

## Gender Differences and Pulmonary Function Tests

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Accurate measurement of lung function is important from academic, clinical and industrial point of view. In the academic field, they provides(1) basic physiologic knowledge of pulmonary function in healthy men as affected by age, sex, race, physical status, (2) information about pathophysiology of cardiopulmonary disease and give clinico-pathological correlation, are used as physical fitness test (3) good scope for research in respiratory medicine.

In clinical field, they aid (1) early detection, diagnosis and differential diagnosis of the disease,(2) provide guidance for management and therapy of various cardiopulmonary diseases and(3) aid in preoperative evaluation of patients suspected of cardiopulmonary diseases which prevent surgical and anesthetic risks.

While in industrial field, they contribute towards the health of industrial workers, in the assessment of rehabilitation claims and are essential in epidemiological surveys on occupational pulmonary diseases.[1,2]

Parameters of PFT are among very few parameters which reflect early damage to respiratory system. Infact in majority of cases these parameters may get affected in predeceased state also. These parameters can also be used to monitor progression and improvement in disease conditions.[2,3]

With the improvement in technology, particularly in the field of computer hardware and software, pulmonary function tests have attained greater speed, accuracy and reproducibility. The major limitation of PFTs

are various physiological factors which interfere with the values of PFTs and thus making interpretation of results more troublesome which sometimes can even result in misdiagnosis. Thus it becomes atmost important to have a sound knowledge of various physiological factors that affect PFTs.

Though it is very well known that age, height, weight, body mass index ( BMI) affects PFTs considerably; very limited data is available in literature on effect of gender differences on PFTs particularly of Indian population. Considering the current scenario, the present study was undertaken to find out PFT values of Indian males and females and to analyze whether any relationship exist between them.

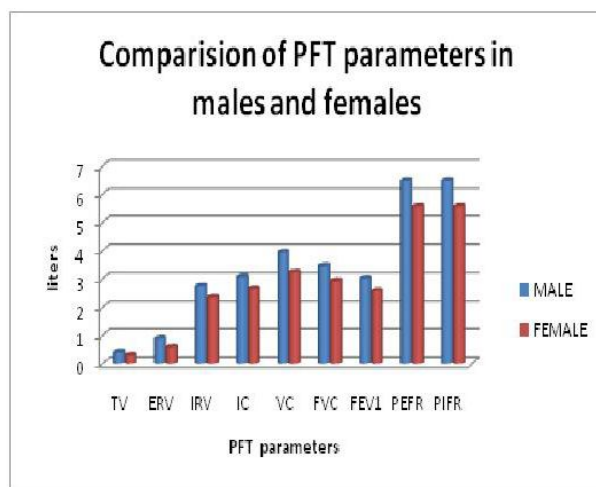
The present study was an cross sectional study conducted in 100 males and 100 females of similar age group, height, weight and BMI. It was confirmed that none of the participant is or was having any major respiratory illness, also none of the participant were engaged in any strenuous physical activity or any sports. The entire participants were having similar physical activity per day. Inform consent was taken from all the participant after explaining them the study protocol. PFT parameters were recorded by RMS Helios 702 spirometer as per ATS ERS guidelines.[6,7] The parameters recorded were TV, ERV, IRV, IC, VC, FVE1, FVC, PEFr, PIFR.

### Results

We found all the PFT parameters are lower

**Table 1: Comparison of PFT Parameters in Males and Females**

| Pulmonary function parameters | Male Mean $\pm$ S.D. | Female Mean $\pm$ S.D. |
|-------------------------------|----------------------|------------------------|
| TV (in Lit.)                  | 0.40 $\pm$ 0.03      | 0.30 $\pm$ 0.02        |
| ERV (in Lit.)                 | 0.90 $\pm$ 0.14      | 0.59 $\pm$ 0.05        |
| IRV (in Lit.)                 | 2.75 $\pm$ 0.22      | 2.35 $\pm$ 0.04        |
| IC (in Lit.)                  | 3.07 $\pm$ 0.36      | 2.66 $\pm$ 0.08        |
| VC (in Lit.)                  | 3.95 $\pm$ 0.51      | 3.25 $\pm$ 0.1         |
| MVV (Lit/min.)                | 96.16 $\pm$ 6.86     | 85.16 $\pm$ 3.81       |
| FVC (in Lit)                  | 3.47 $\pm$ 0.36      | 2.93 $\pm$ 0.27        |
| FEV <sub>1</sub> (in Lit.)    | 3.01 $\pm$ 0.35      | 2.59 $\pm$ 0.39        |
| FEV <sub>1</sub> /FVC (in %)  | 86.40 $\pm$ 4.53     | 87.09 $\pm$ 5.25       |
| PEFR (Lit/sec.)               | 6.47 $\pm$ 1.43      | 5.57 $\pm$ 0.96        |
| PIFR (Lit/sec.)               | 6.47 $\pm$ 1.43      | 5.57 $\pm$ 0.96        |



in females as compare to their male counterpart. (Table 1, figure 1)

### Discussion and Conclusion

All the PFT values were more in males as compared to their female counterpart. These

may be attributed to various factors such as more strength of respiratory muscles and abdomino thoracic type of respiration. The possible role of female sex hormone estrogen and progesterone is still questionable.[6] PFTs can be very useful tool in academic, clinical and industrial field. But while interpreting the results various factors that affect PFTs should also be keep in mind otherwise these could result in misinterpretation of results. Thus PFTs when used prejudiciously and correctly along with intelligent interpretation, it can be a investigation of choice for diagnosing disorders affecting respiratory system.

### References

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