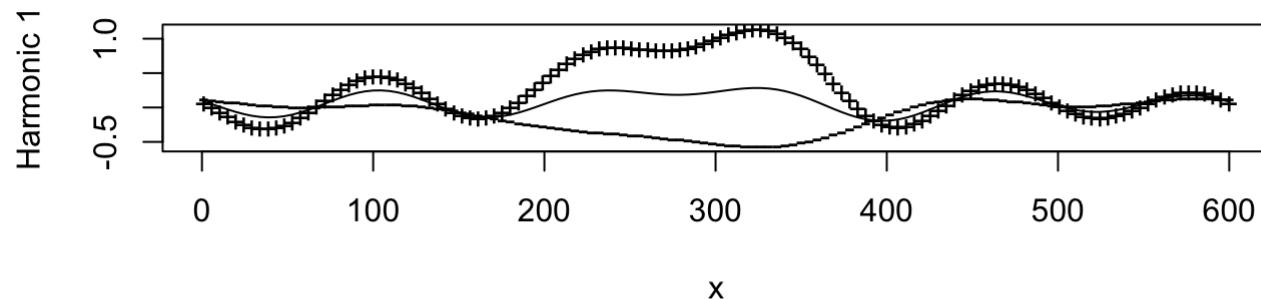
```
pd_placebo <- c(1,4,6,10,14,15,18,20,22,23,31,46,47,50,56,60,61,64,65,80,81,91,97)
for (i in c(1:32)){
  ### put node 1 from PD-placebo group together
  node1=nodes.compare(pd_placebo, node_number=i)
  d <- melt(data = node1, id.vars = c("index"), measure.vars = paste('patient', pd_placebo, sep = ""))
  print(ggplot(d, aes(x = index, y = value)) +
    geom_line(aes(color = variable, linetype = variable)) + ggtitle(paste("PD-placebo, Node,",i)))
  ### fpca on the node dataframe
  rotpcalist = fPCA.nodes(as.matrix(node1[,1:23]), k=11, nharm=2, plt=1)
}
```



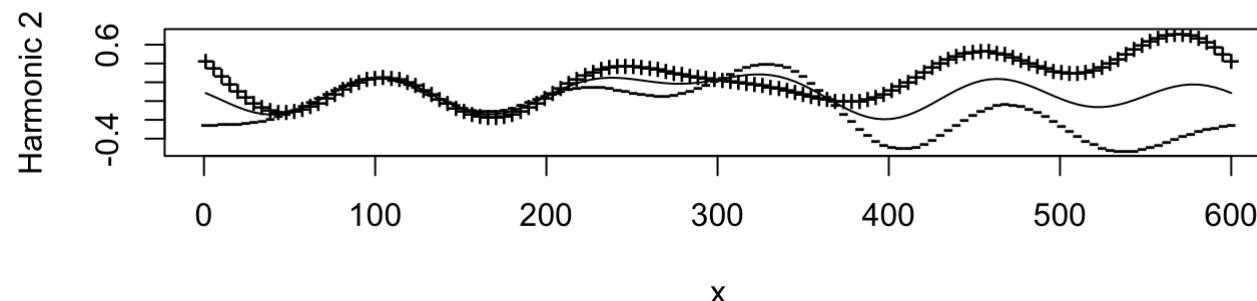
## PD-placebo, Node, 1



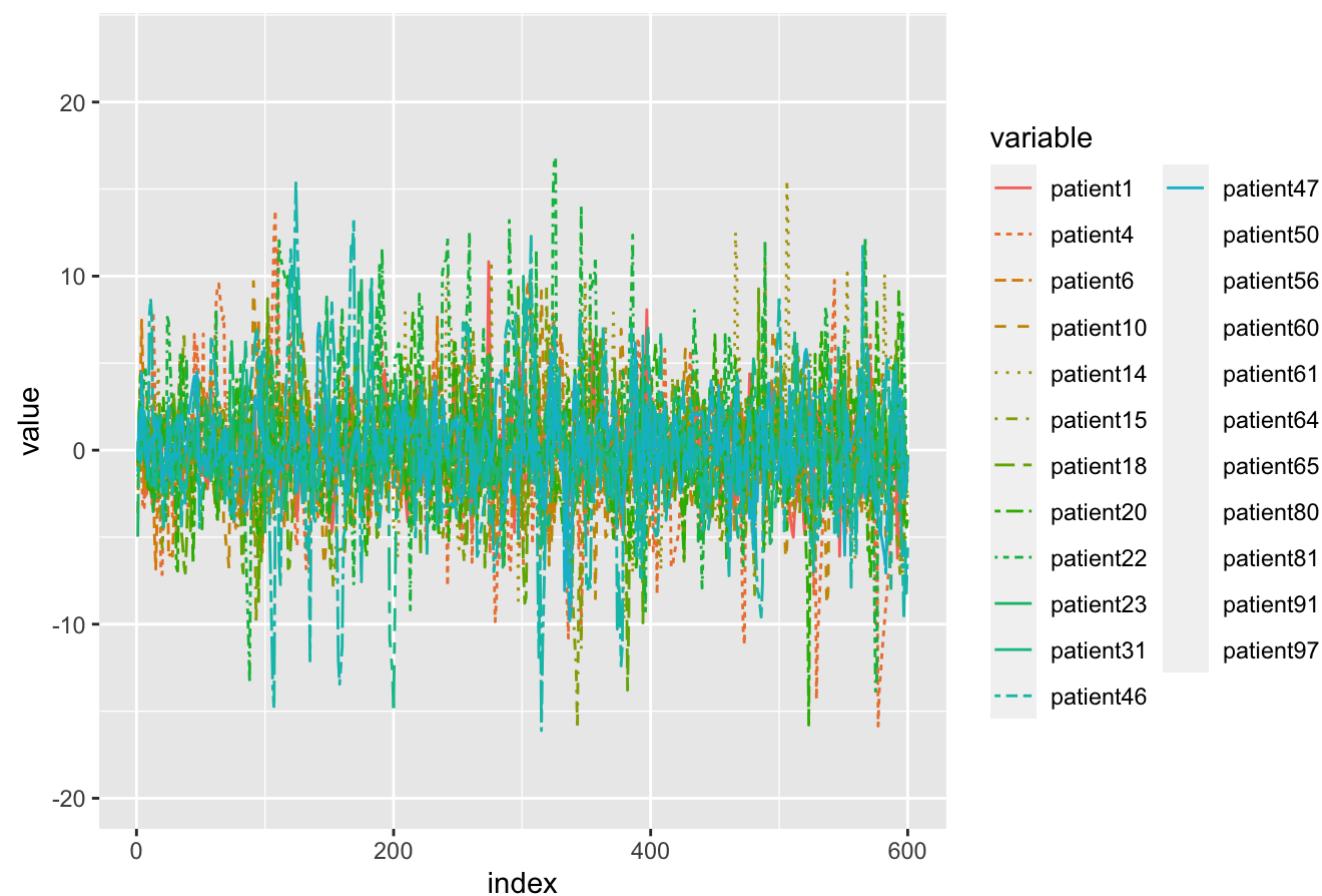
PCA function 1 (Percentage of variability 36 )

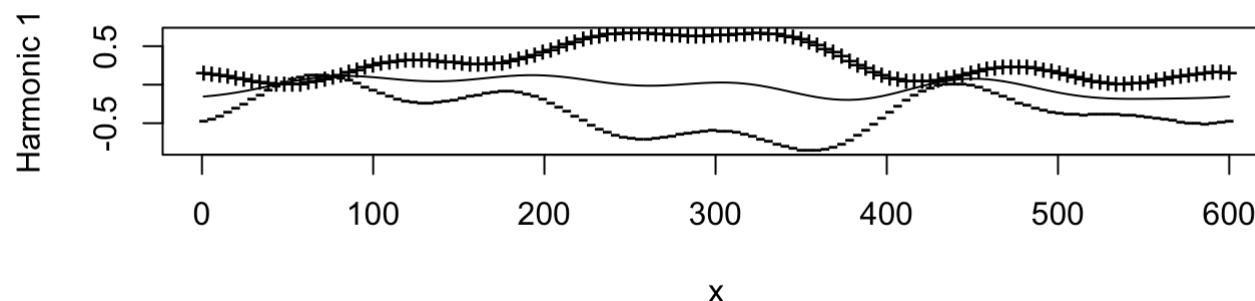
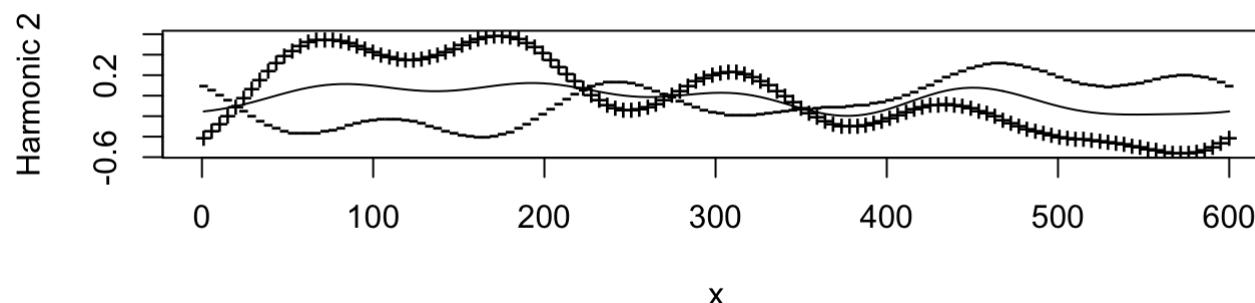


## PCA function 2 (Percentage of variability 31.3 )

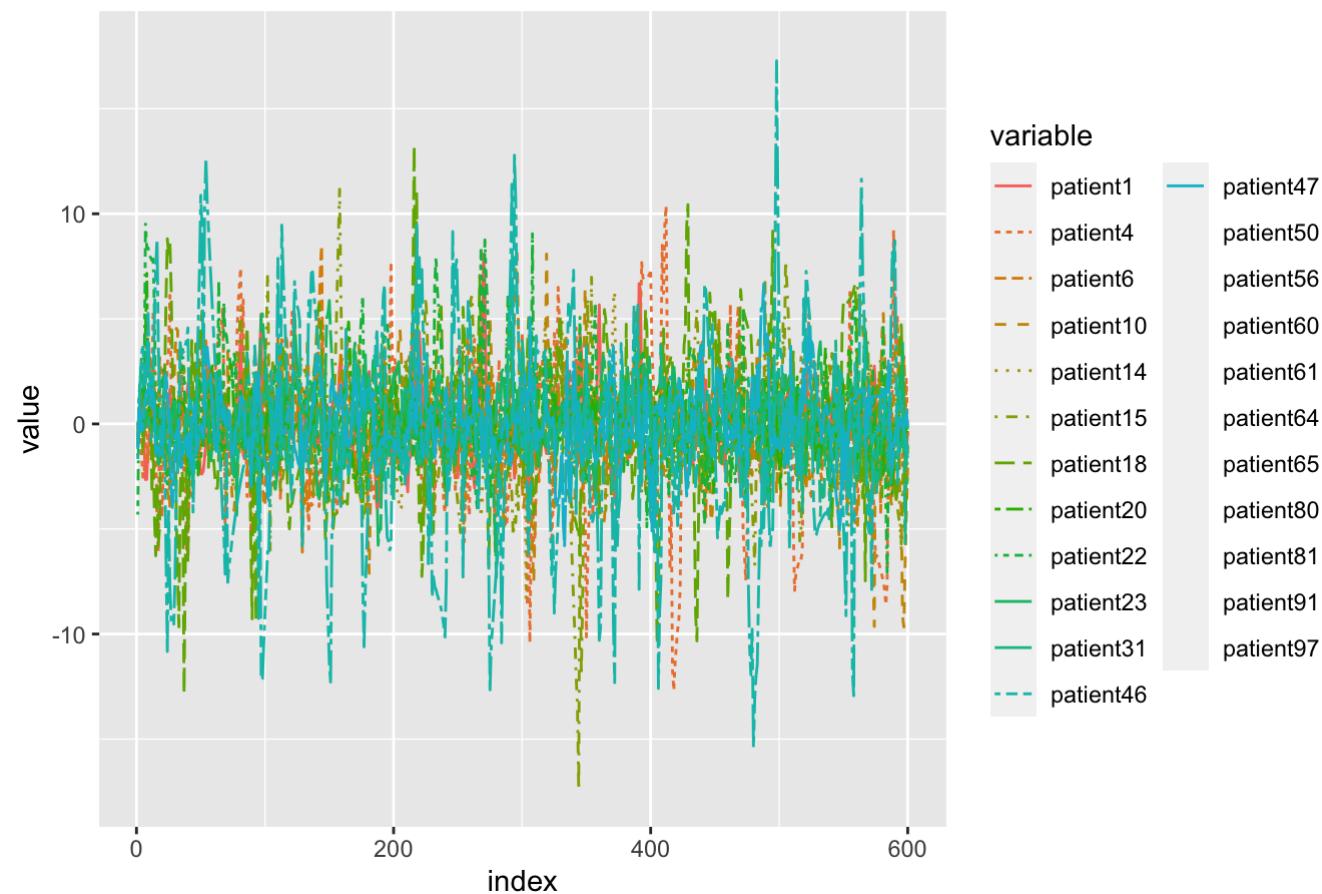


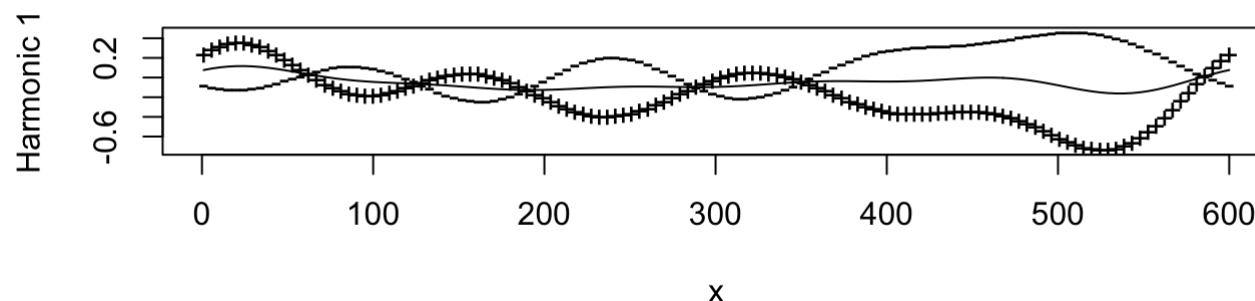
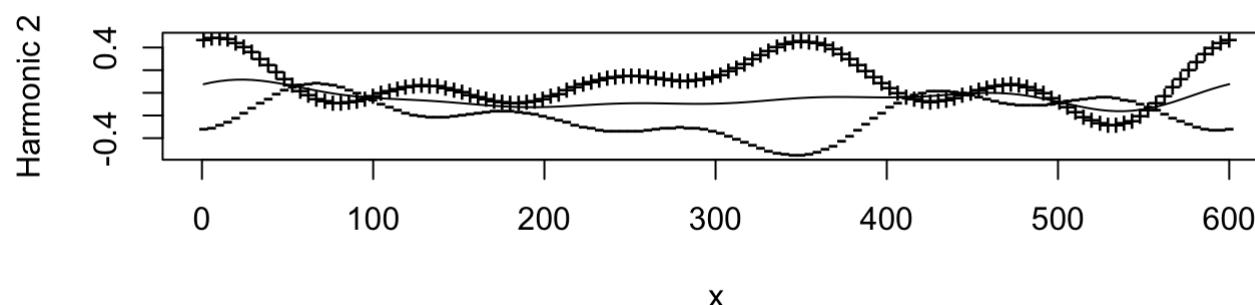
PD-placebo, Node, 2



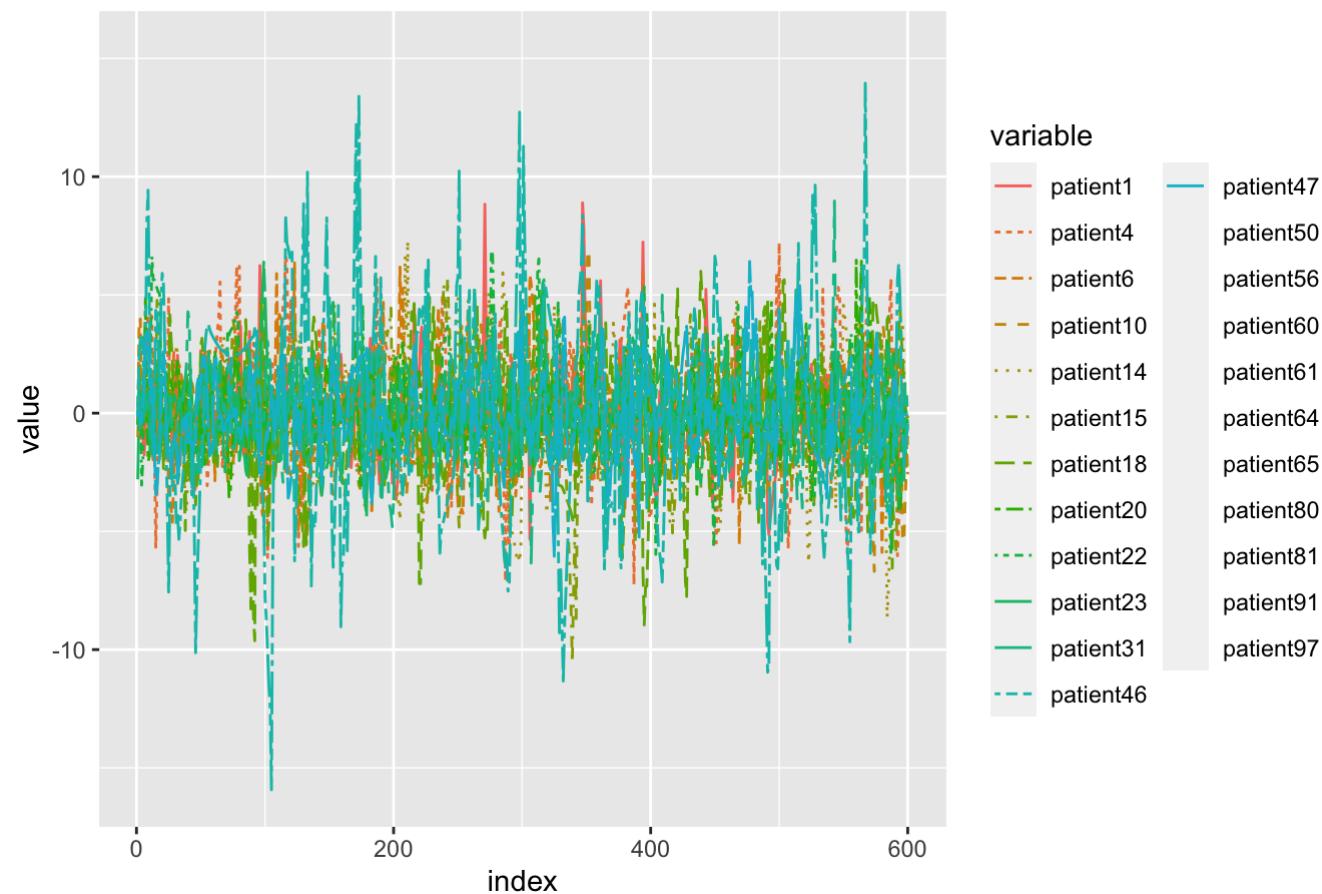
**PCA function 1 (Percentage of variability 39.5 )****PCA function 2 (Percentage of variability 22.2 )**

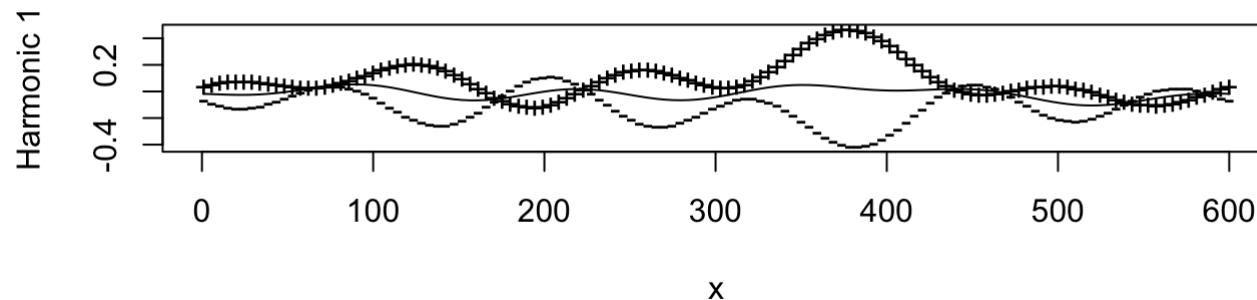
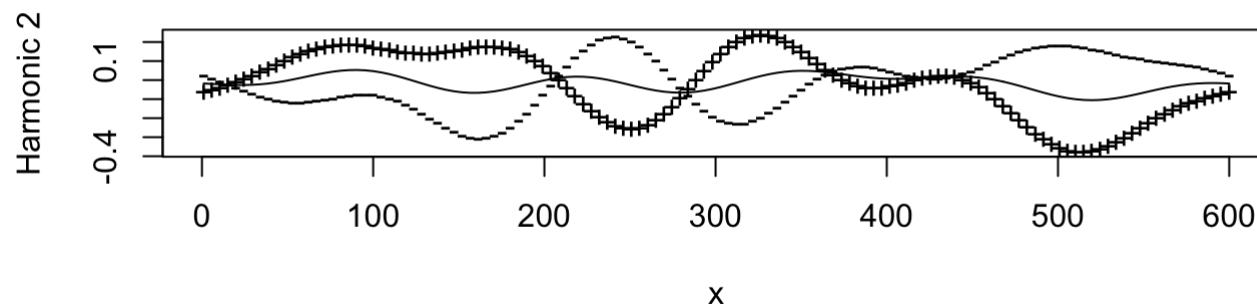
## PD-placebo, Node, 3



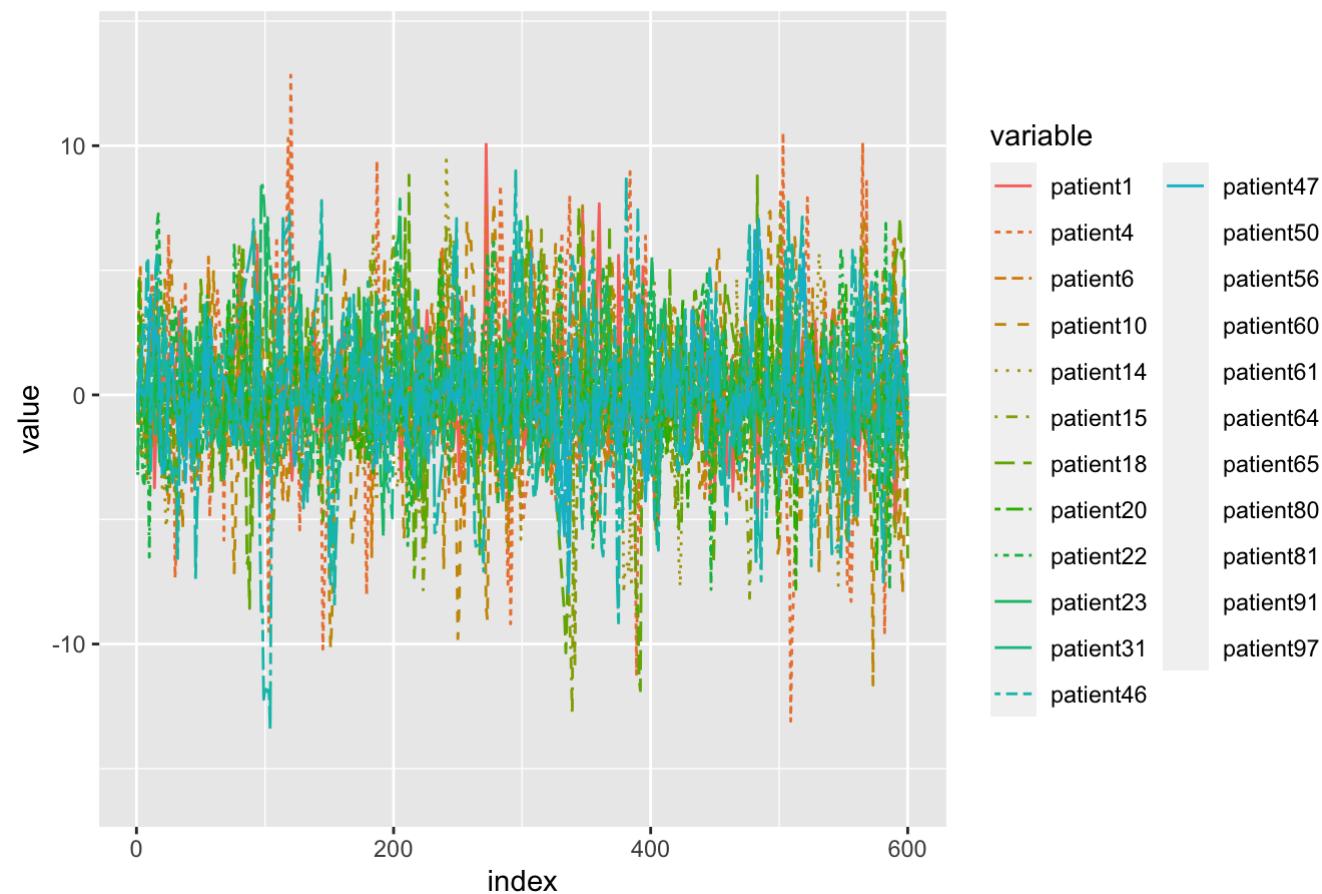
**PCA function 1 (Percentage of variability 31.6 )****PCA function 2 (Percentage of variability 24.7 )**

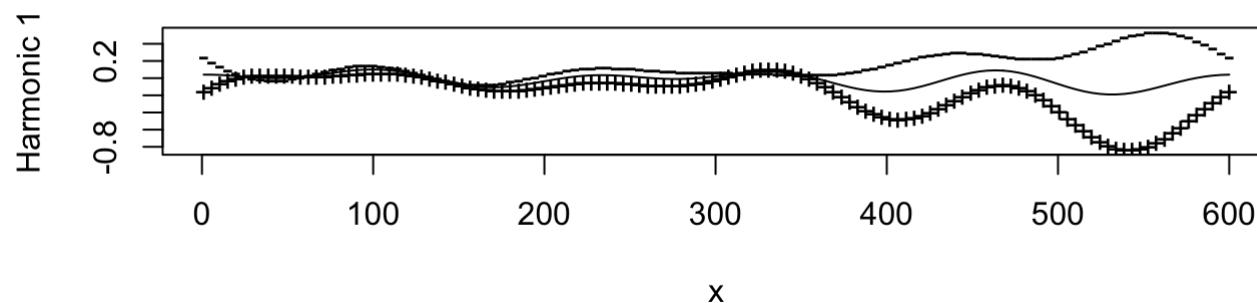
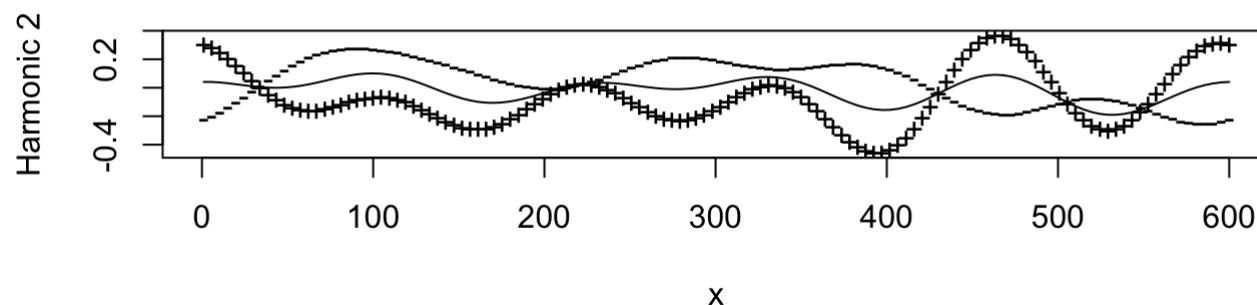
## PD-placebo, Node, 4



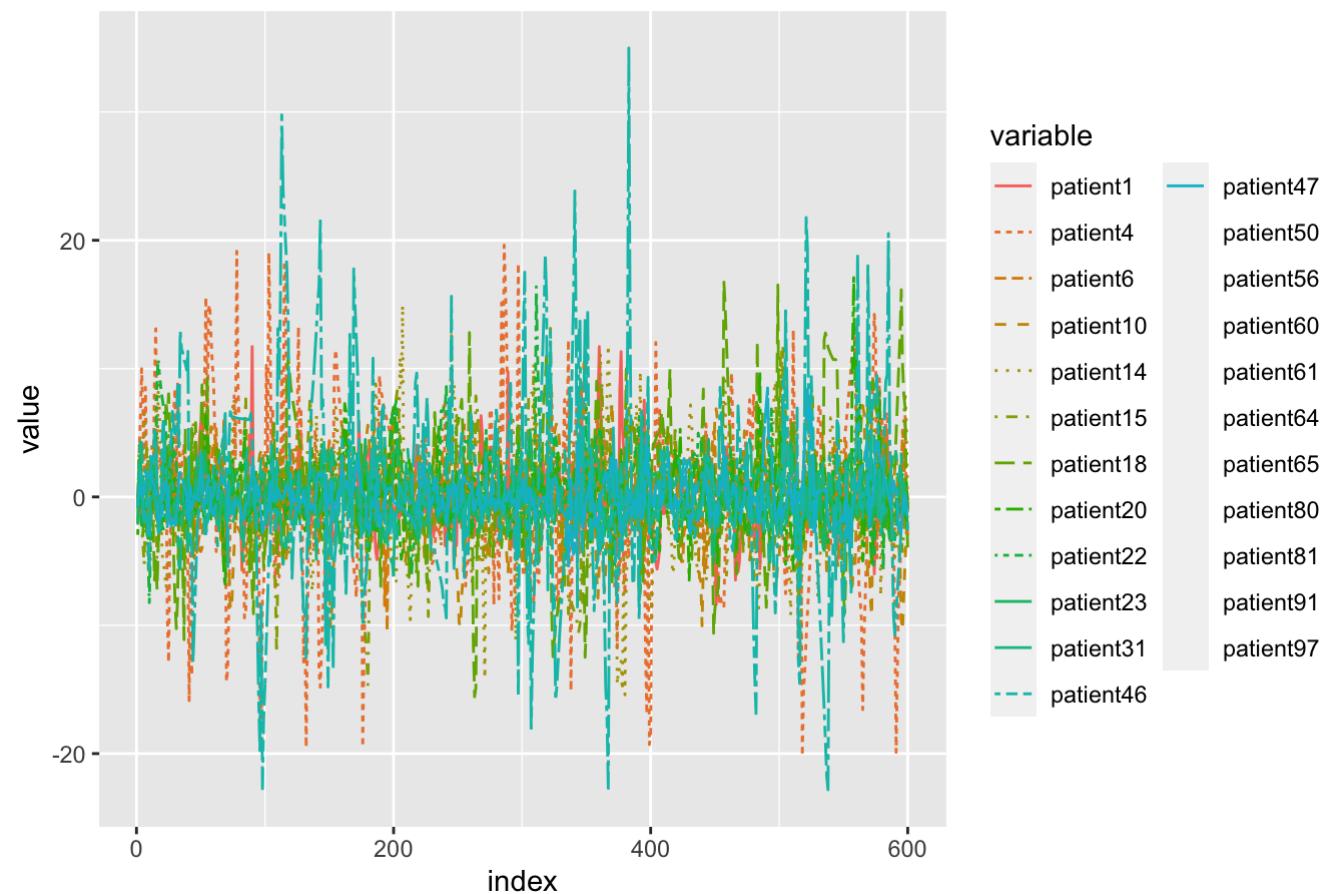
**PCA function 1 (Percentage of variability 23.7 )****PCA function 2 (Percentage of variability 21.7 )**

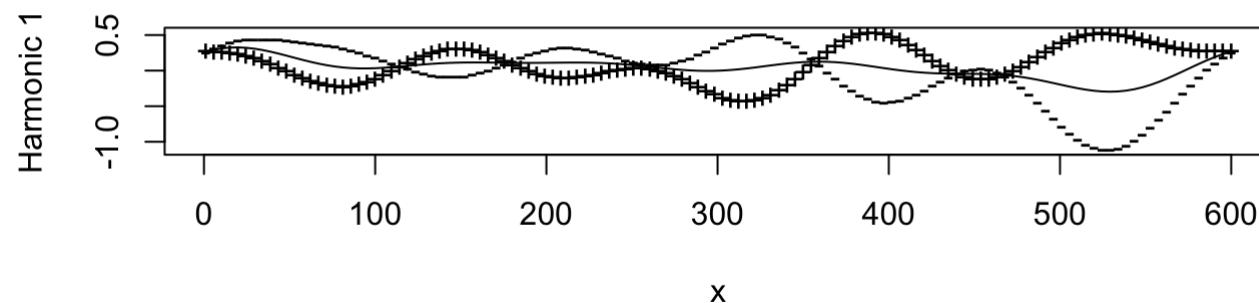
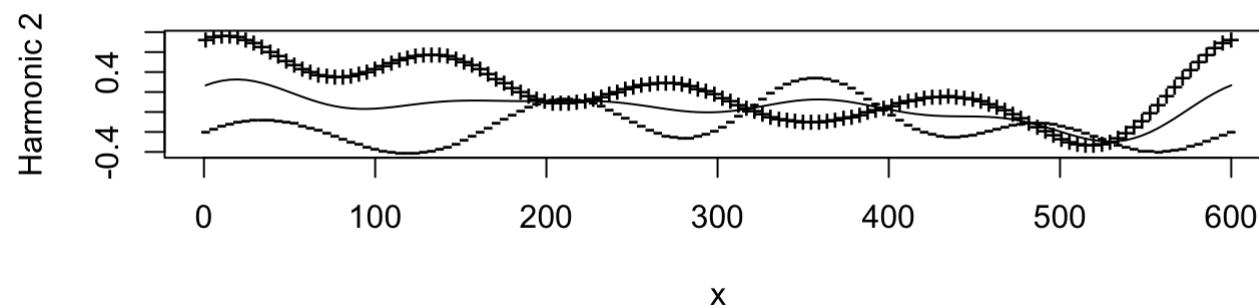
## PD-placebo, Node, 5



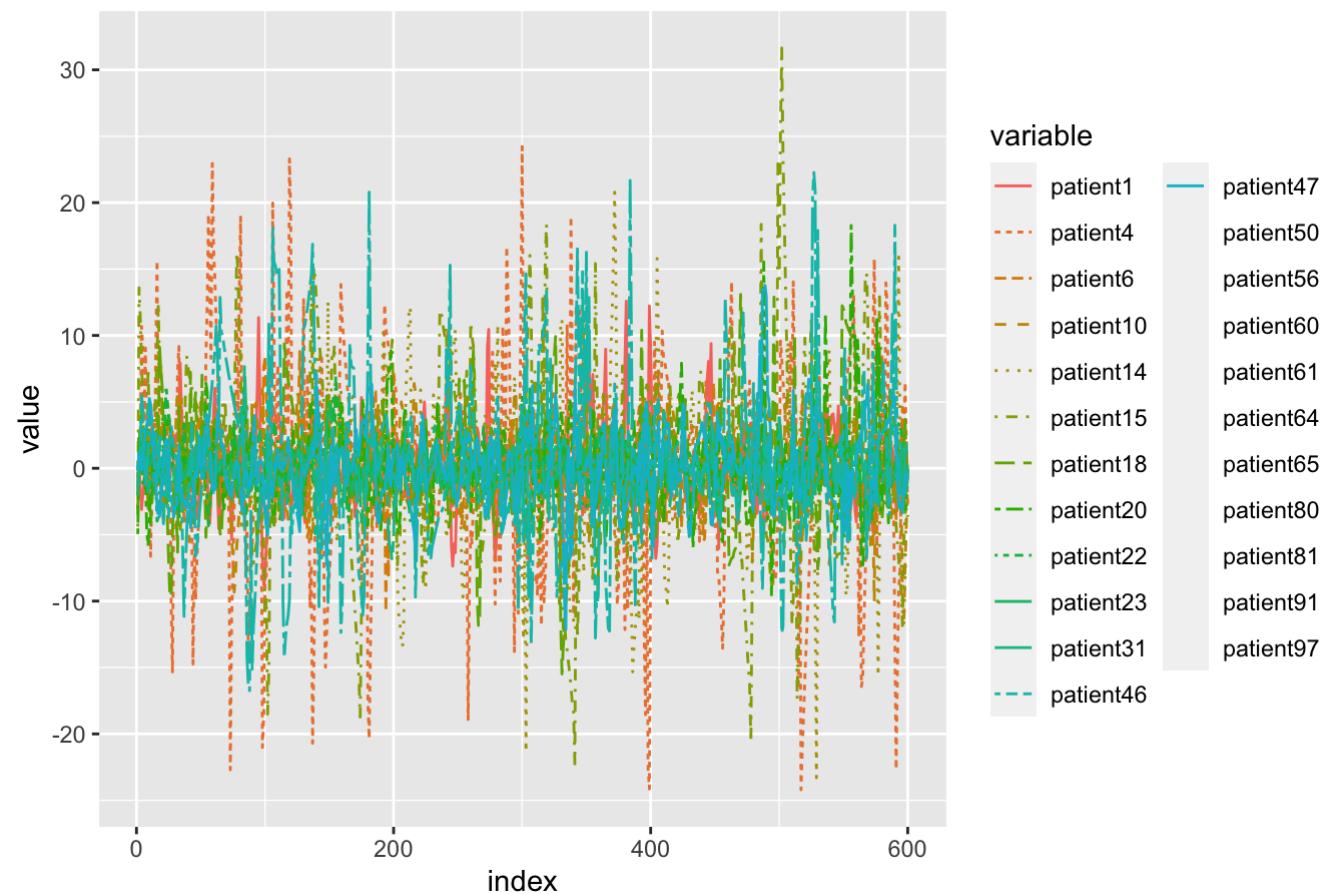
**PCA function 1 (Percentage of variability 38.1 )****PCA function 2 (Percentage of variability 18.1 )**

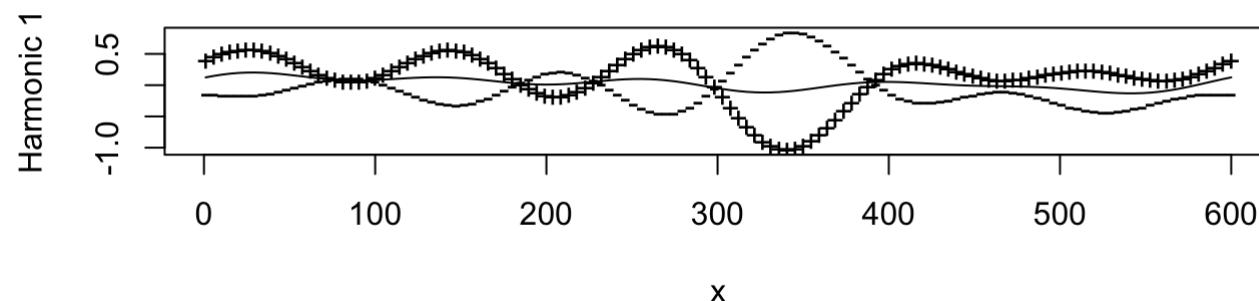
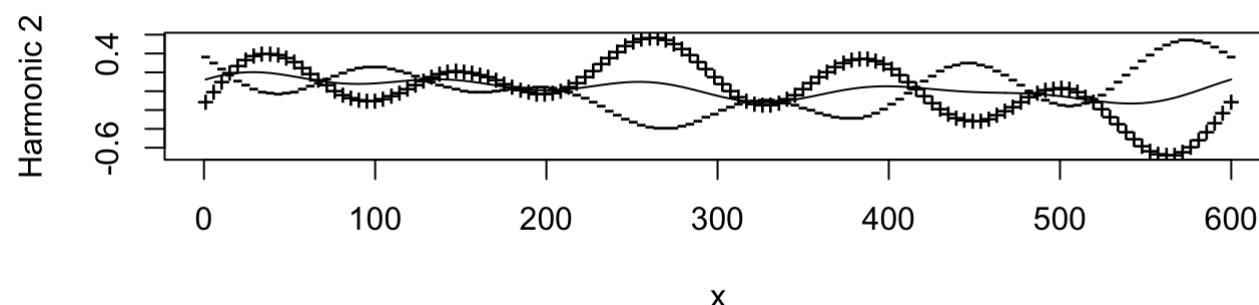
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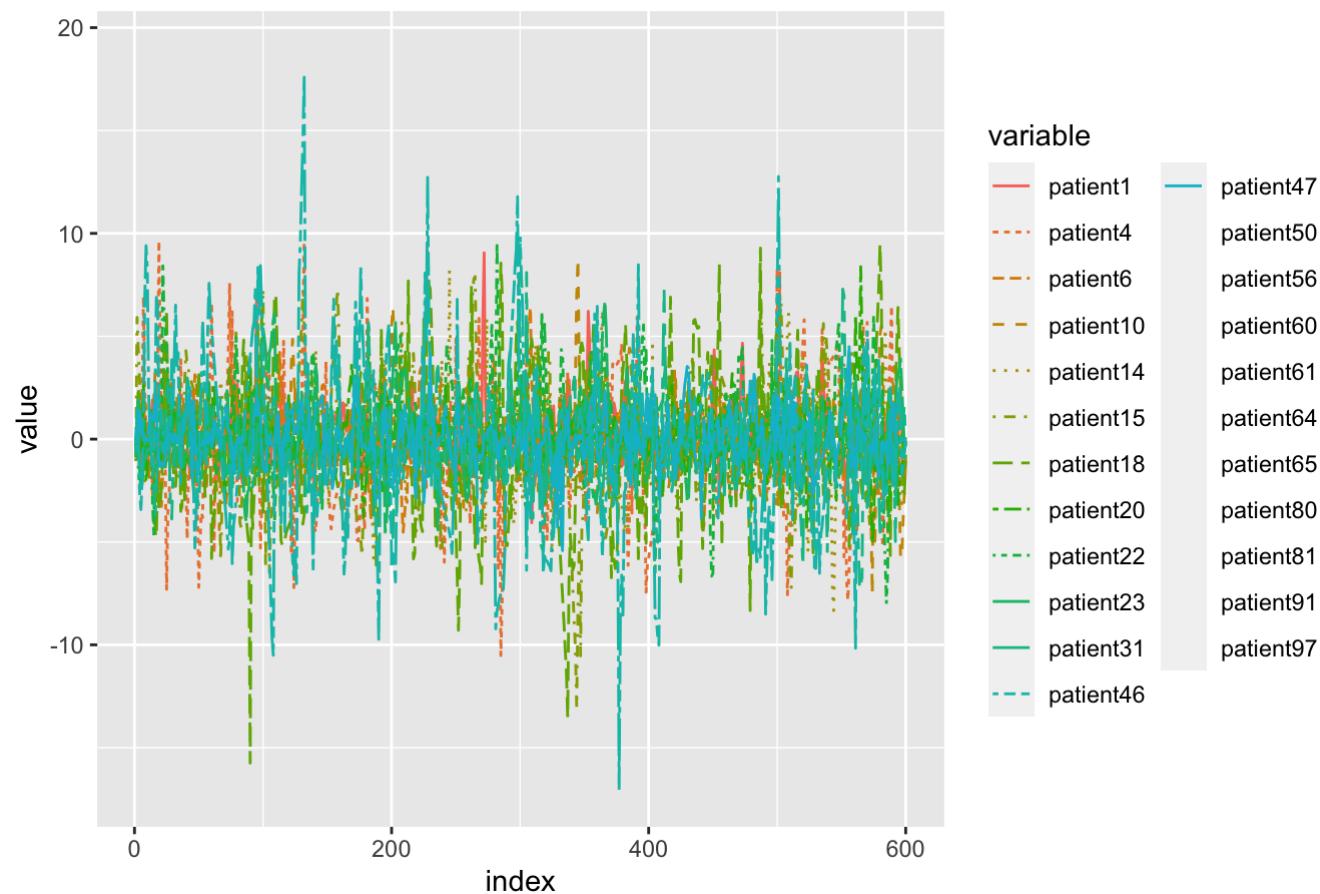
**PCA function 1 (Percentage of variability 25.9 )****PCA function 2 (Percentage of variability 21.7 )**

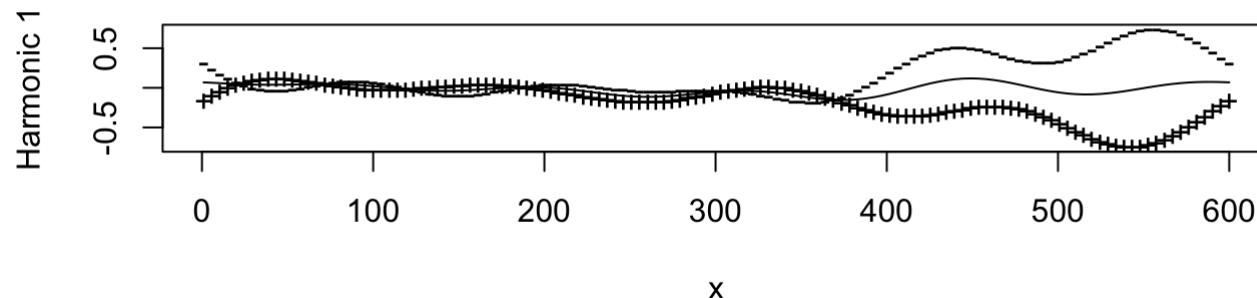
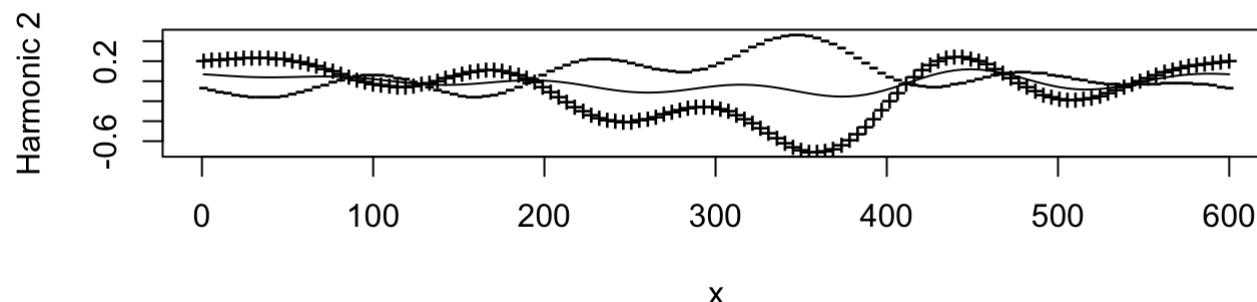
## PD-placebo, Node, 7



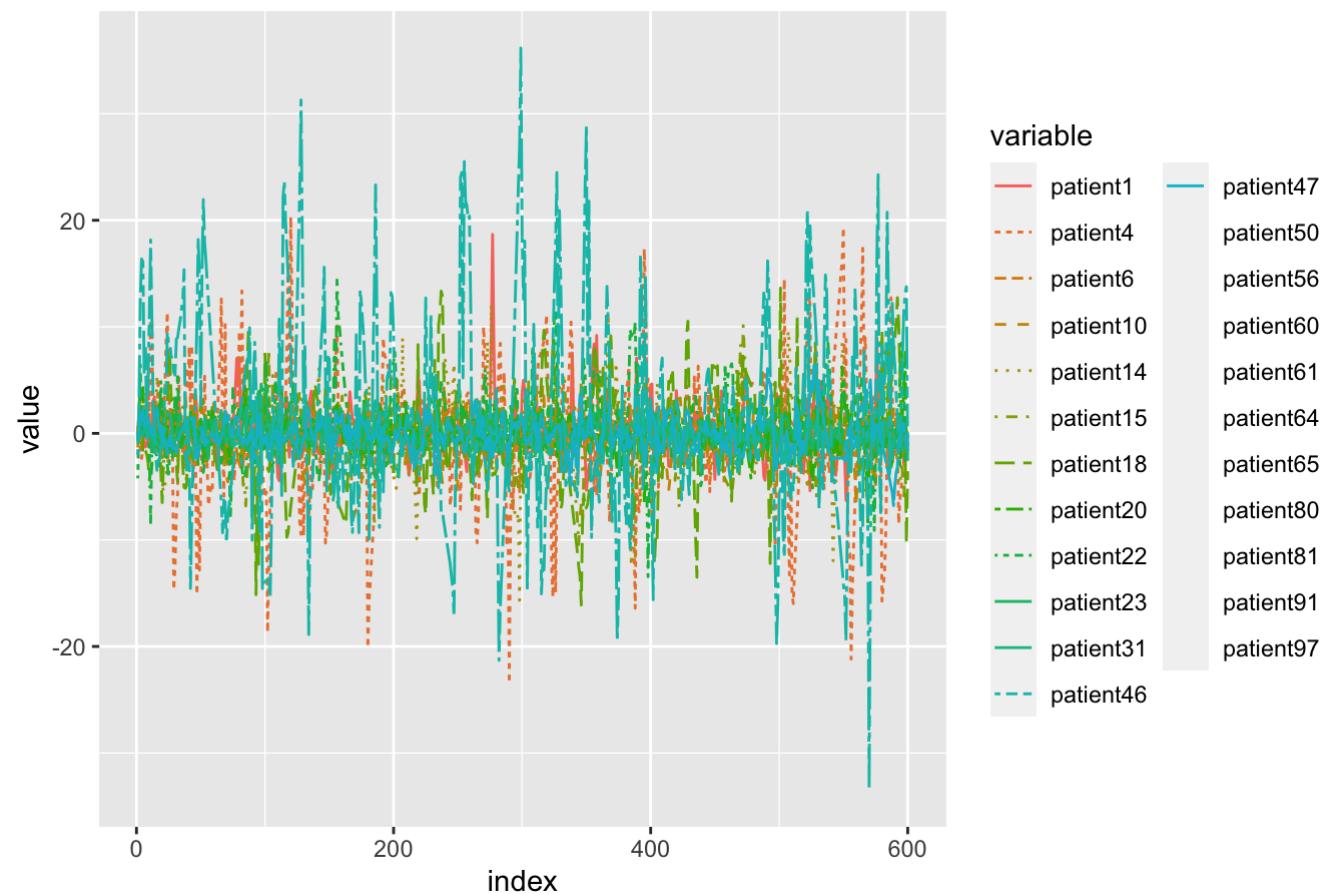
**PCA function 1 (Percentage of variability 37.1 )****PCA function 2 (Percentage of variability 18.1 )**

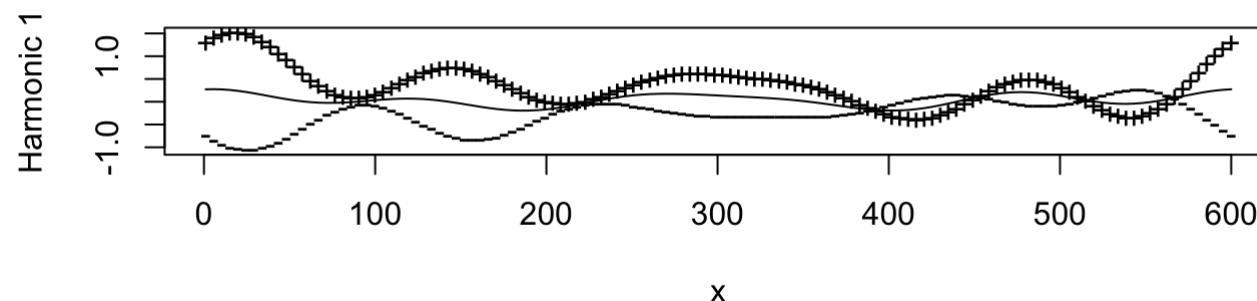
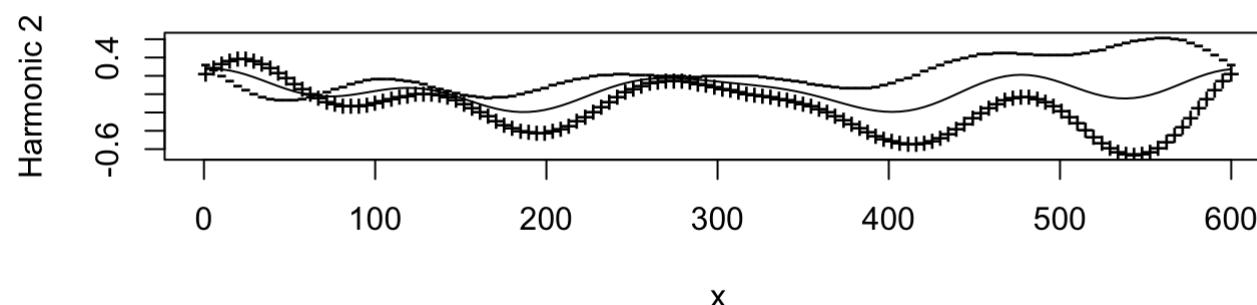
## PD-placebo, Node, 8



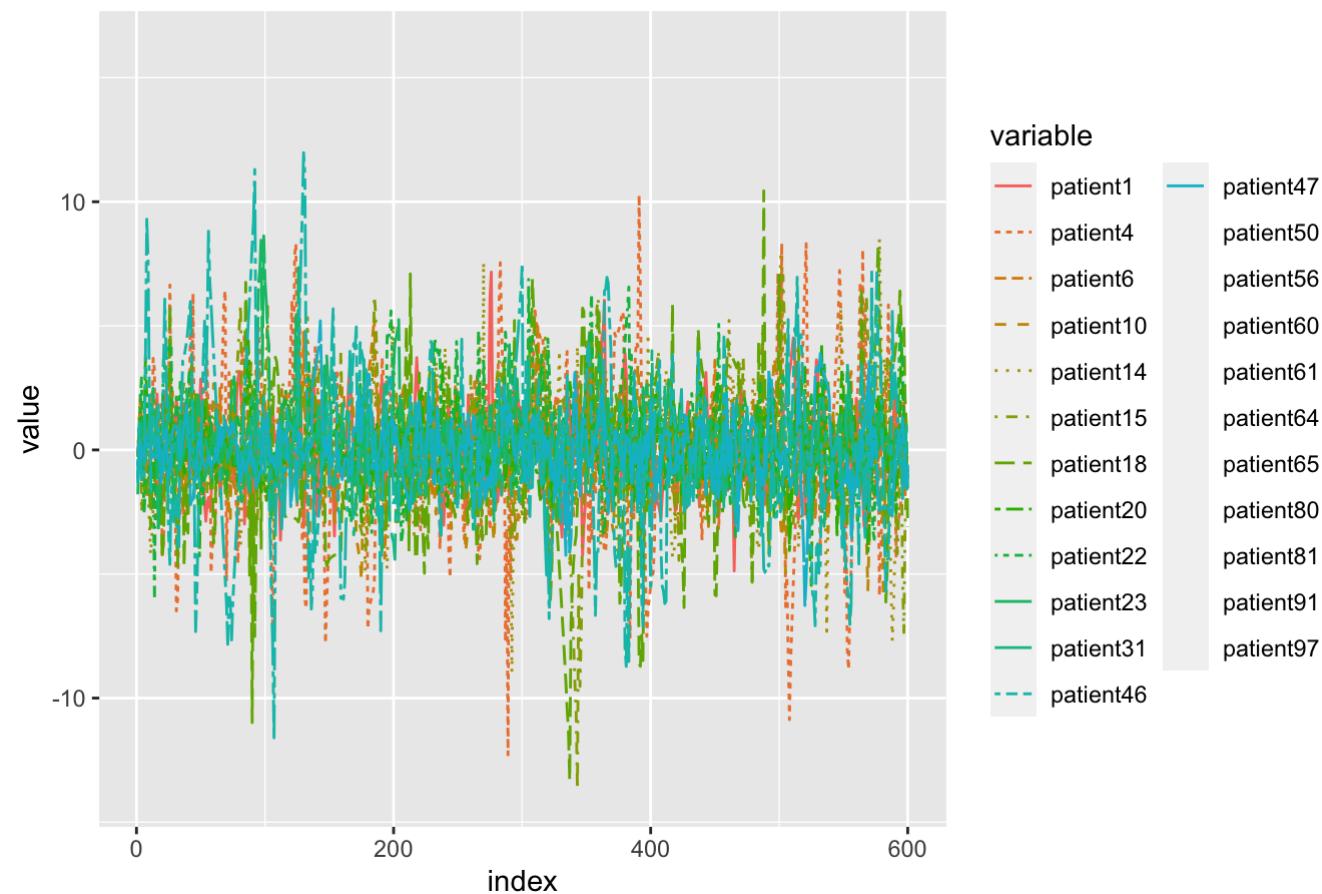
**PCA function 1 (Percentage of variability 42.4 )****PCA function 2 (Percentage of variability 25.8 )**

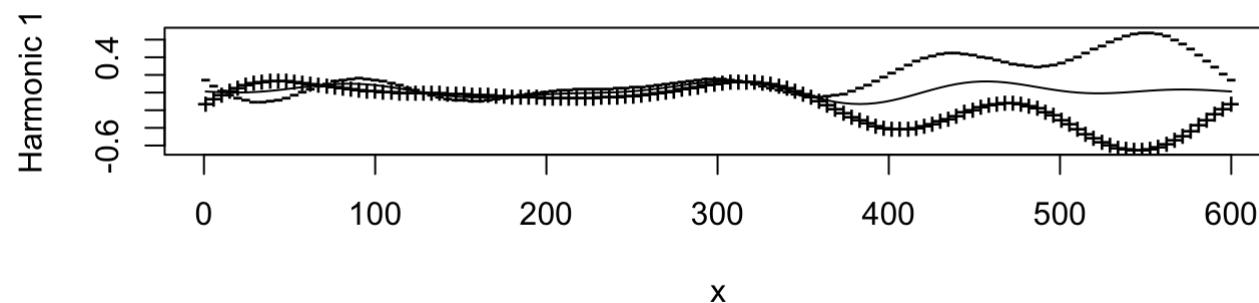
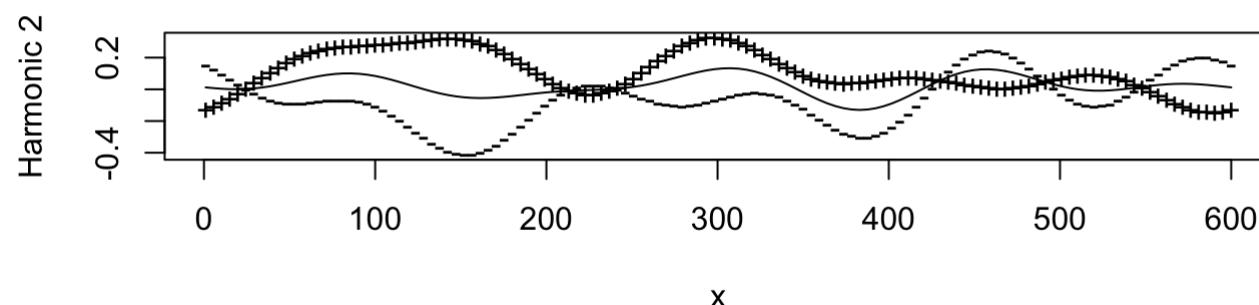
## PD-placebo, Node, 9



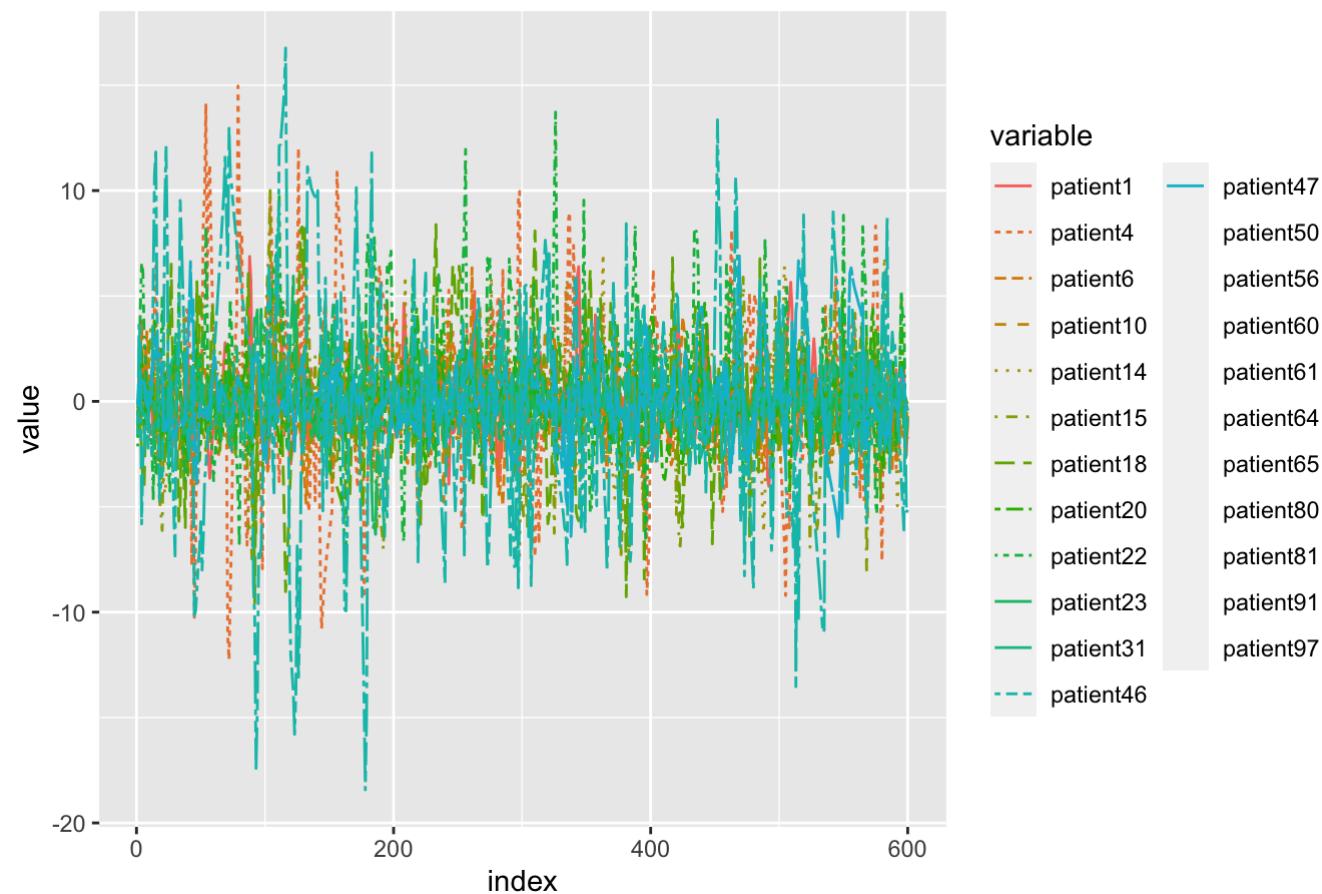
**PCA function 1 (Percentage of variability 54.9 )****PCA function 2 (Percentage of variability 16.8 )**

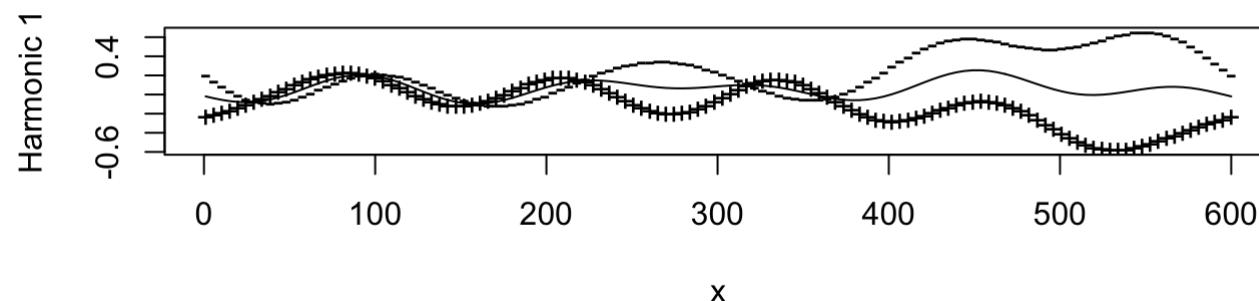
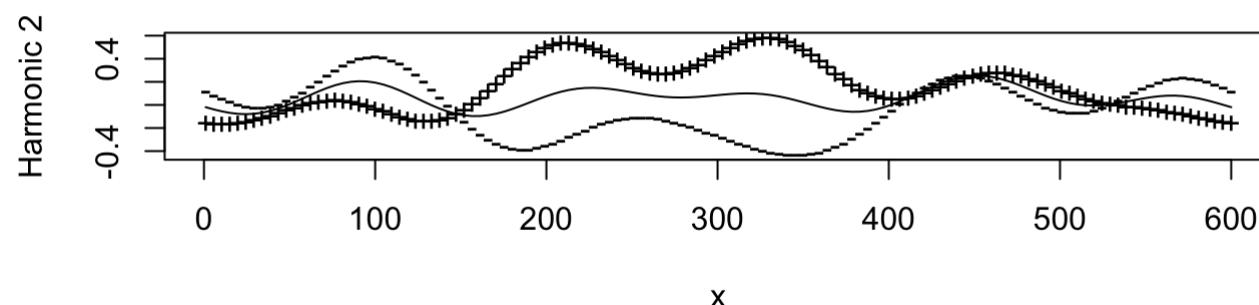
## PD-placebo, Node, 10



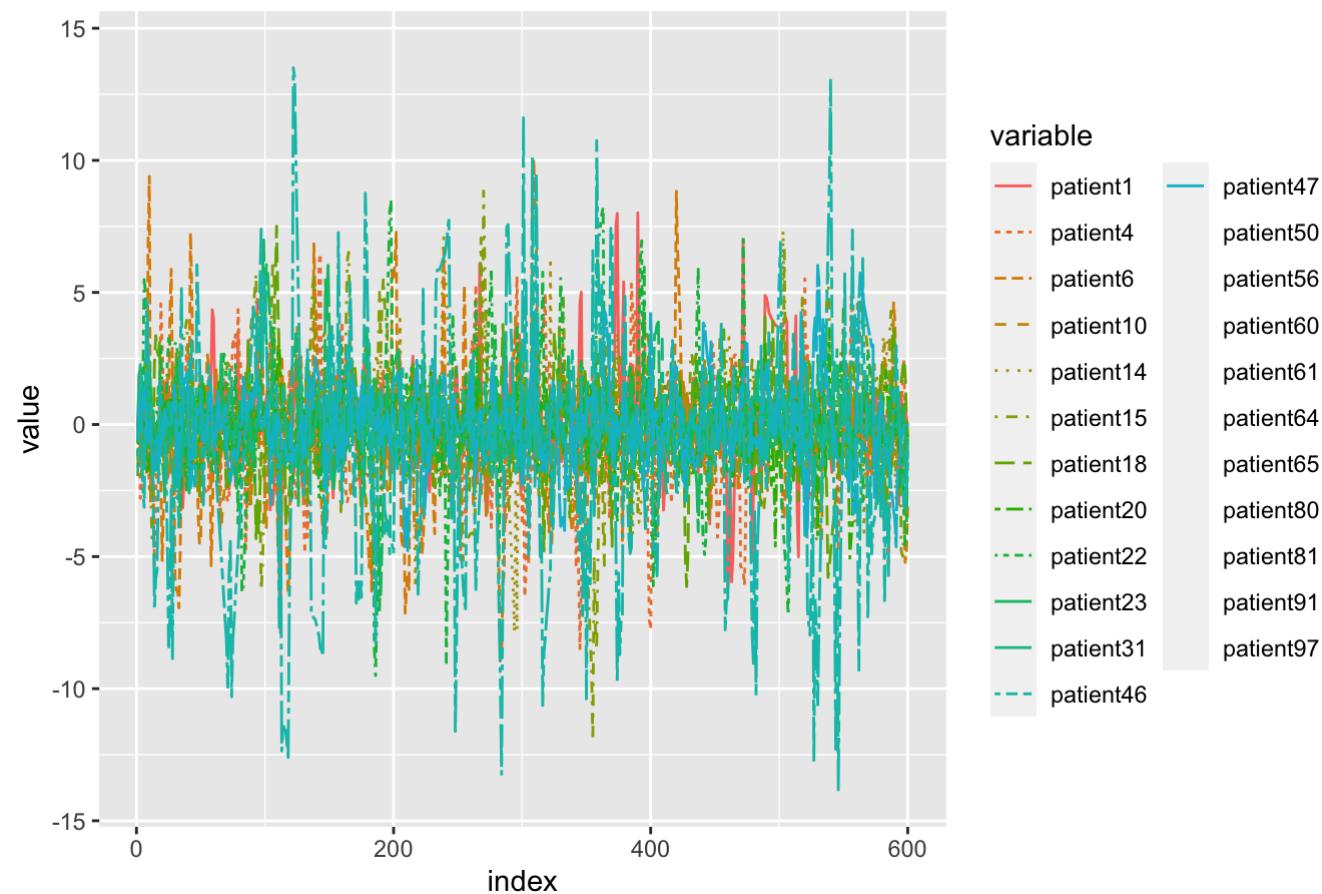
**PCA function 1 (Percentage of variability 45.1 )****PCA function 2 (Percentage of variability 19.1 )**

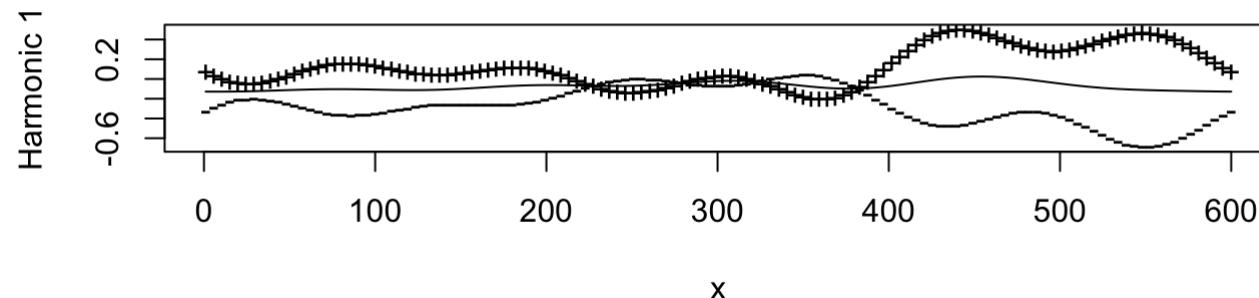
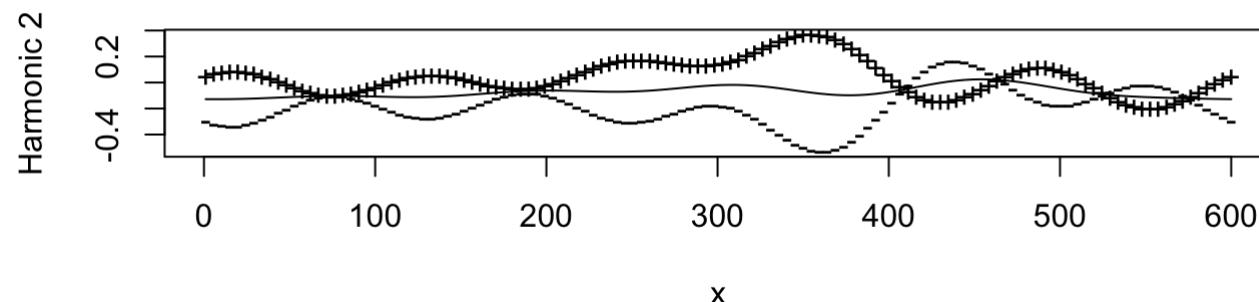
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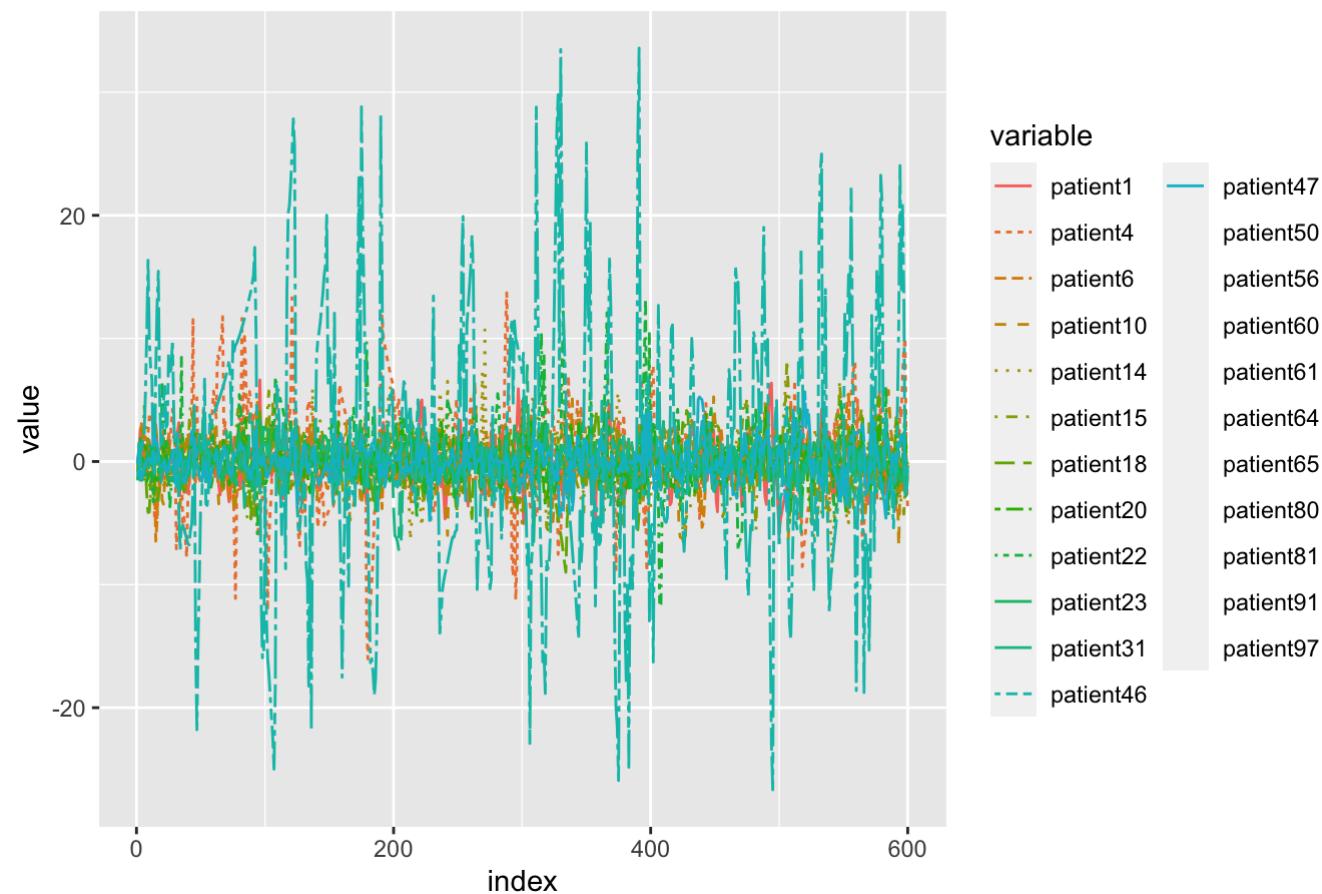
**PCA function 1 (Percentage of variability 30.6 )****PCA function 2 (Percentage of variability 28.7 )**

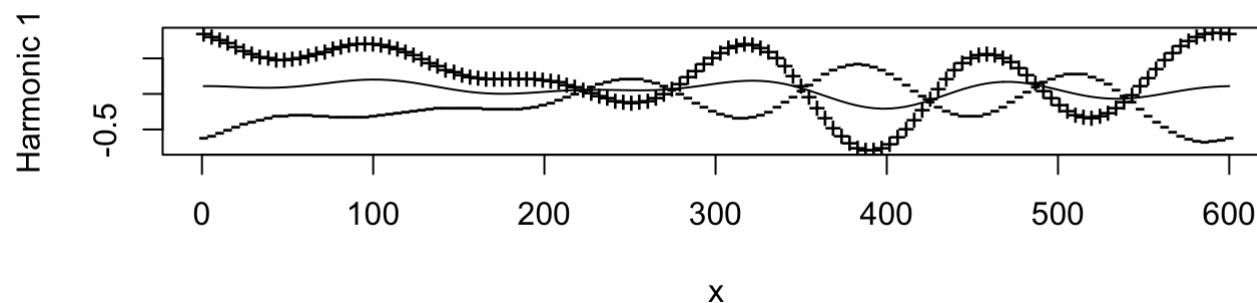
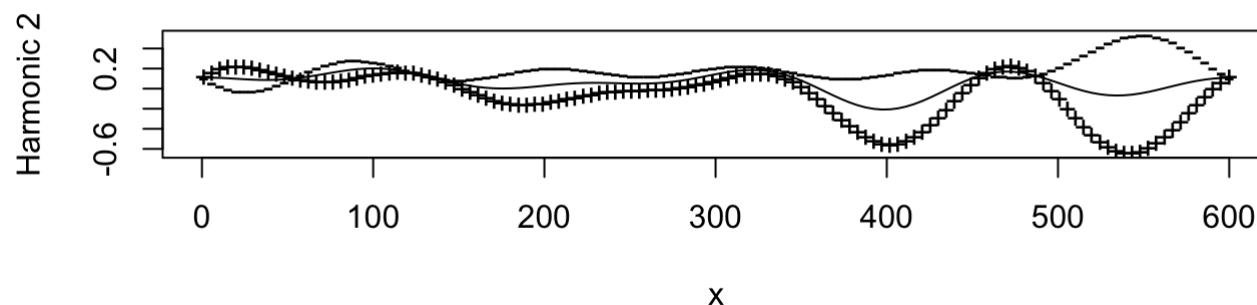
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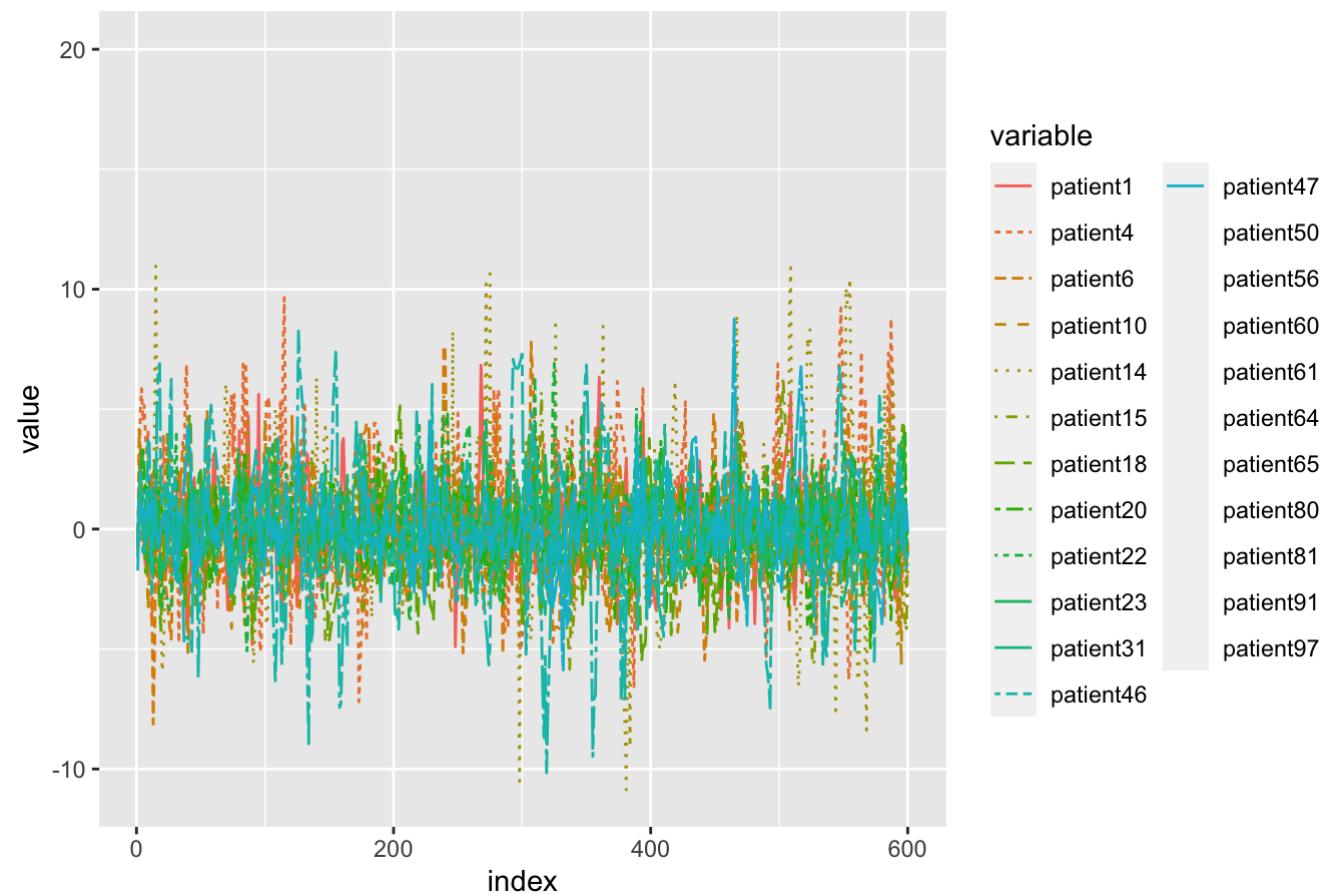
**PCA function 1 (Percentage of variability 41 )****PCA function 2 (Percentage of variability 21.9 )**

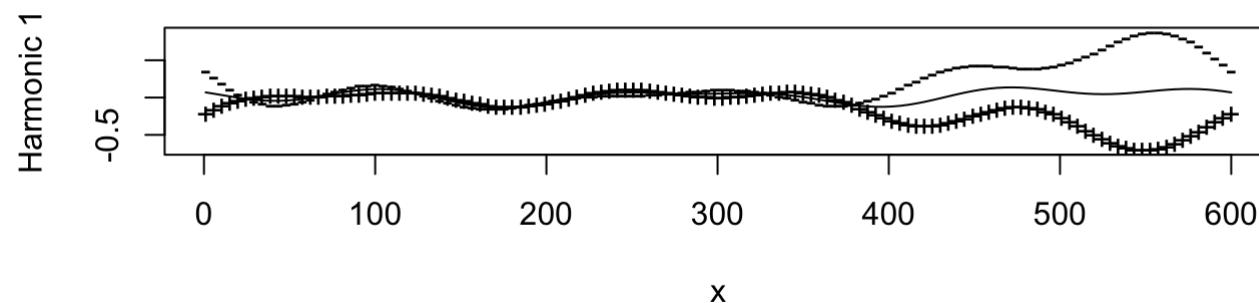
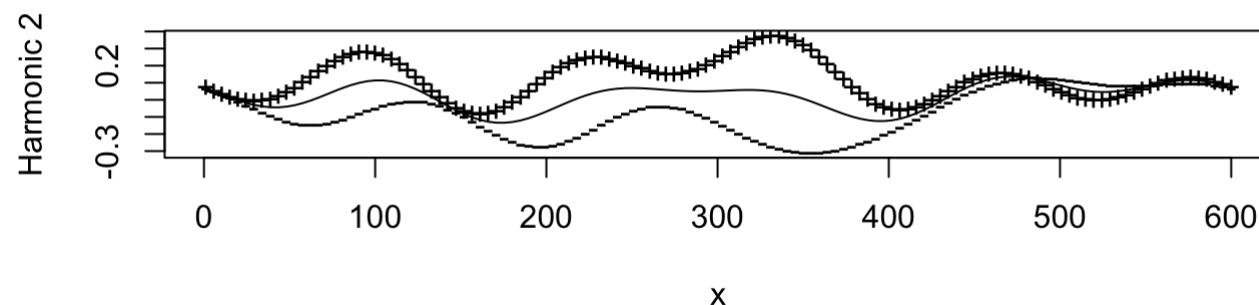
## PD-placebo, Node, 13



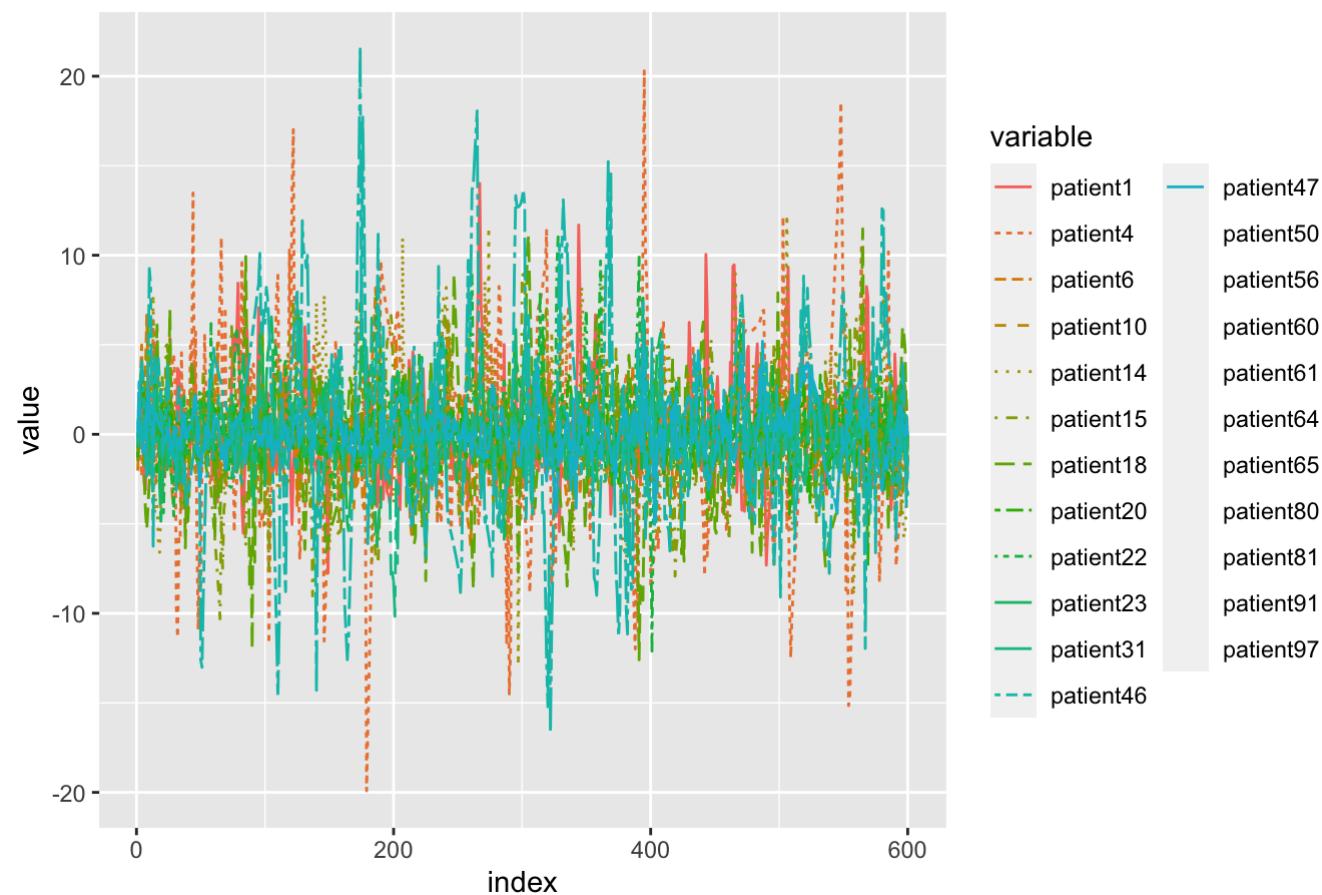
**PCA function 1 (Percentage of variability 52.5 )****PCA function 2 (Percentage of variability 17.2 )**

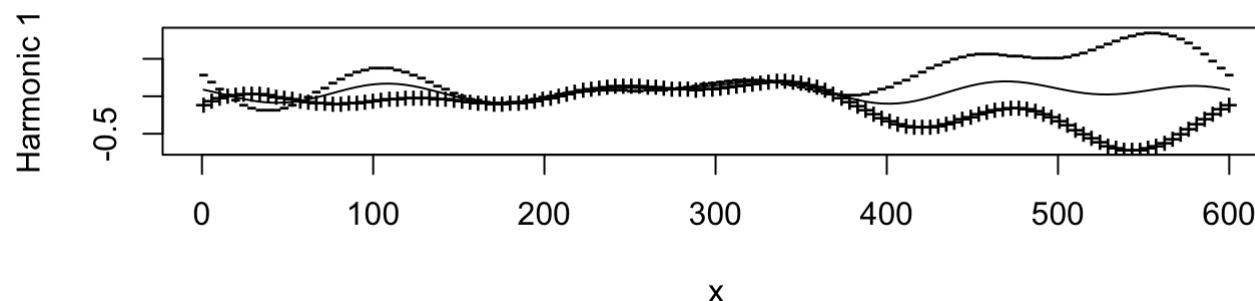
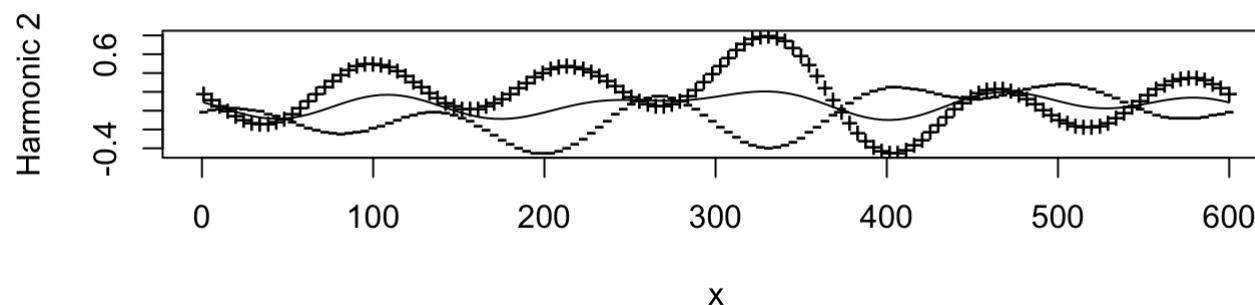
## PD-placebo, Node, 14



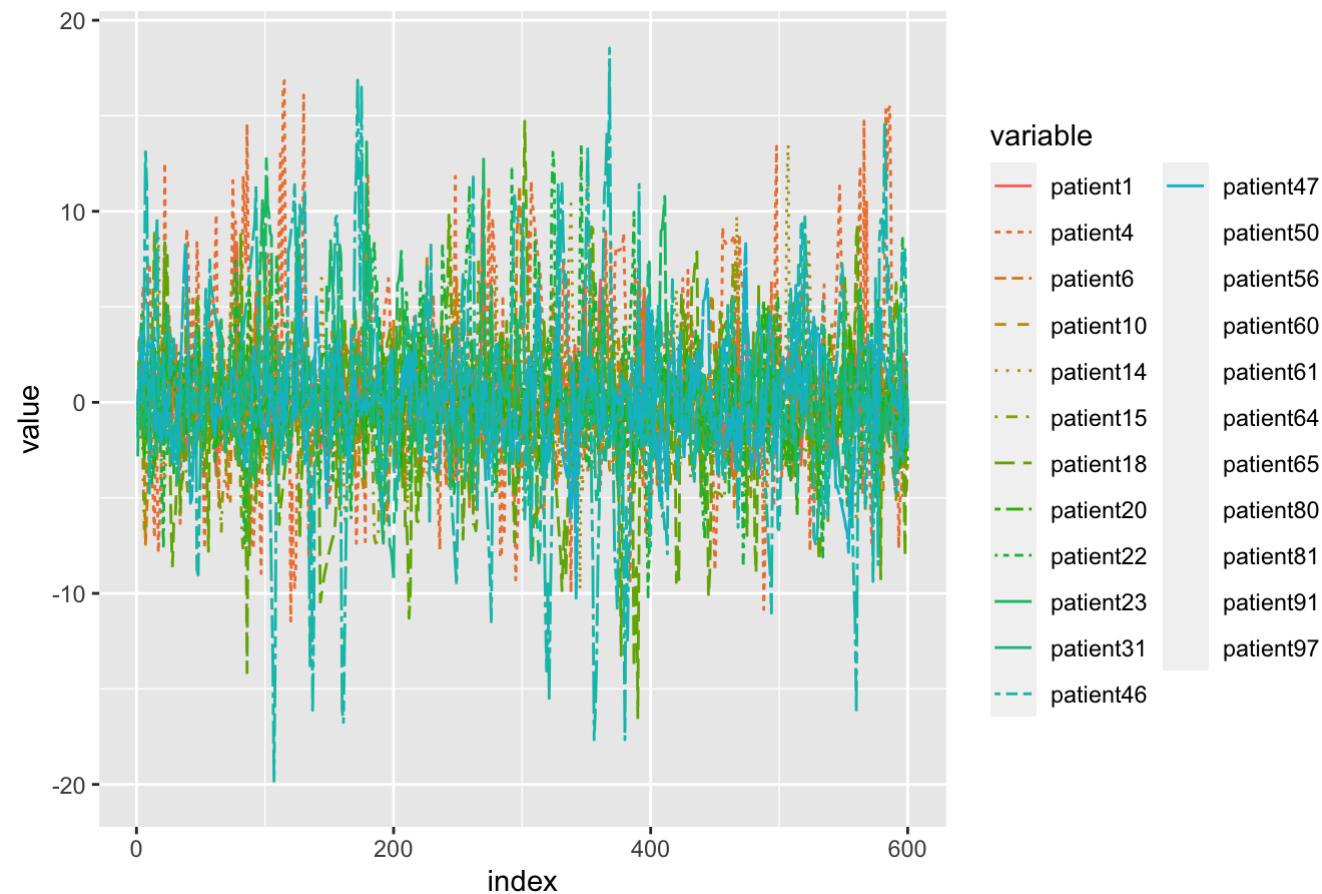
**PCA function 1 (Percentage of variability 52.5 )****PCA function 2 (Percentage of variability 14.1 )**

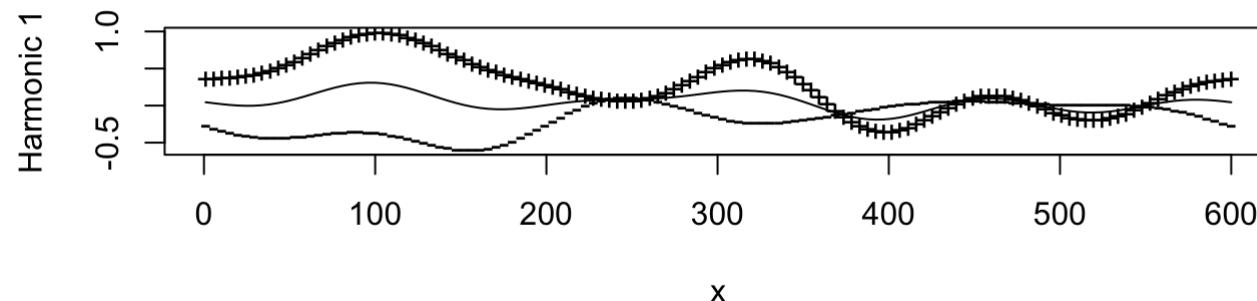
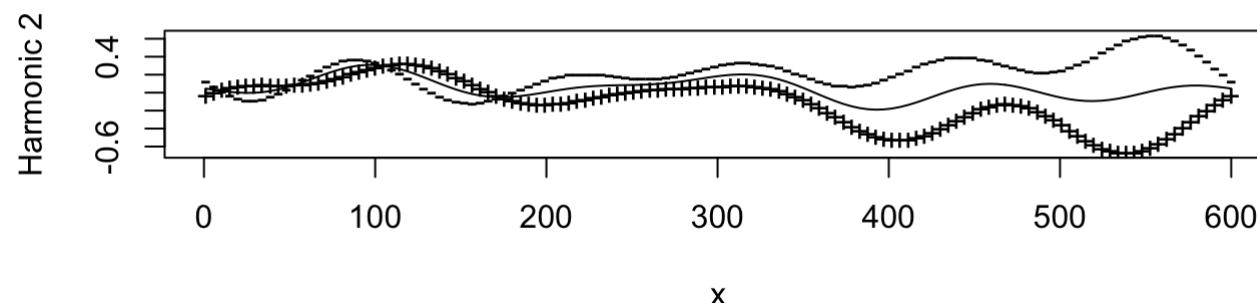
## PD-placebo, Node, 15



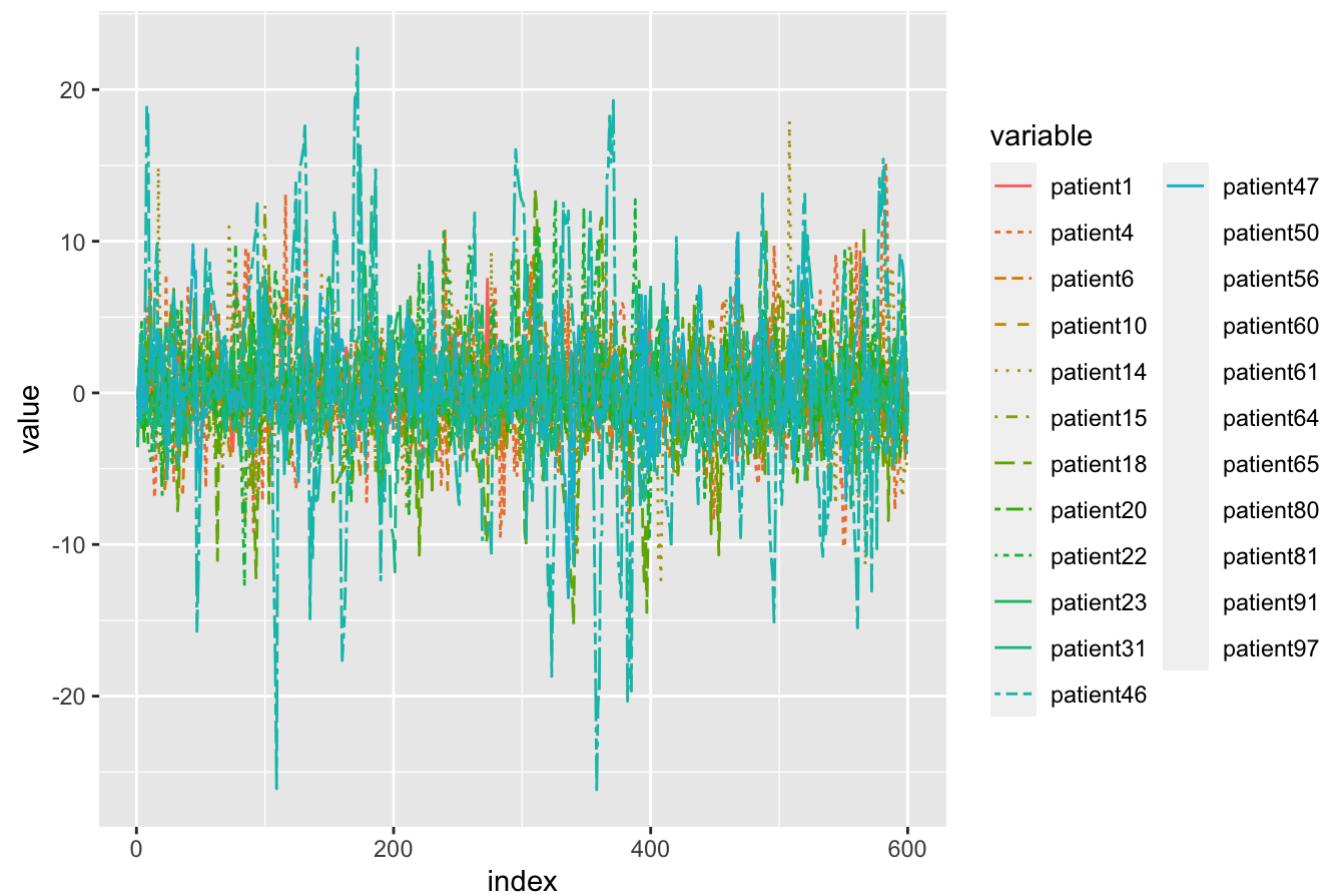
**PCA function 1 (Percentage of variability 28.1 )****PCA function 2 (Percentage of variability 25.5 )**

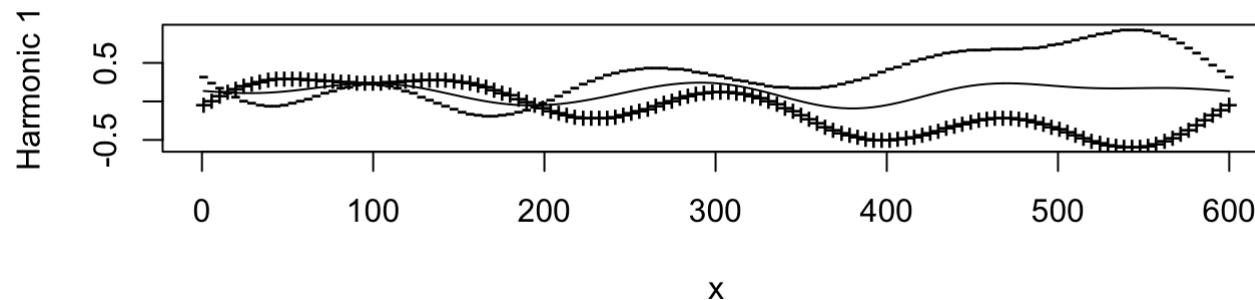
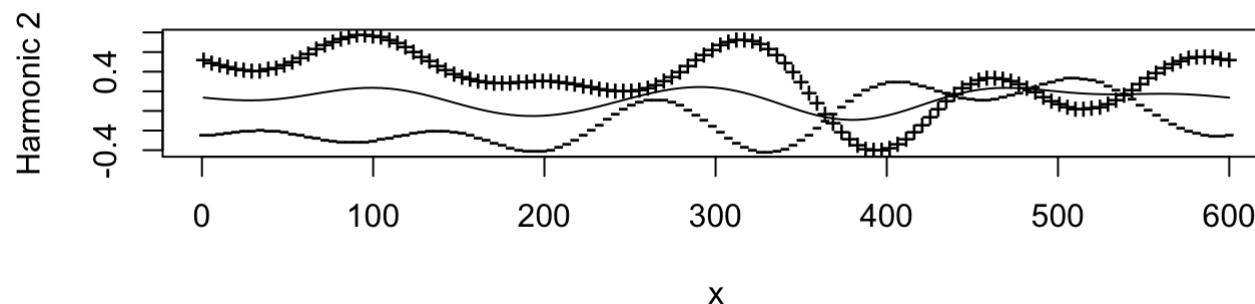
## PD-placebo, Node, 16



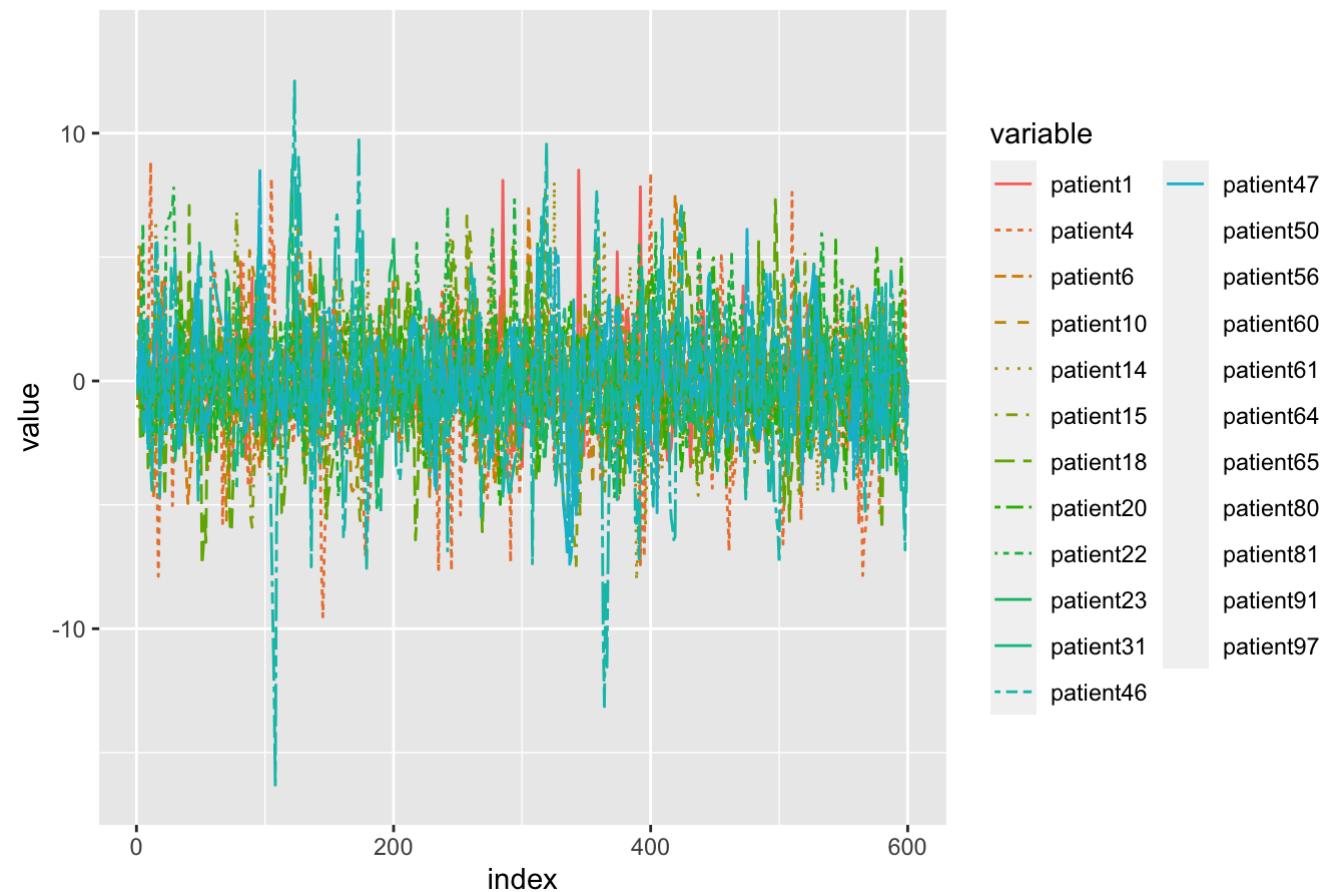
**PCA function 1 (Percentage of variability 31.2 )****PCA function 2 (Percentage of variability 26.5 )**

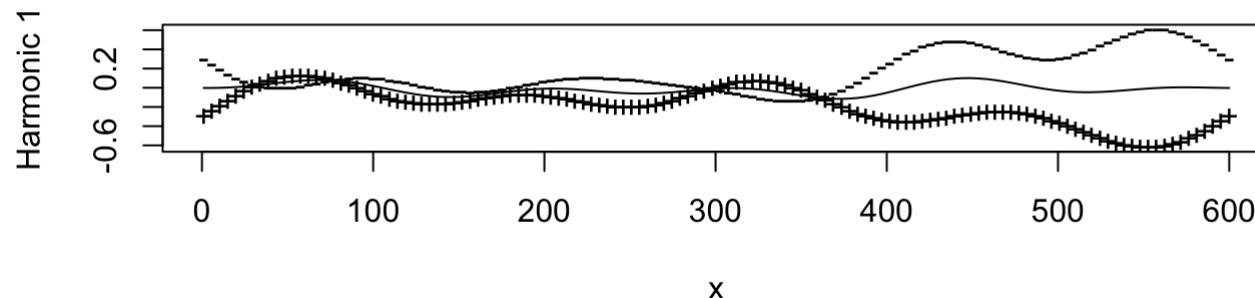
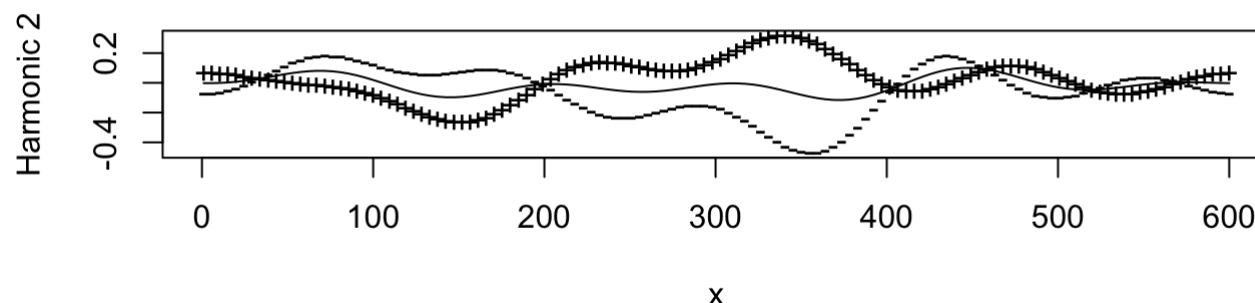
## PD-placebo, Node, 17



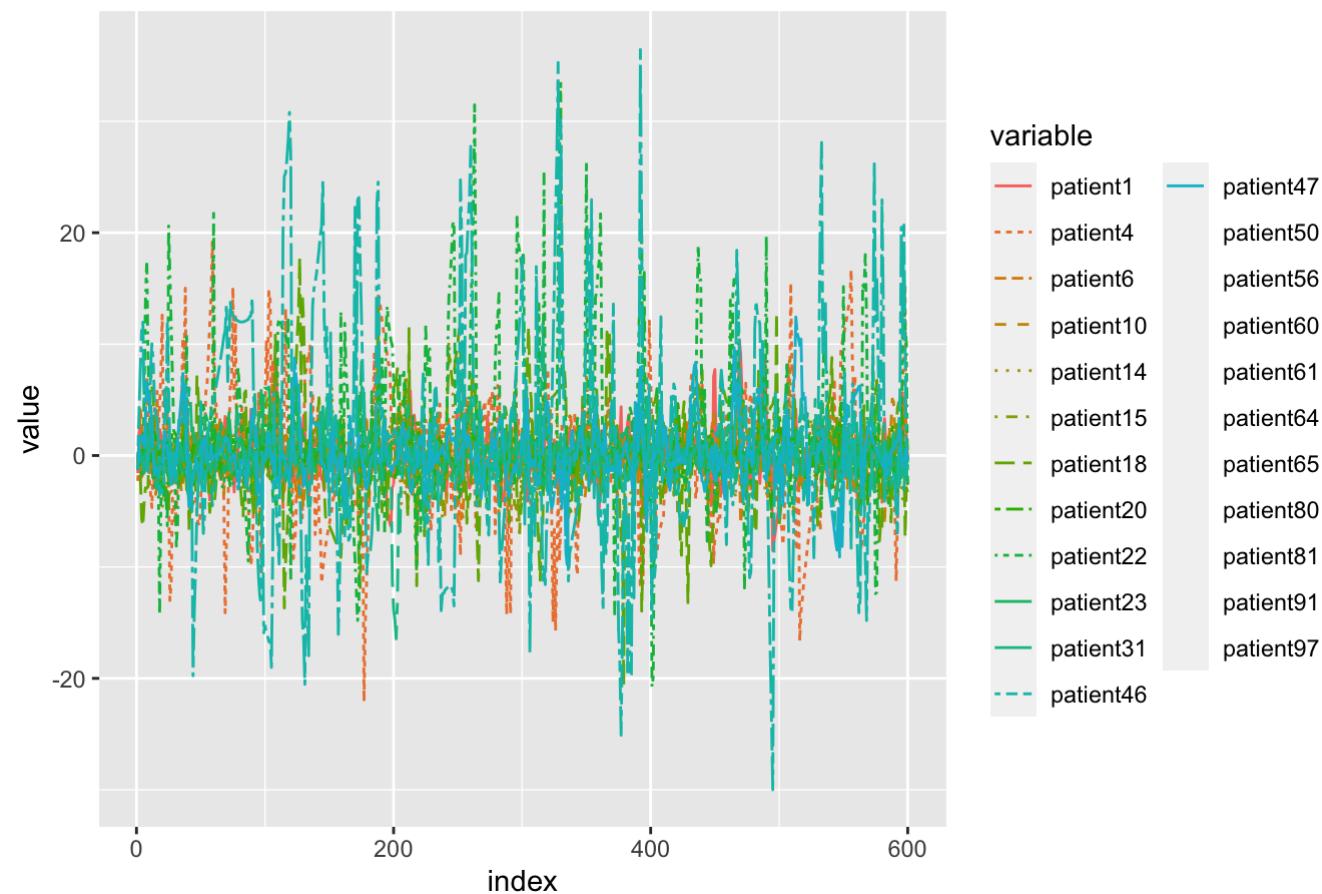
**PCA function 1 (Percentage of variability 33.7 )****PCA function 2 (Percentage of variability 26.7 )**

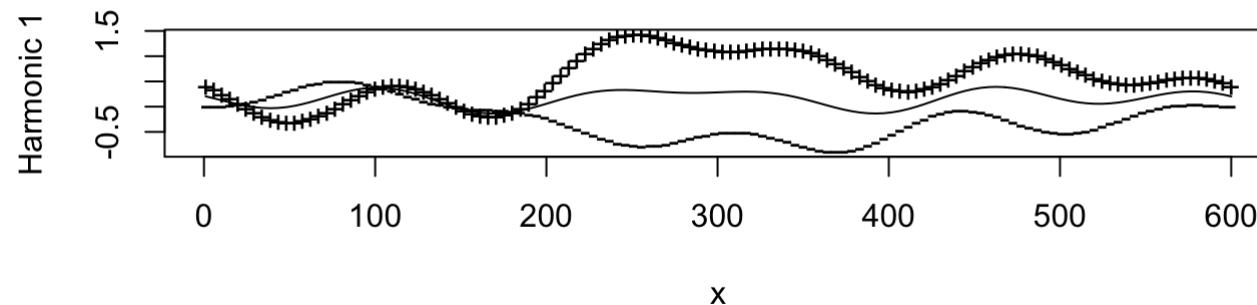
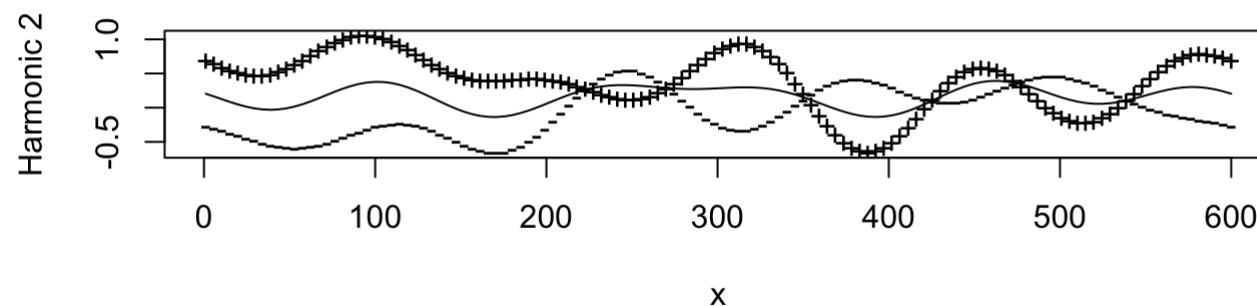
## PD-placebo, Node, 18



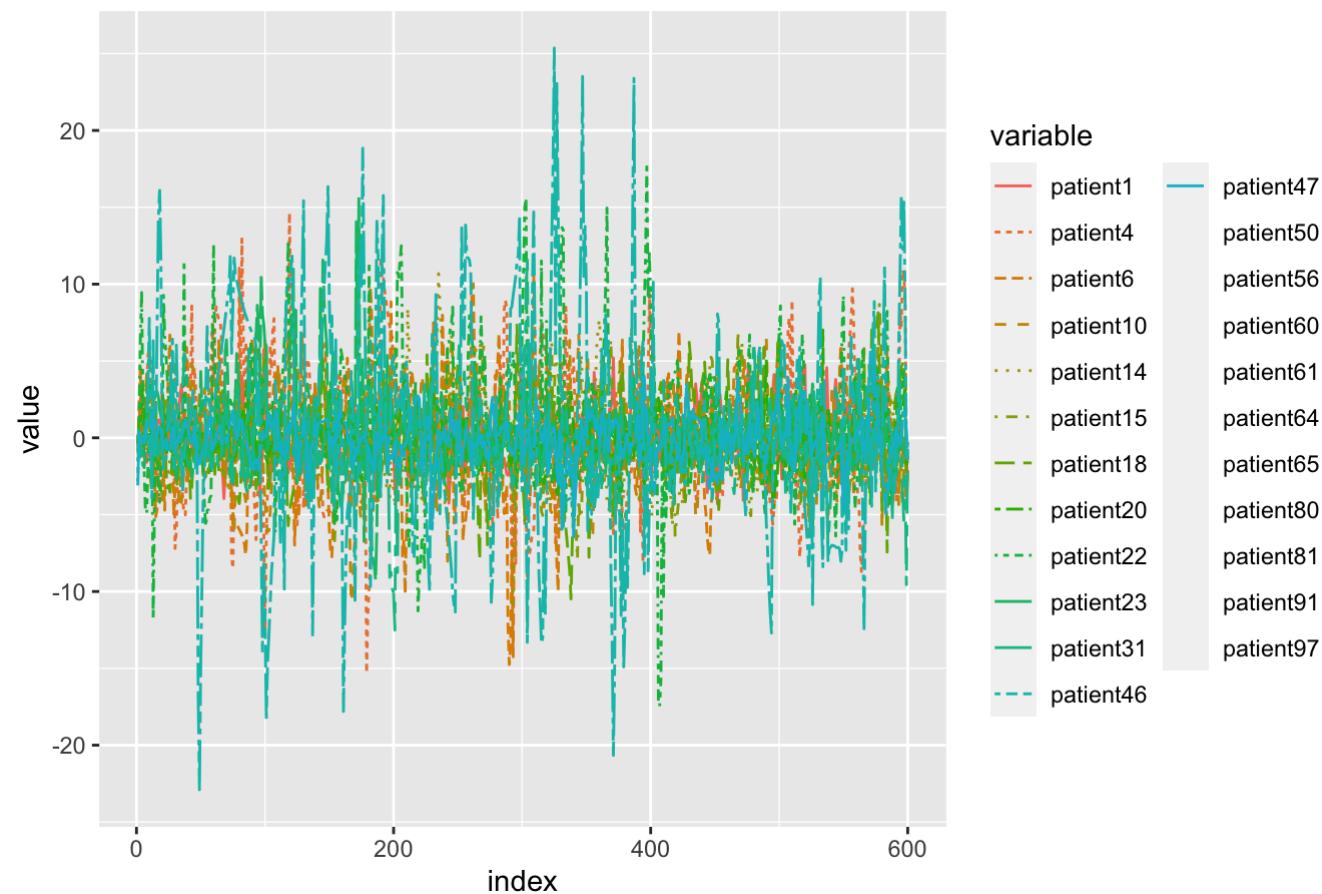
**PCA function 1 (Percentage of variability 41.9 )****PCA function 2 (Percentage of variability 19.8 )**

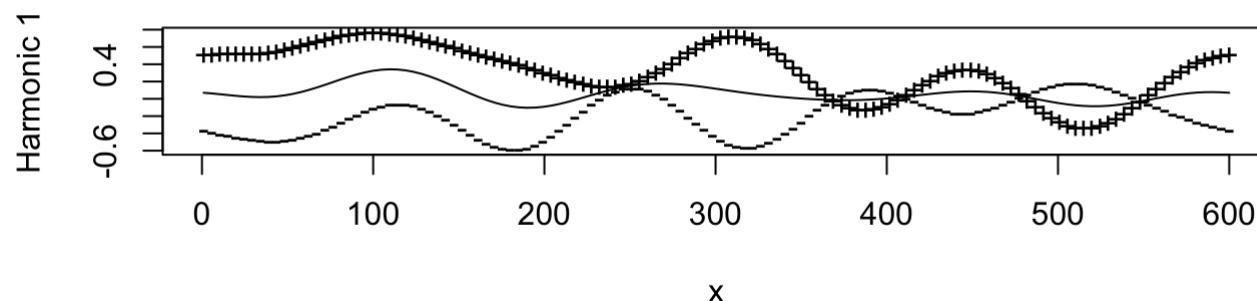
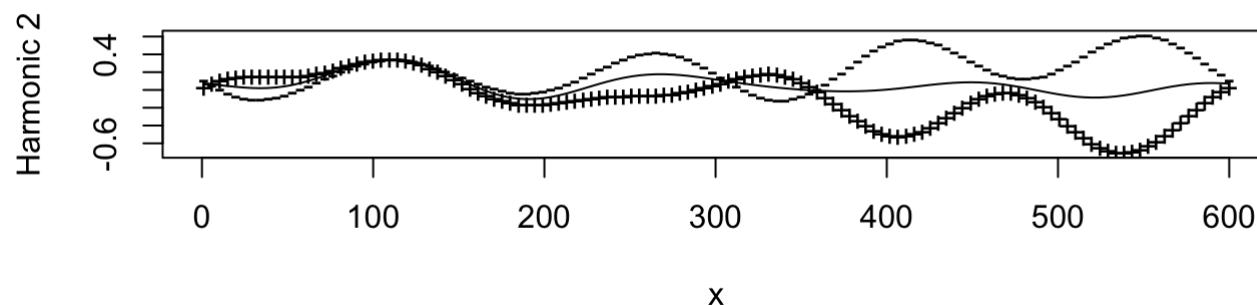
## PD-placebo, Node, 19



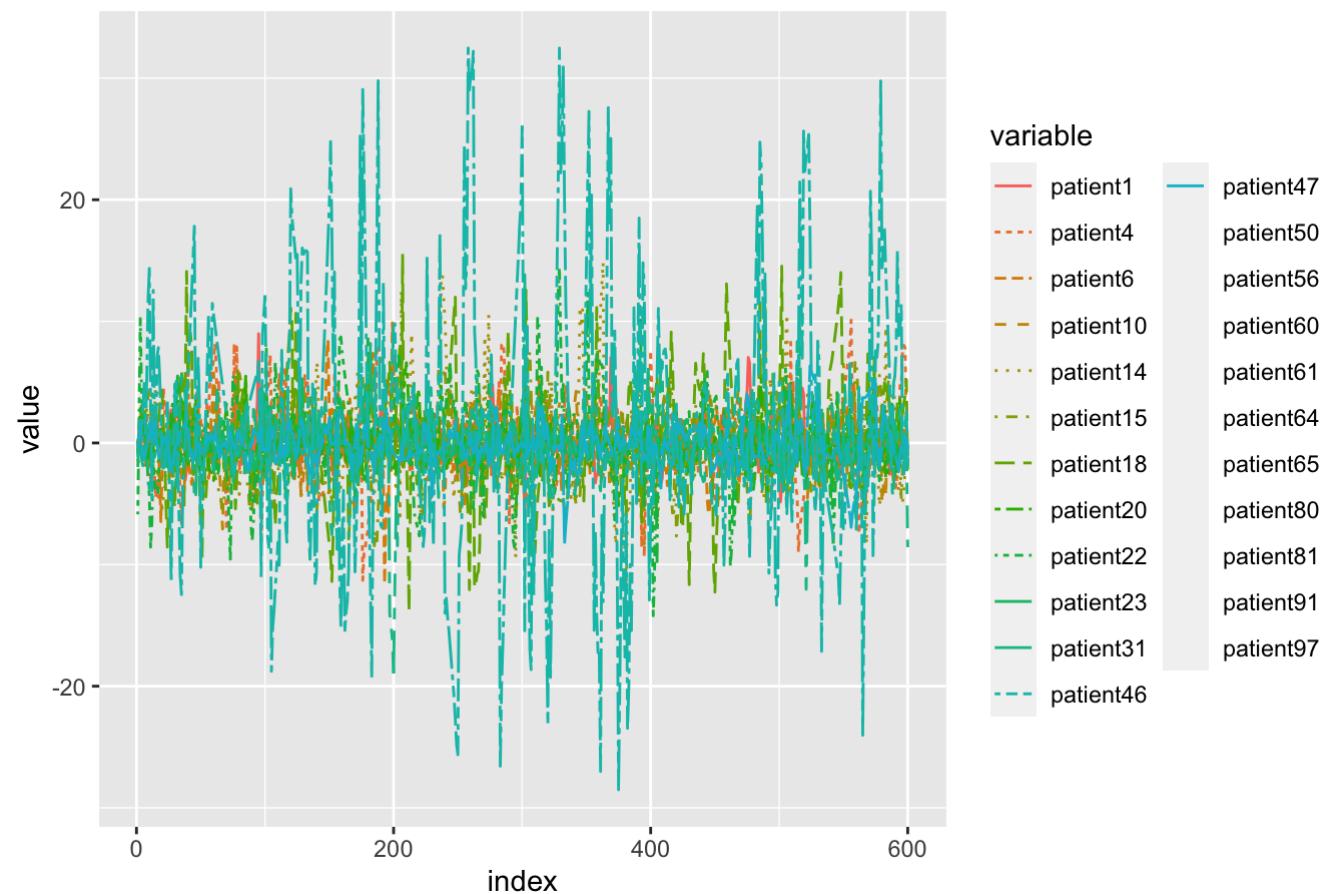
**PCA function 1 (Percentage of variability 38.9 )****PCA function 2 (Percentage of variability 34.8 )**

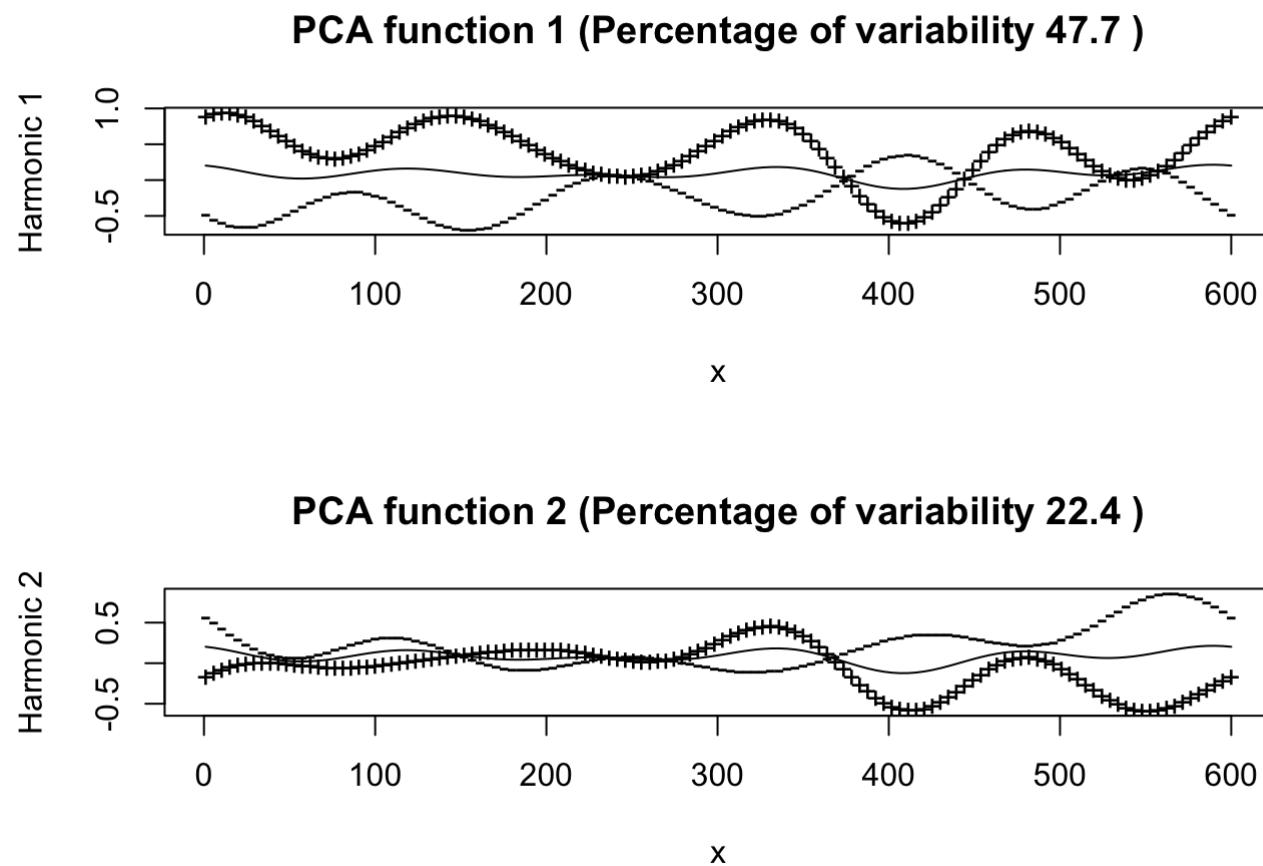
## PD-placebo, Node, 20



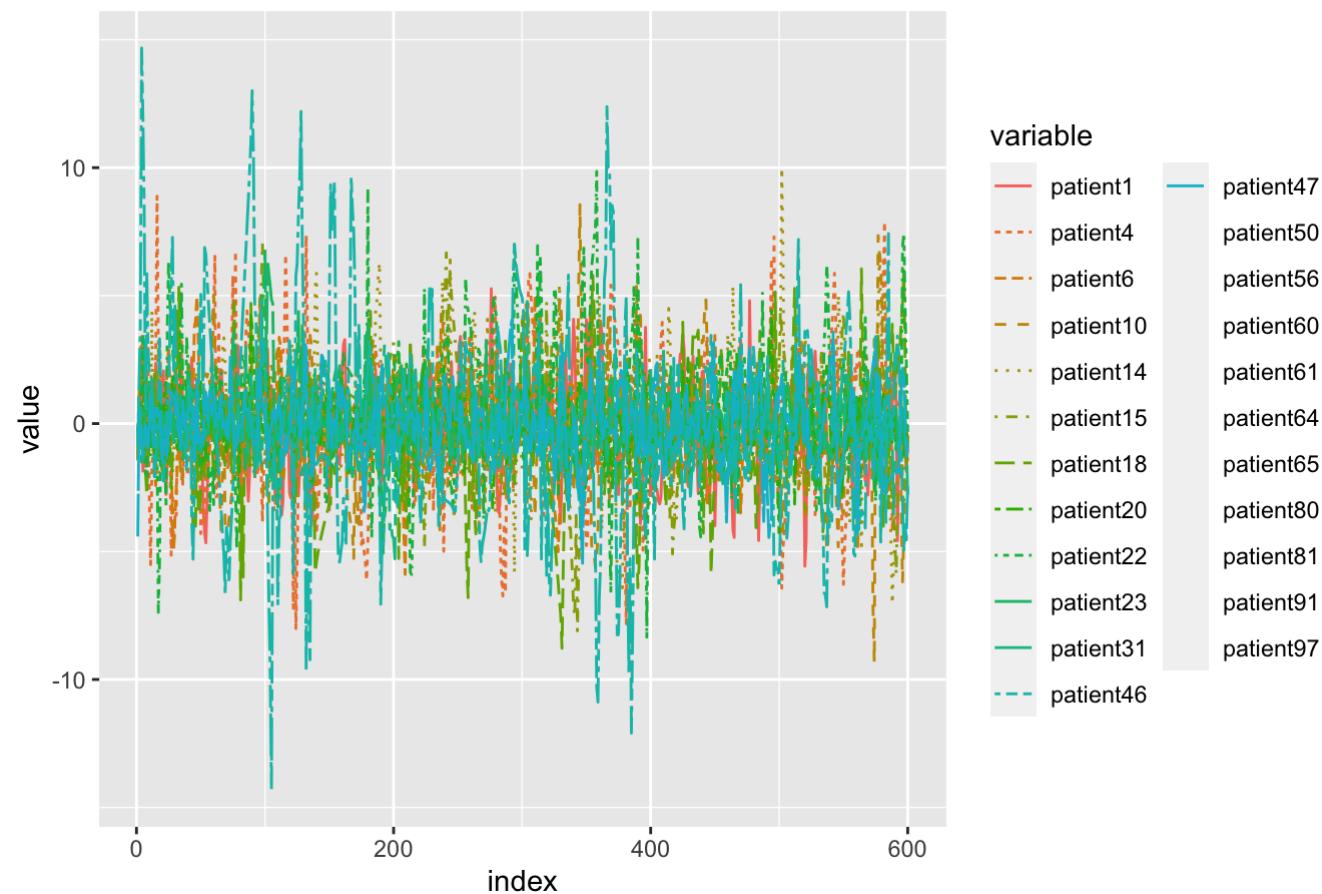
**PCA function 1 (Percentage of variability 35.1 )****PCA function 2 (Percentage of variability 24 )**

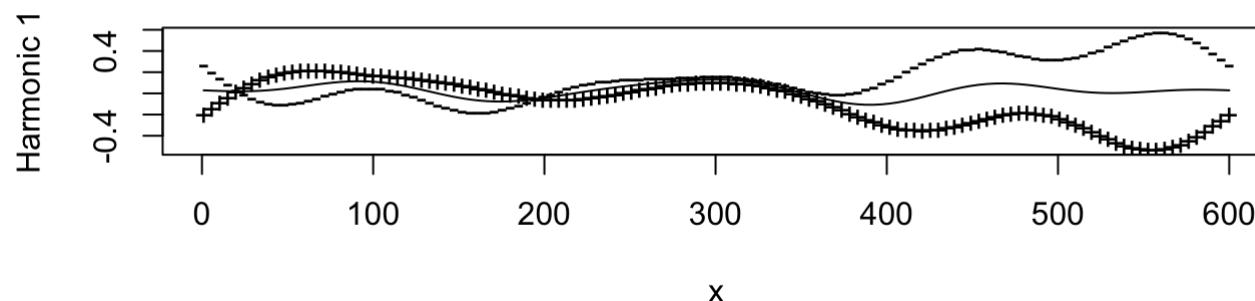
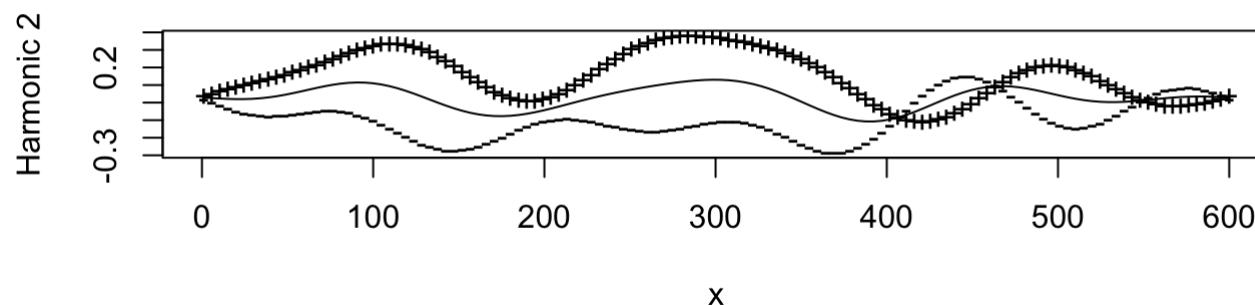
## PD-placebo, Node, 21



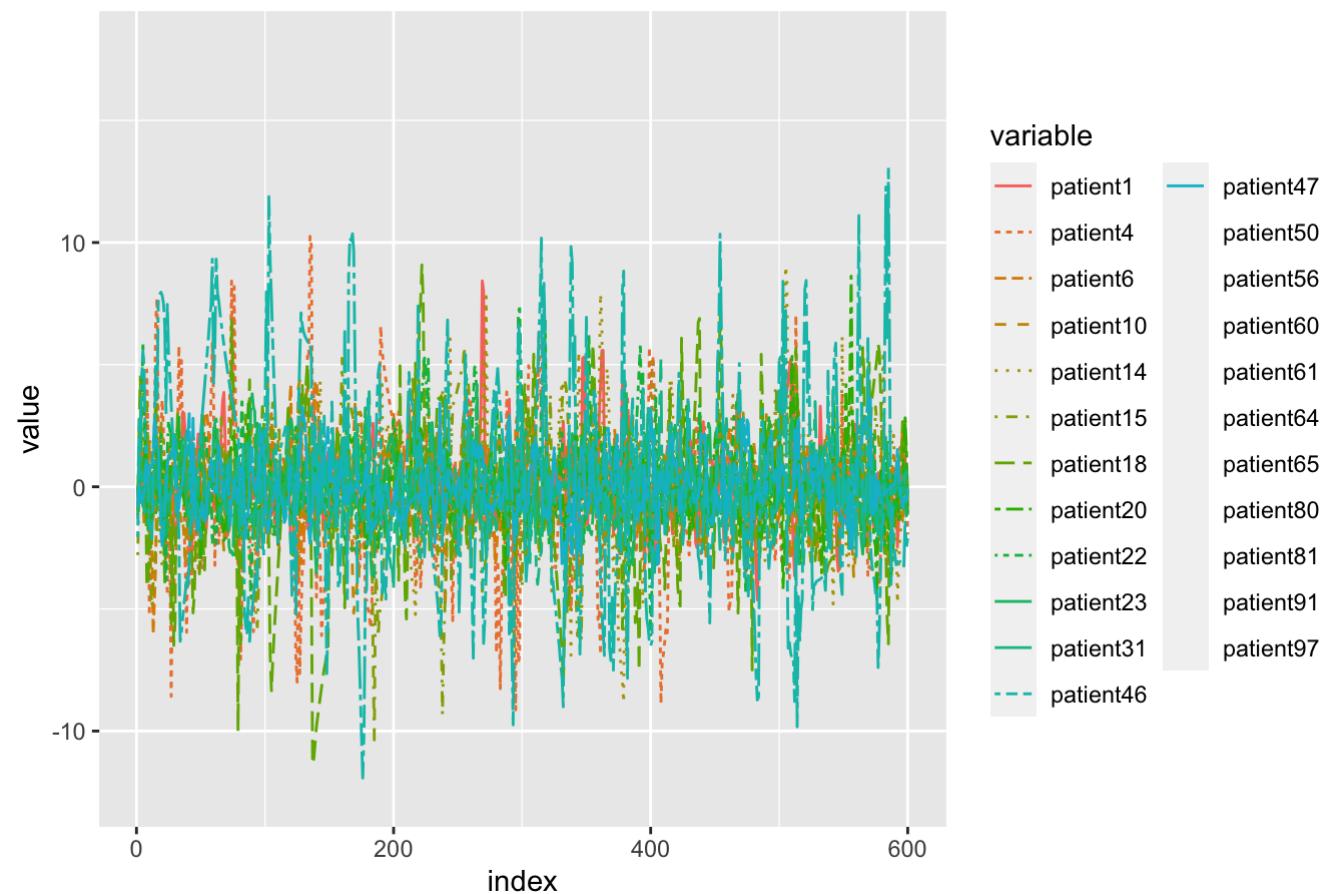


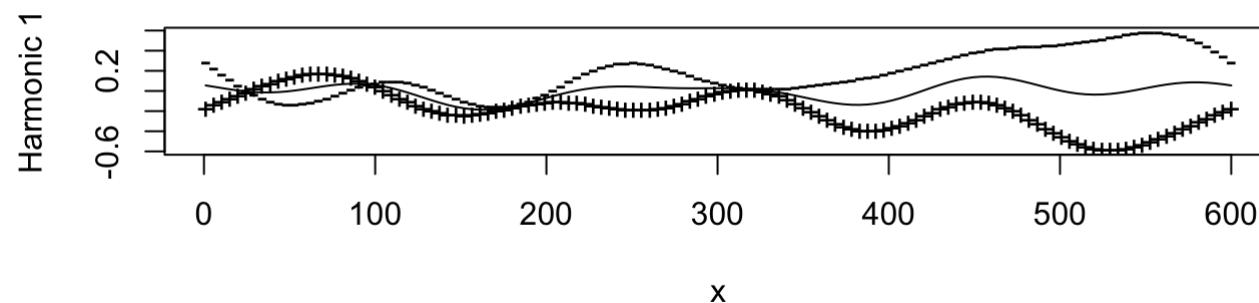
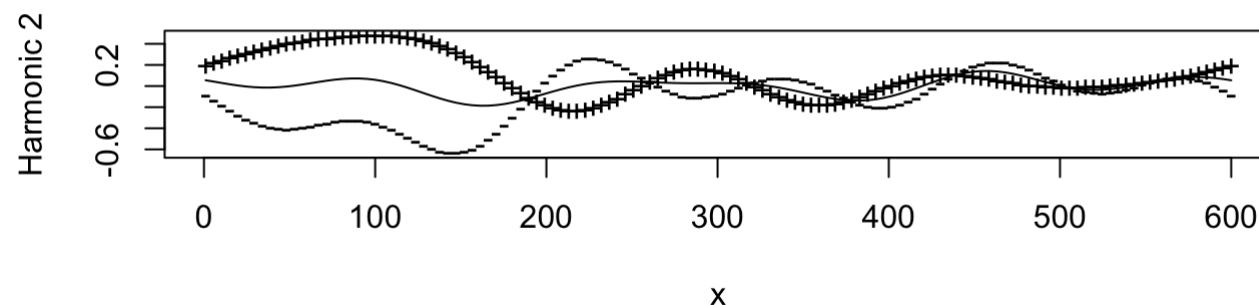
## PD-placebo, Node, 22



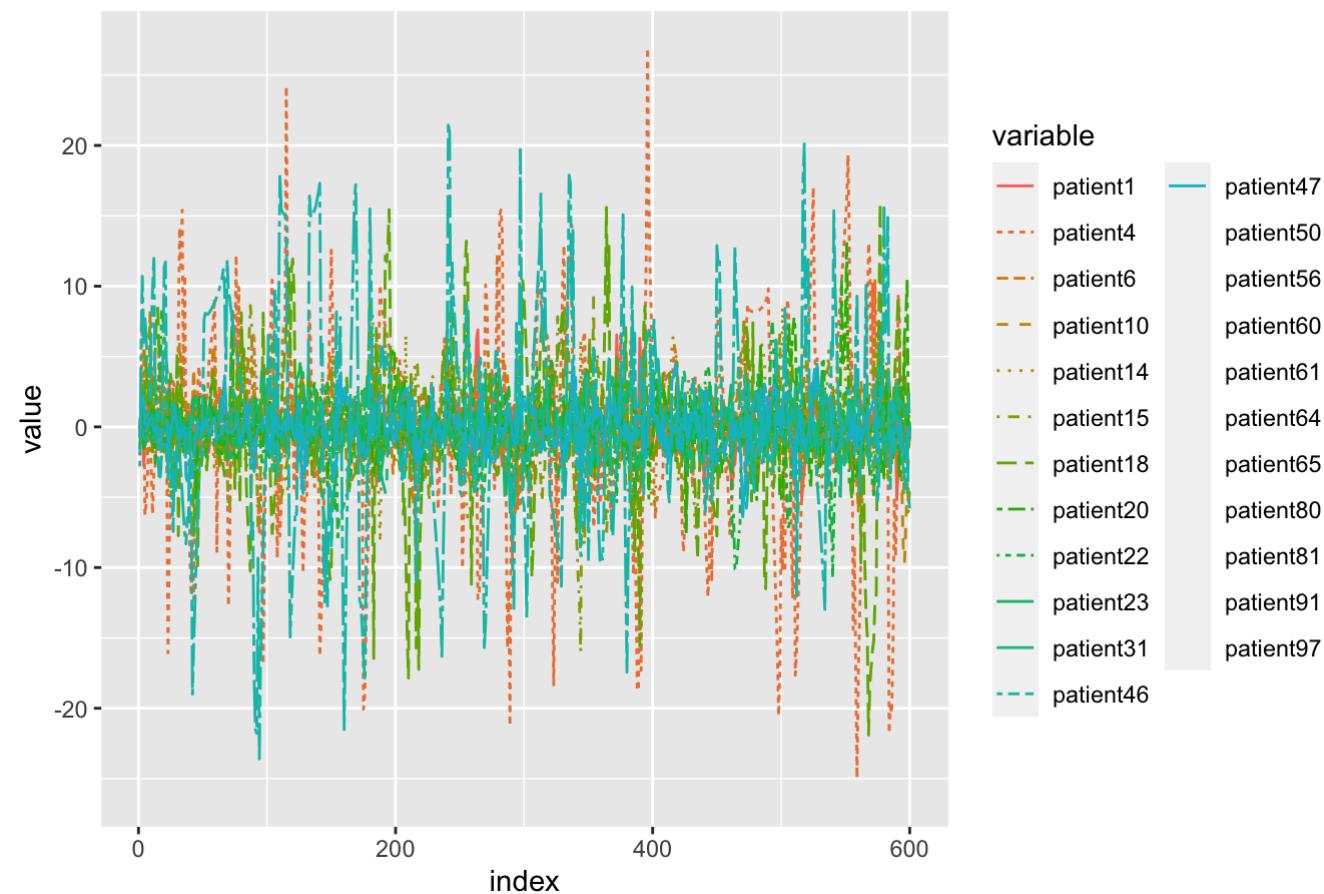
**PCA function 1 (Percentage of variability 34.3 )****PCA function 2 (Percentage of variability 21.3 )**

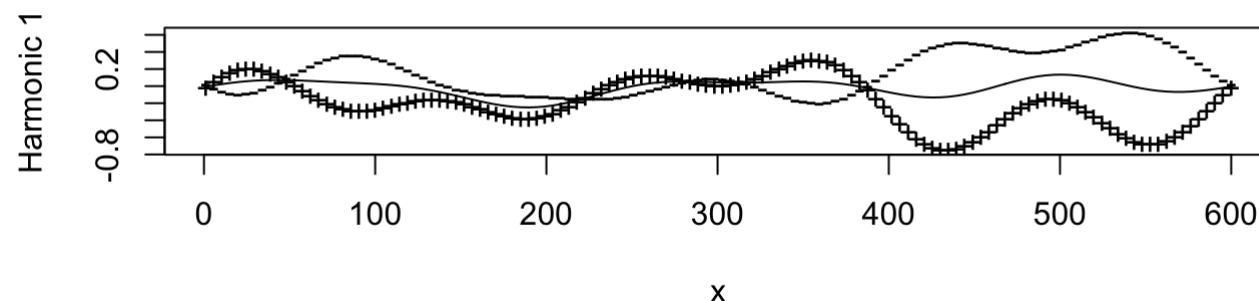
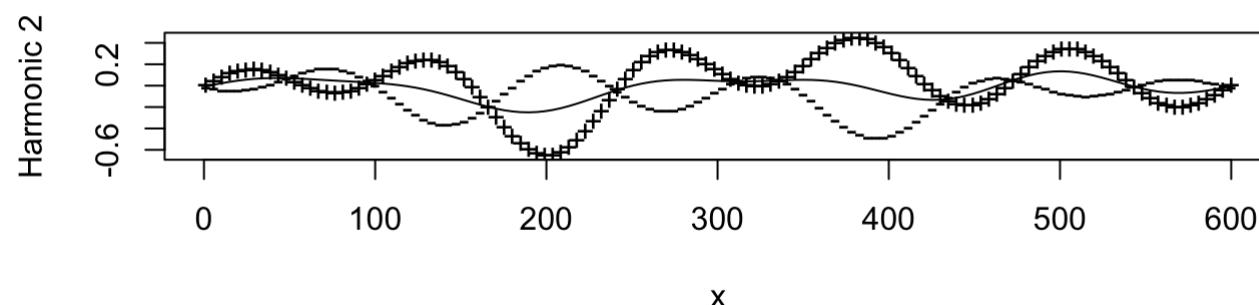
## PD-placebo, Node, 23



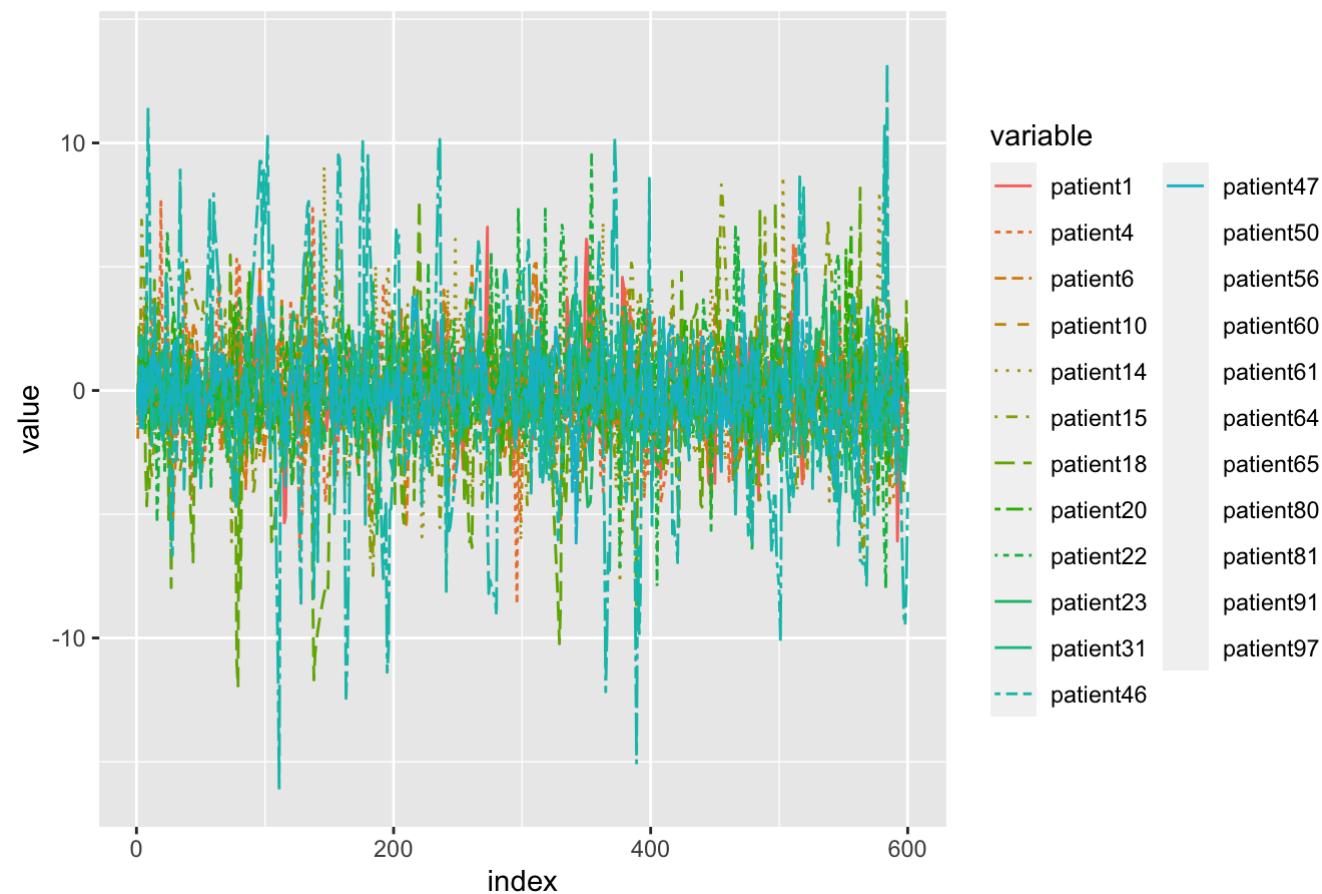
**PCA function 1 (Percentage of variability 33.3 )****PCA function 2 (Percentage of variability 30.2 )**

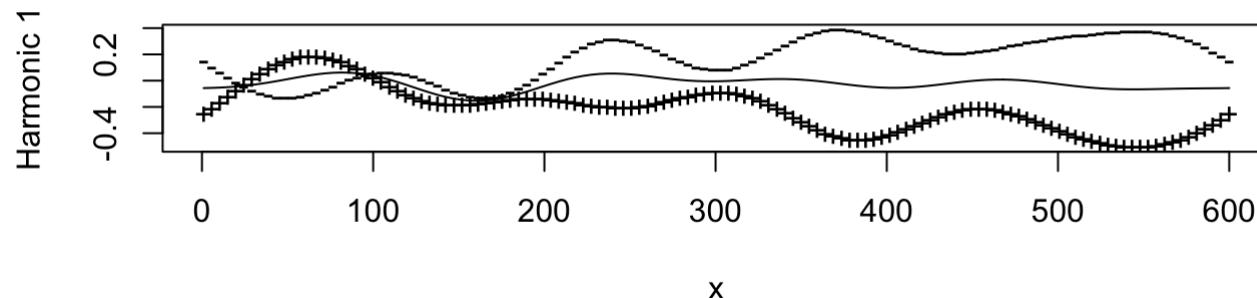
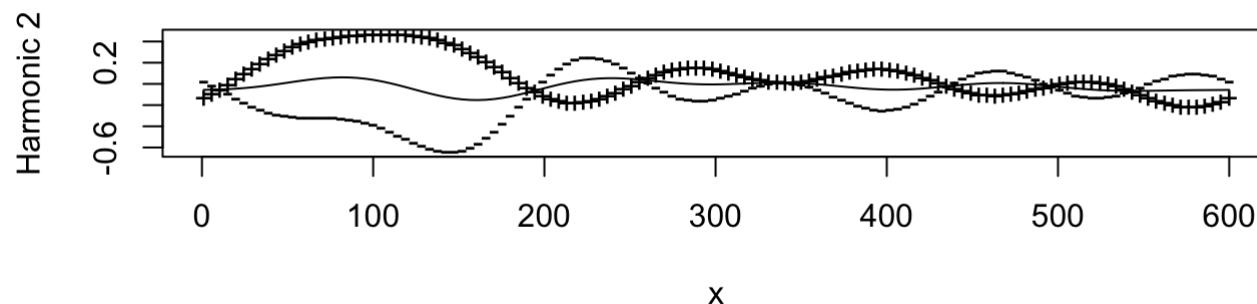
## PD-placebo, Node, 24



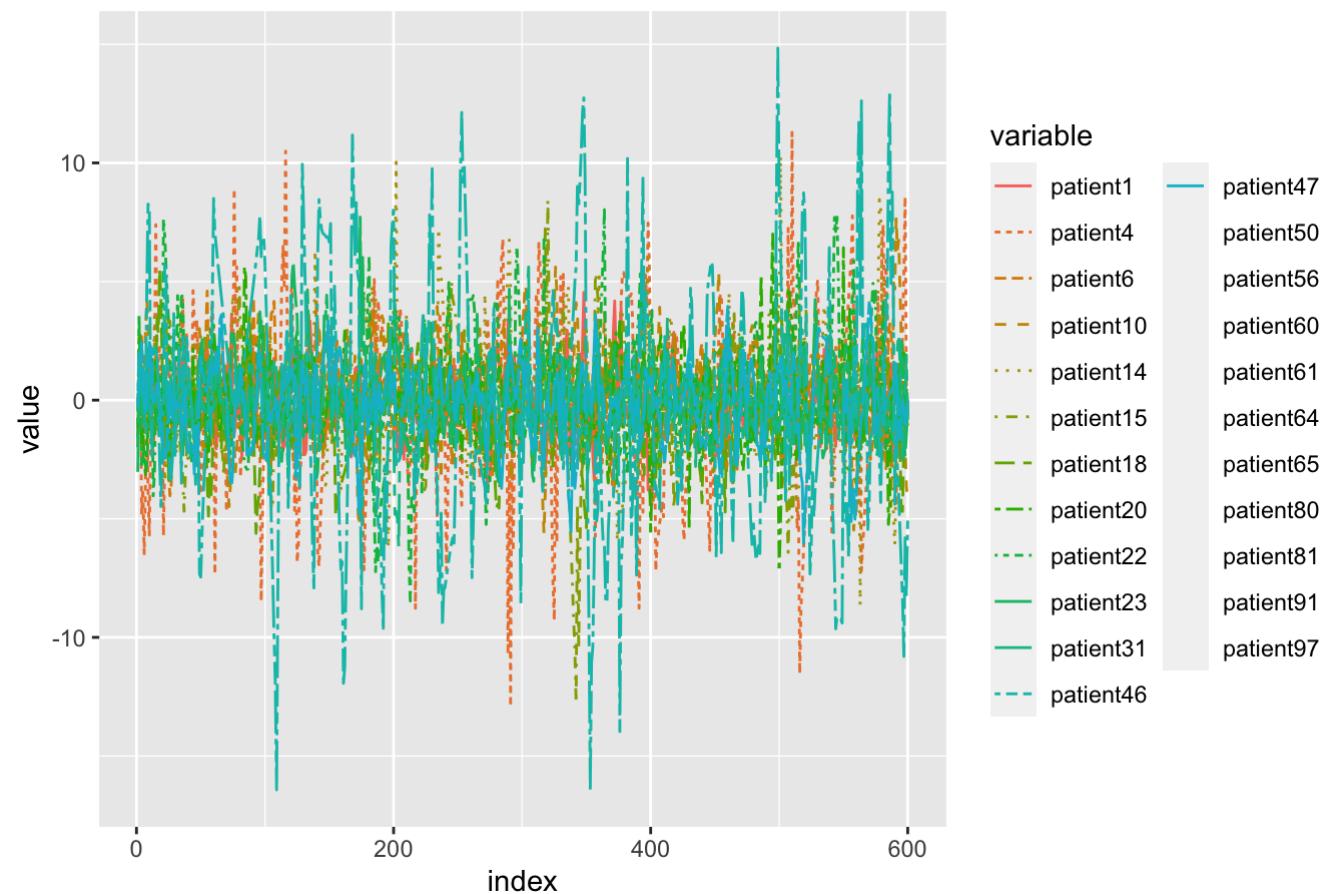
**PCA function 1 (Percentage of variability 37.7 )****PCA function 2 (Percentage of variability 17.8 )**

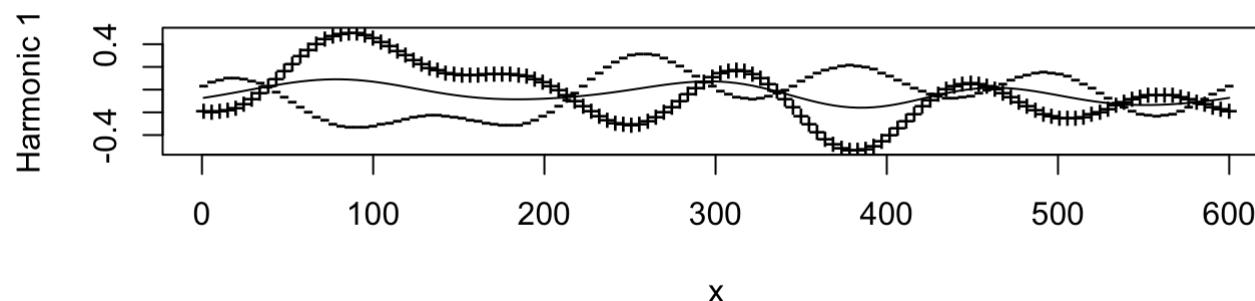
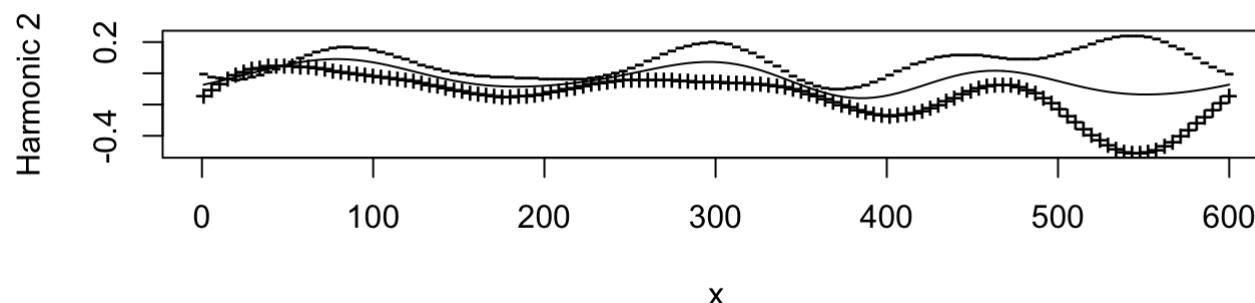
## PD-placebo, Node, 25



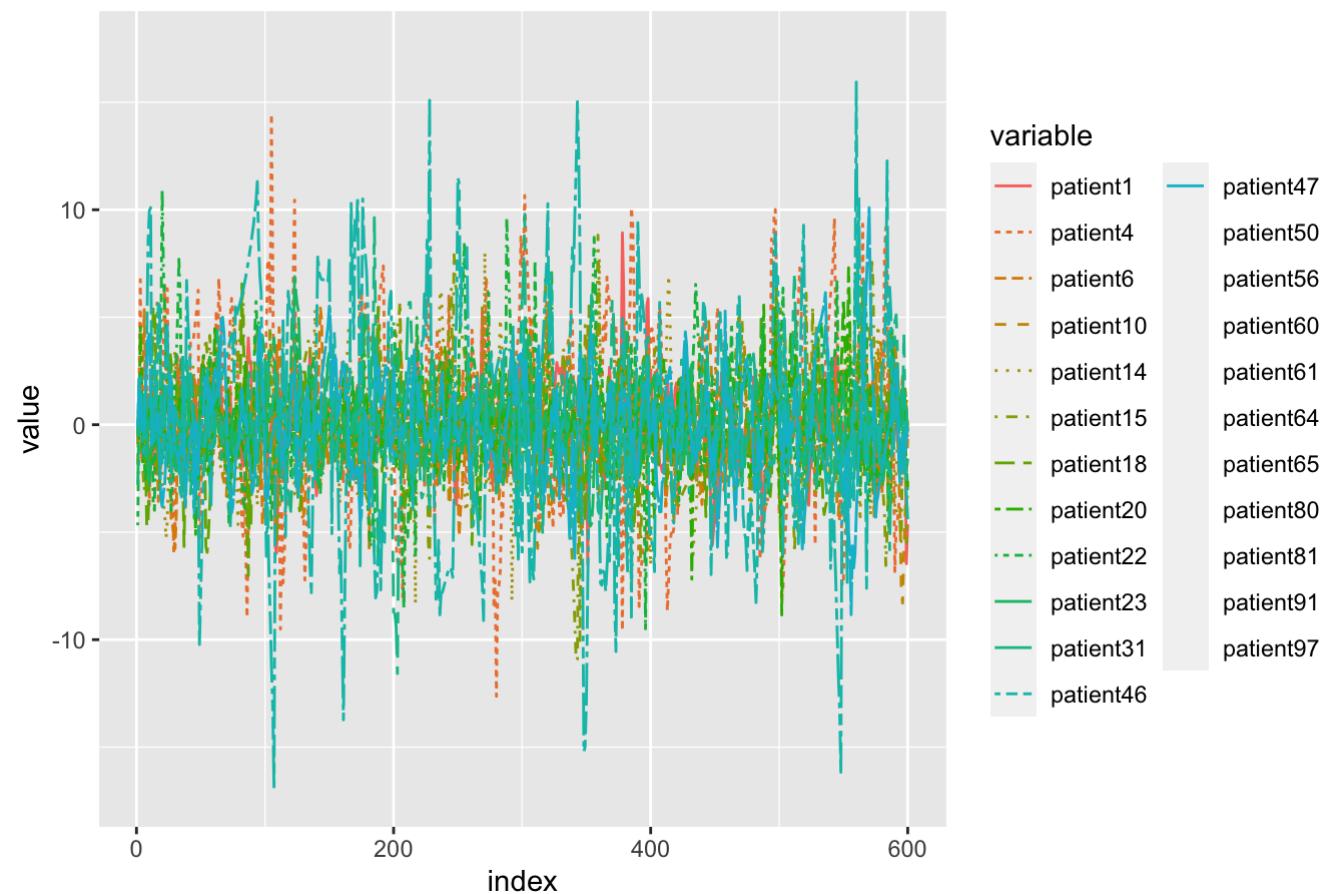
**PCA function 1 (Percentage of variability 33.1 )****PCA function 2 (Percentage of variability 27.5 )**

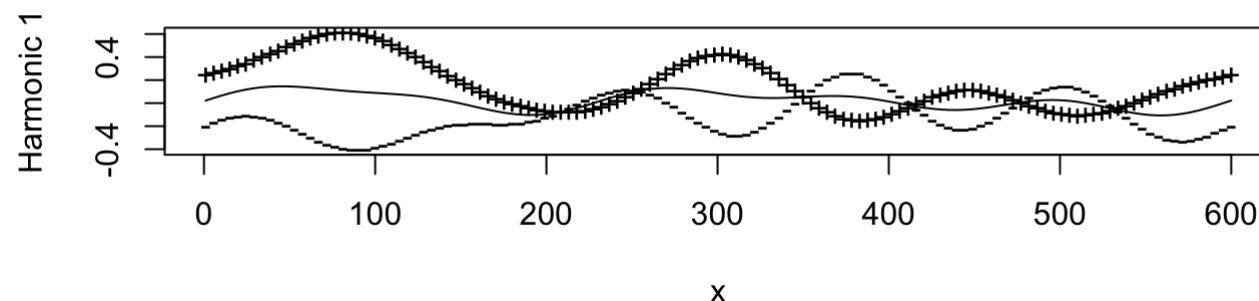
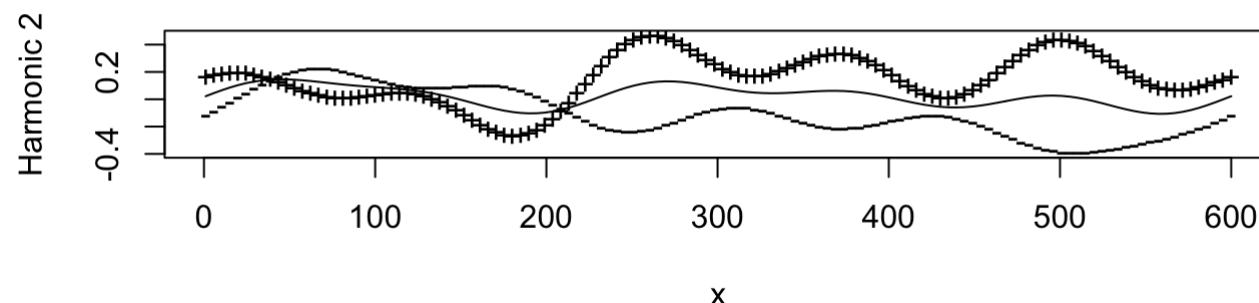
## PD-placebo, Node, 26



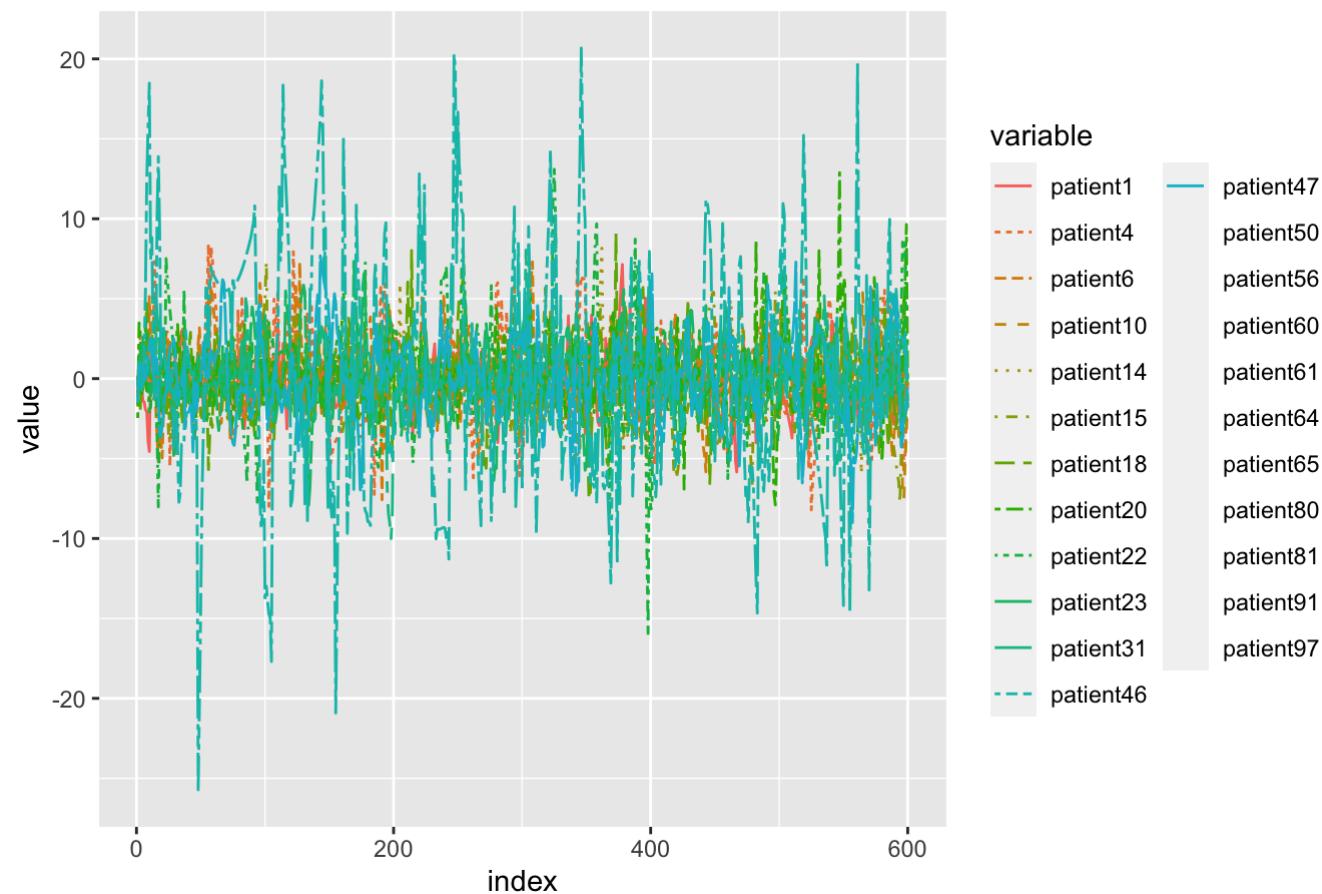
**PCA function 1 (Percentage of variability 31.2 )****PCA function 2 (Percentage of variability 22.7 )**

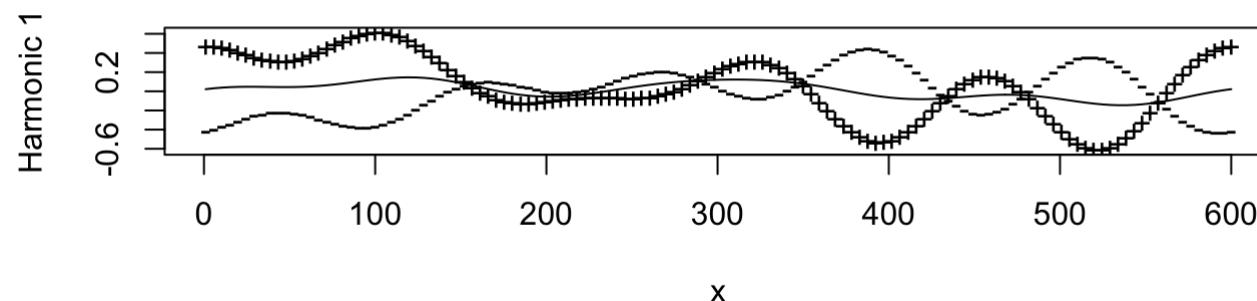
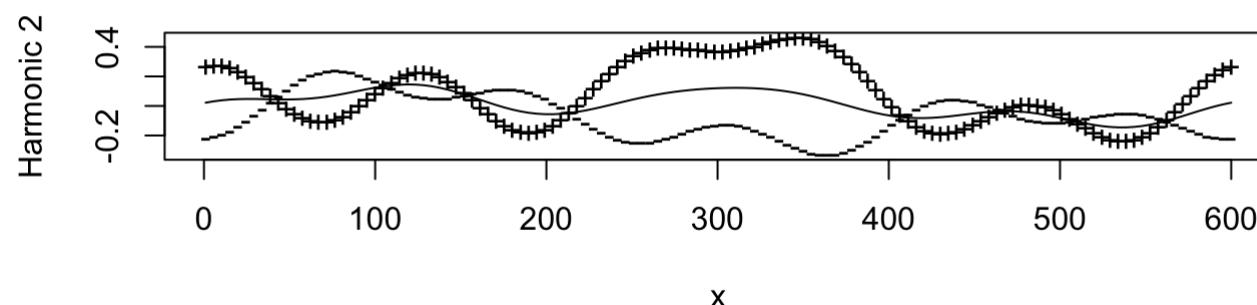
## PD-placebo, Node, 27



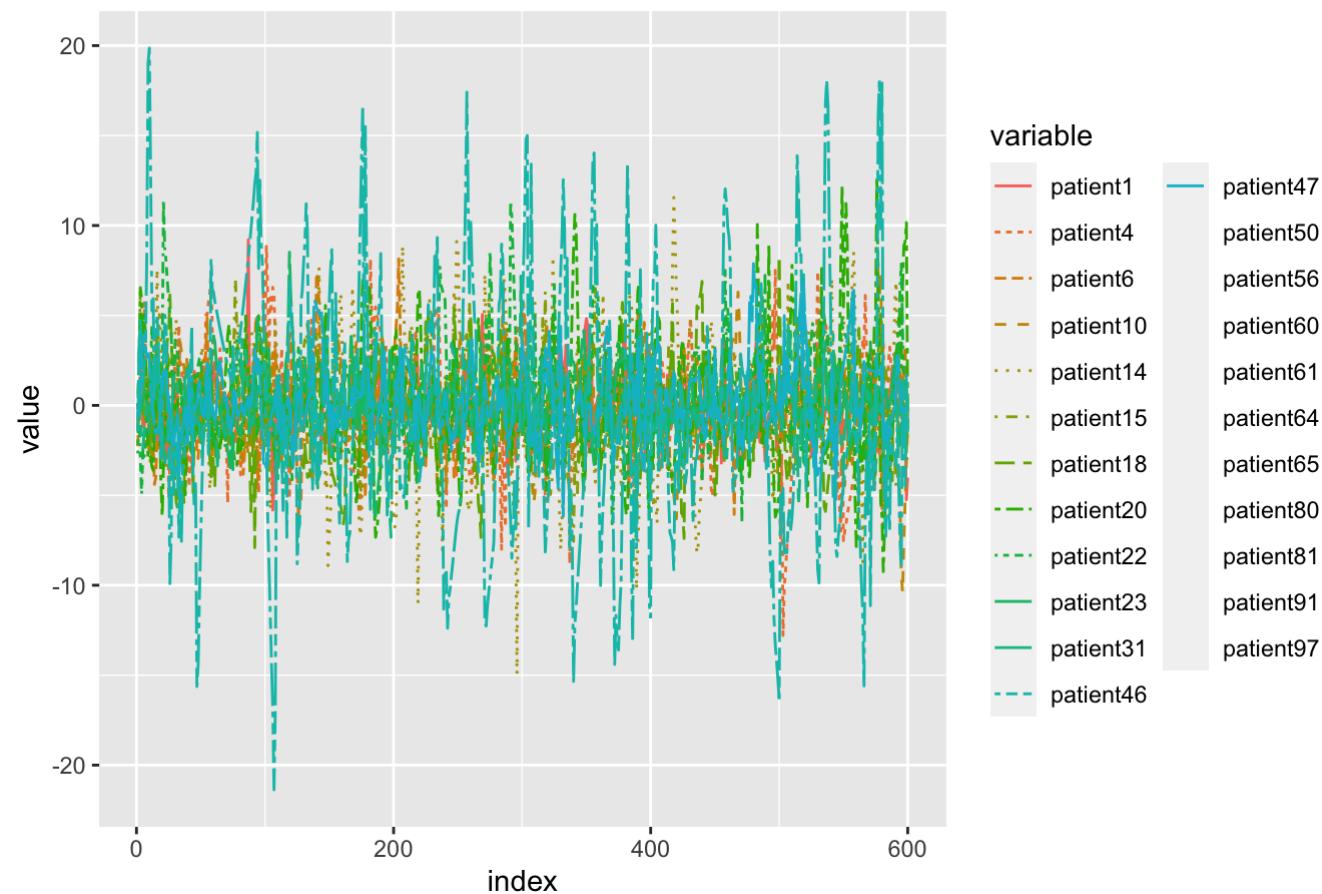
**PCA function 1 (Percentage of variability 26.8 )****PCA function 2 (Percentage of variability 24.9 )**

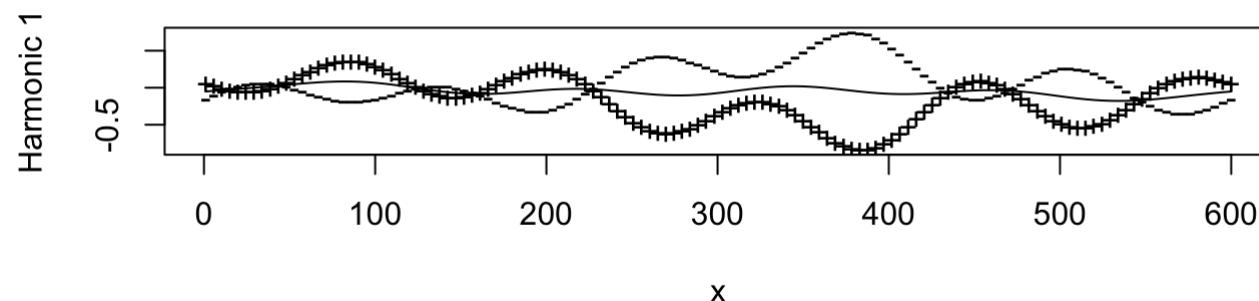
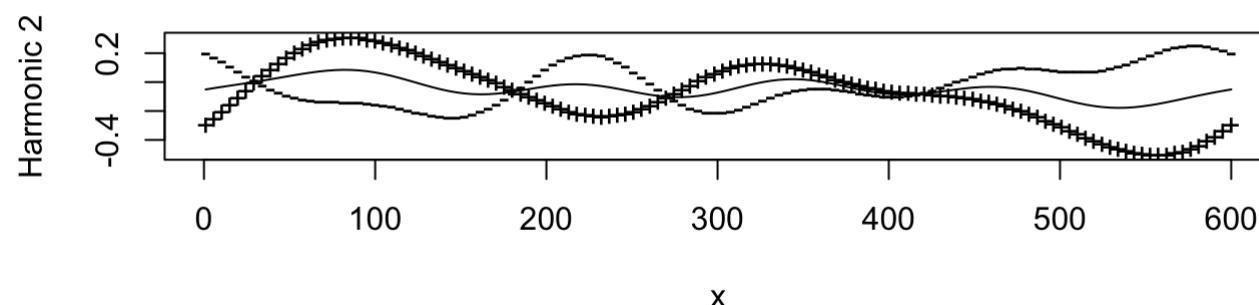
## PD-placebo, Node, 28



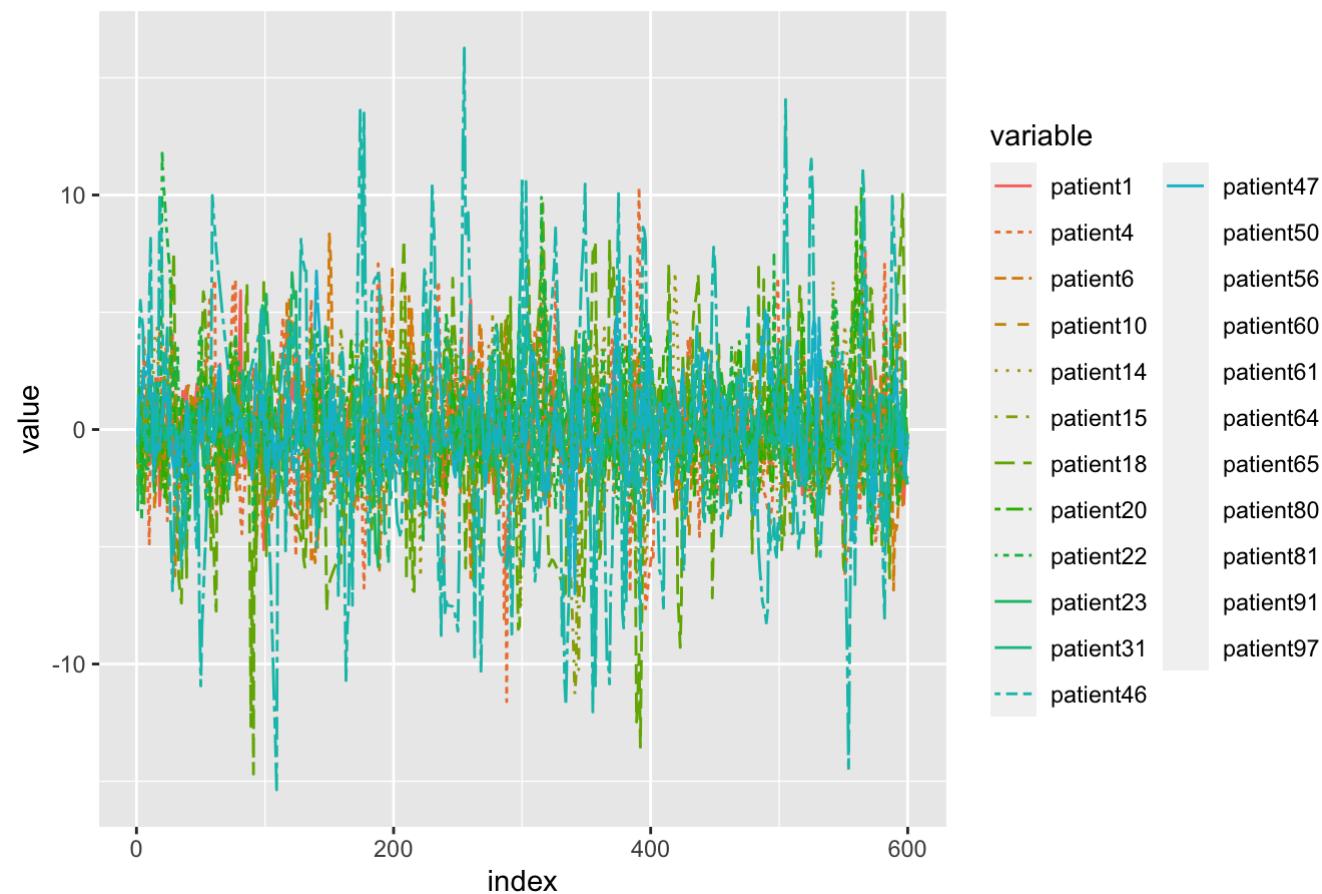
**PCA function 1 (Percentage of variability 43.9 )****PCA function 2 (Percentage of variability 18.8 )**

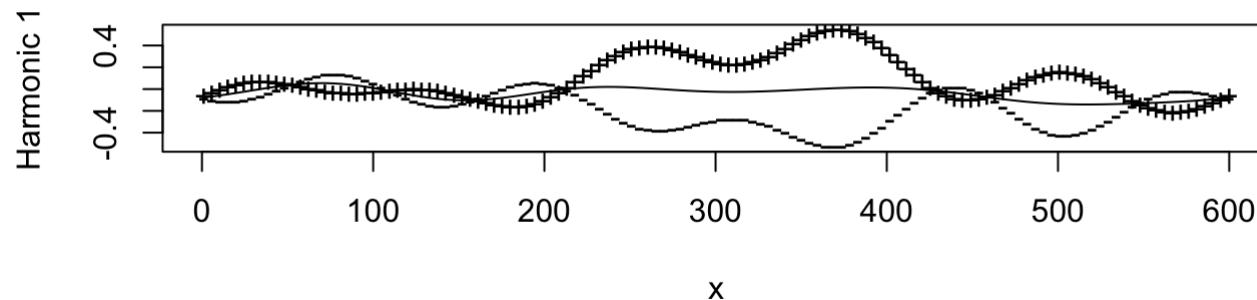
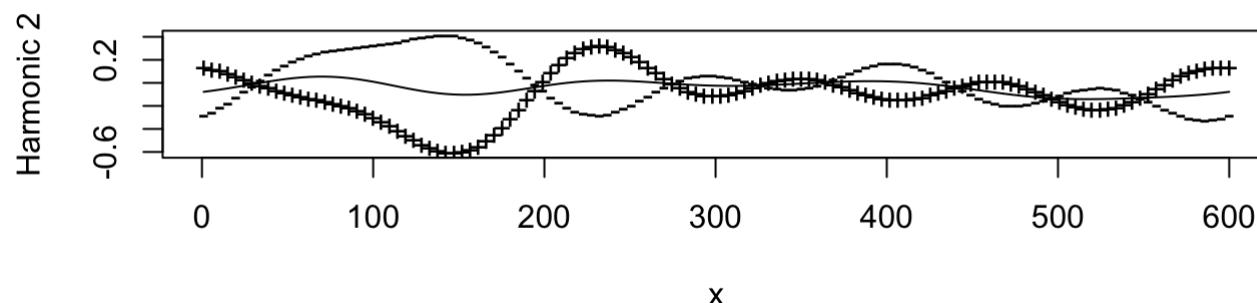
## PD-placebo, Node, 29



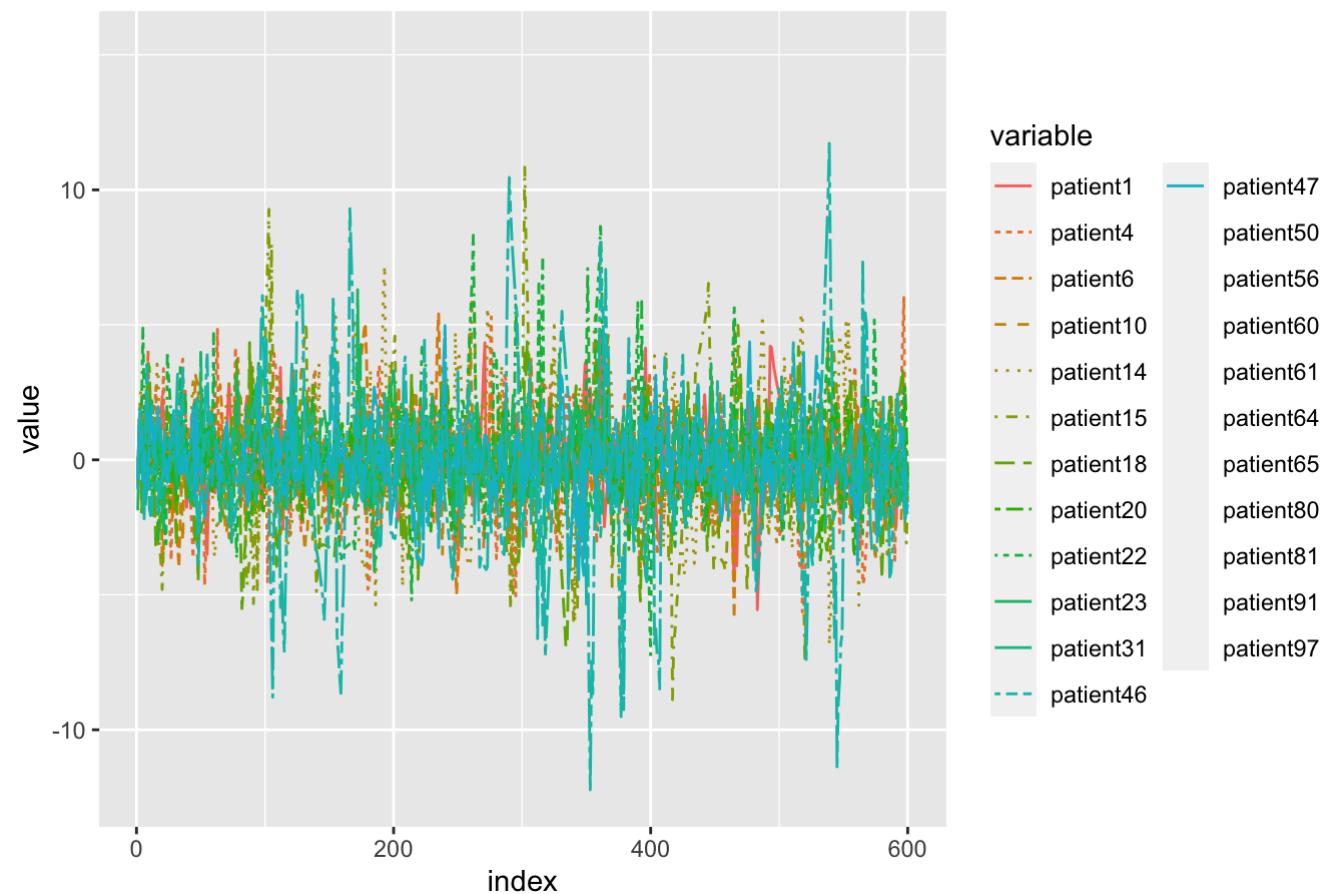
**PCA function 1 (Percentage of variability 34.7 )****PCA function 2 (Percentage of variability 21 )**

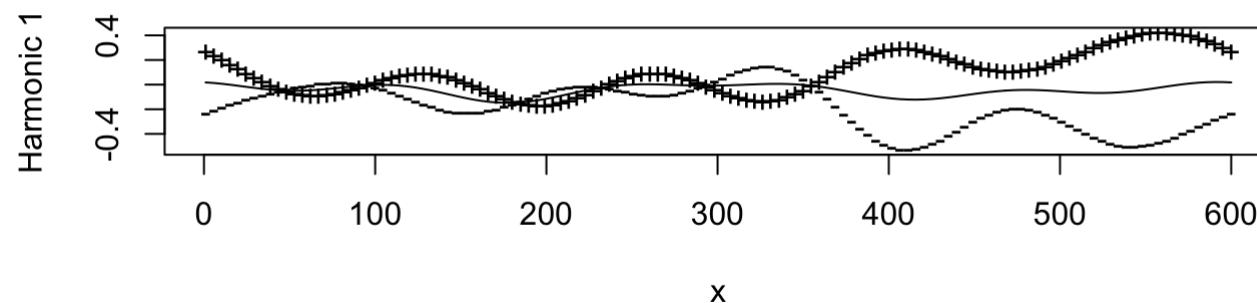
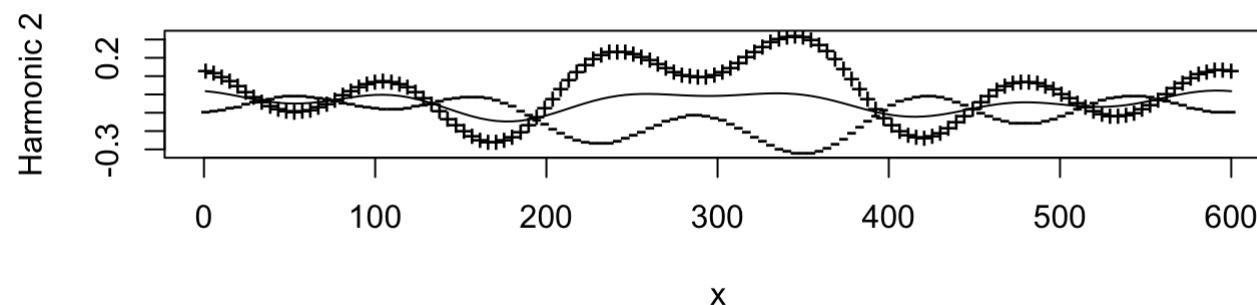
## PD-placebo, Node, 30



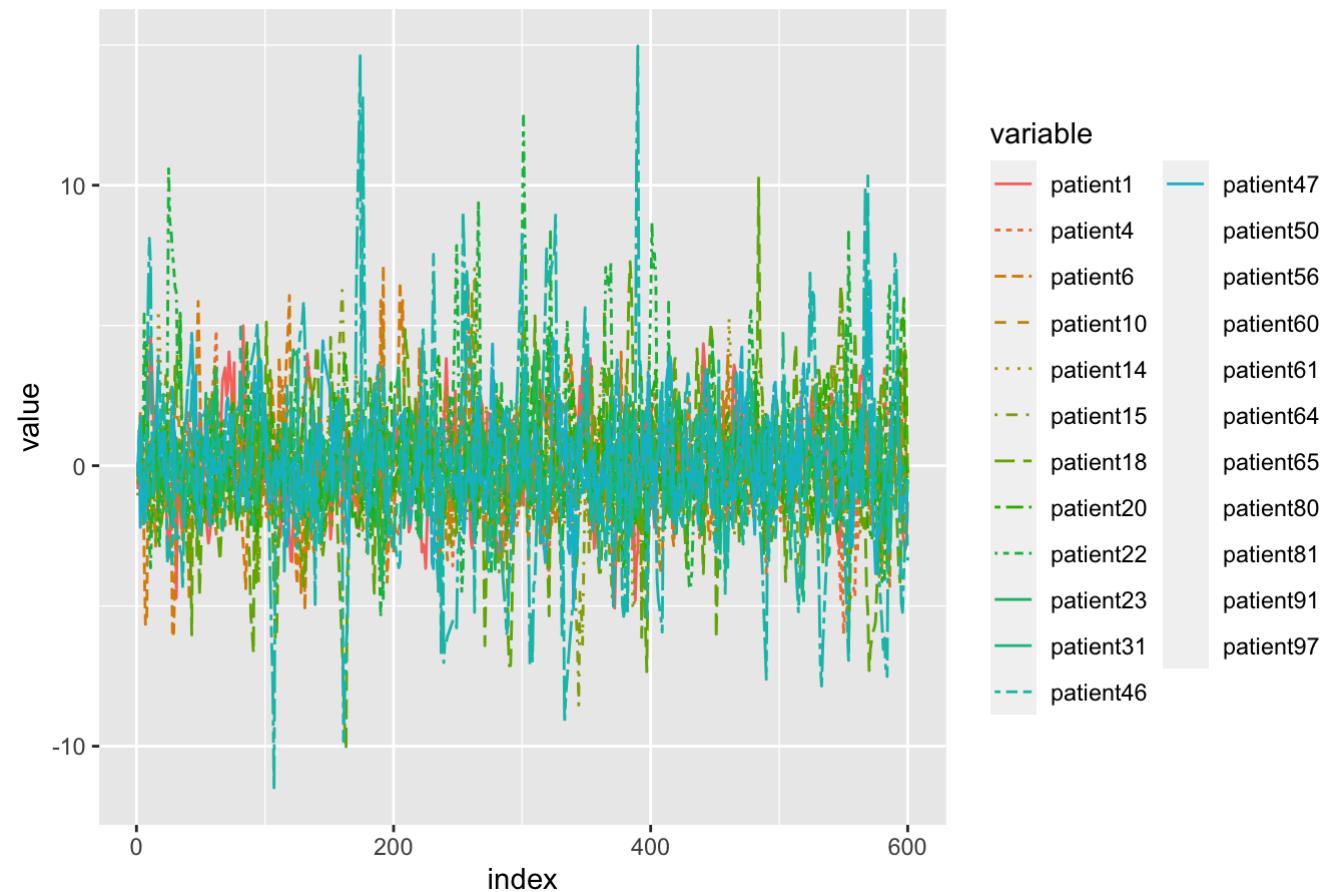
**PCA function 1 (Percentage of variability 32 )****PCA function 2 (Percentage of variability 26.3 )**

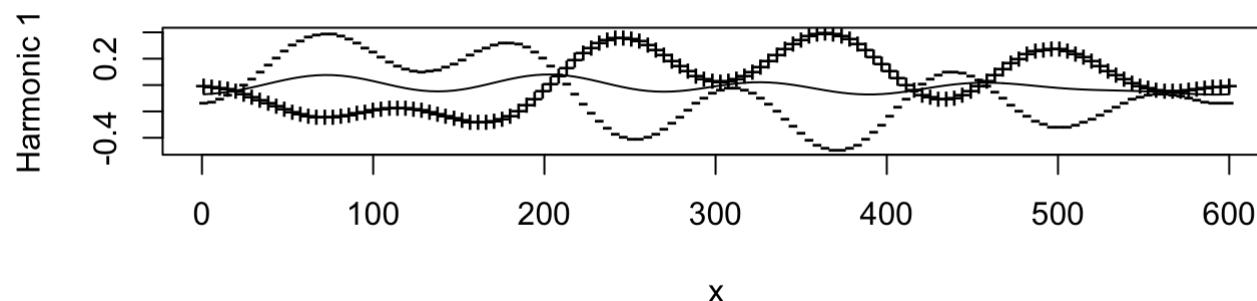
## PD-placebo, Node, 31



**PCA function 1 (Percentage of variability 39.9 )****PCA function 2 (Percentage of variability 23.8 )**

## PD-placebo, Node, 32



**PCA function 1 (Percentage of variability 31.8 )****PCA function 2 (Percentage of variability 30.2 )**