

Correlation coefficient

To obtain a measure of fit, the correlation coefficient (r) can be computed with the formula

$$r^2 = \frac{\left[\sum_{n=1}^{n=N} x(n)y(n) - N\bar{x}\bar{y} \right]^2}{\left[\sum_{n=1}^{n=N} x^2(n) - N\bar{x}^2 \right] \left[\sum_{n=1}^{n=N} y^2(n) - N\bar{y}^2 \right]}$$

where N is the number of samples of x or y , x represents the predicted respiratory airflow signal and y represents the spirometer airflow signal. Also, \bar{x} is the mean of x and \bar{y} is the mean of y .

Root mean square error (RMSE)

The formula of mean squared error (MSE) is

$$MSE = SS_{err}/n$$

where SS_{err} is called the residual sum of squares. It is a measure of the variability in y (spirometer signal) remaining after regressor x has been considered. It's formula is

$$SS_{err} = \sum_i (y_i - f_i)^2$$

where f_i is the predicted respiratory airflow signal.

The root mean square error (RMSE) is a square root of MSE. It indicates the absolute fit of the model to the data, how close the observed data points are to the model's predicted values.