Outcome Measure
10: OUTCOME MEASURE:

The primary outcome for this study was to measure sub maximal exercise lactate and its recovery rate in patients of COPD as well as in age matched group of normal individuals. They were recruited in consecutive order: They had to be considered clinically stable without a history of any kind of infection or exacerbation and without changes in their medication during the last 3-4 week before the commencement of the test. We have excluded the patients whose resting SpO₂ was lower than 85%.

Initial baseline data were recorded while all the patients were attached in the department. They were introduced with the physiotherapist, disease process, pulmonary function test machine, methods & methodology, and equipments within half an hour. All participants were properly demonstrated and instructed about PFT machine. They were instructed to sit comfortably on the chair, and mouth piece was given to them and nose clip was kept on. After that they were instructed to do forceful expiration followed by forceful inspiration without any pause in between this cycle. Five to ten minutes rest was given after the PFT test was performed.

After that subjects were asked to perform incremental exercise test on an electronic cycle ergometer. First 1 minute was given for warming up and getting acquainted with machine. After 1 minute of cycling workload was increased by applying more resistance at wheel (by tightening the knob of resistance) at every 60 seconds till the end of 5 minute. At every minute exertion level was asked as per the chart of PRE (perceived rate of exertion) –Figure 35, at the end of test again the level of exertion was asked to each individual and the score was measured for each patient As well as for normal individual in the control group. Most of the patients and normal individuals PRE score was 13 to 17.
Figure 35: Perceived rate of exertion scale/Borg scale

Lactate level was measured with the instrument known as lactometer, before the exercise, immediately after the test, after 15 and 30 minutes of test.

The method of using lactometer (Lactate Plus):

Lactate Plus (L+, Nova Biomedical®-USA) uses an electrochemical lactate oxidase biosensor for the measurement of lactate in whole blood. The reliability and accuracy of lactate plus was checked with the laboratory based analyzer, it was good compared to the lactate pro instrument \(^{(108)}\) \(^{(101)}\).

A blood sample of 0.7 µL is required: sample analysis time is 11 seconds. Test strips used with the L+ do not require calibration codes or specific calibration strips. The L+ displayed good reliability and accuracy when compared to a laboratory based analyzer \(^{(109)}\).
For measurement of lactate middle finger was chosen and distal phalanx was cleaned properly with spirit and cotton. After that clinical lancet was used to prick the finger and blood was taken on strip and that strip was kept in lactometer instrument for at least 10-11 seconds till the value of lactate was shown on the display. Same way immediately after exercise, after 15 and 30 minutes procedure was done.