The Measurement of Mean Airflow Rate in Normals *

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The measurement of air flow has gained importance in recent years in screening, assessing, and treating voice disorders.

The study was conducted to find out the possibilities of (i) predicting vital capacity based on height and weight of an indivisual, and (ii) to predict mean air flow rate based on vital capacity and maximum phonation duration and to validate the methods.

The experiment was carried out in two parts. In Part 1, 30 normal males, age ranging from 18 to 29, with a mean age of 21 .47 years and 30 normal females, age ranging from 17 to 22, with a mean age of 20.8 years served as subjects. The vital capacity was determined using expirograph. Based on their height and weight, and vital capacity measured a ' nomogram ' was constructed for males and females separately.

The maximum phonation duration was measured for each subject. Based on maximum phonation duration and vital capacity, the phonation quotient was calculated for each individual. Then mean air flow rate for each subject was calculated using the formula

$$MFR = \frac{\text{Phonation volume}}{\text{Phonation time}} .$$

Further the mean air flow rate was **also** determined for each subject using the formula (MFR = 77 +236 PQ) given by Rau and Beckett (1984) for both males and females. The estimated and obtained mean airflow rates were compared.

In Part II of the experiment, 15 males age ranging from 19.5 to 30, with a mean age of 23.43 years, and 15 females age ranging from 18 to 24. with a mean age of 19.67 years served as subjects.

Based on the height and weight, the vital capacity was predicted for each subject (using nomograms derived in Part I of the experiment). Then correlation coefficients were found out between VC estimated and obtained for males and females separately. Further the phonation quotients were predicted based on the vital capacity (estimated) and maximum phonation duration (measured) for all the 30 subjects. The mean airflow rate was also estimated using the formula **MFR** = $77 - +236 PQ$ (which was indicated as mean flow rate estimated).

Then the vital capacity and mean airflow rates were determined for all the subjects using routine procedure *(i.e.,* using **expiro**-graph) (which were indicated as **vital** capacity obtained and mean airflow rate obtained).

The phonation quotients were calculated using vital capacity (obtained) and maximum phonation duration. The phonation quotients (estimated - and obtained) were compared for each subject.

The mean air flow rates (obtained) were compared with the mean air flow rates (estimated) for all the subjects. Then correlation coefficients were found out between phonation quotient and mean air flow rate (estimated and obtained). The results indicated that there was no significant difference between vital capacity estimated and obtained for both males and females. There was also a high positive correlation between the estimated and obtained PQ and MFRs. These results indicate that the vital capacity can be predicted based on height and weight of an individual and it is possible to predict mean air flow rate based on vital capacity (estimated) and maximum phonation duration.

Recommendations

(1) Using same method the study can be carried out on larger population.

(2) This study can be repeated with different age groups.

(3) This study can be carried out on clinical population to find out the clinical utility of the method.