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Maximum Static Respiratory Pressure in Healthy School Going Children in Bangalore, India

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Introduction: The respiratory muscle strength assessment is vital for both clinical reasoning and respiratory system growth and development, in-turn are linked to changes in mechanical function of lungs in the life cycle. There are predicted normal values of respiratory muscle strength which is measured by PImax and PEmax provided in published literature for Caucasian, Brazilian, Canadian, Australian and Mexican population. The same however, are not appropriate in determining their normal values for Indian children because of the ethnic difference and large inter subject variations of PImax and PEmax values.

Objective: The objective of this study was to evaluate respiratory muscle strength in healthy school going children in Bangalore, India.

Design/Method: A cross-sectional study was conducted among healthy school going children between 8-12 years of age who attended government schools in the city of Bangalore. The participants who were born prematurely, had chronic respiratory, cardiologic and/or neurologic diseases, had acute respiratory disease during the three weeks prior to the assessment were excluded from the study. In total, 109 healthy children (78 boys and 31 girls) aged 9.51(1.23) years, meeting the inclusion criteria were included in the study after obtaining appropriate consent by parents and guardians.

Measures and instruments: Respiratory muscle strength (PImax and PEmax) was quantified by measuring maximum inspiratory and expiratory pressures (PImax and PEmax) and was evaluated using an MicroRPM according to a standardized American Thoracic Society/European Respiratory Society statement on respiratory muscle testing protocol. All the values were evaluated by a single investigator on the same day.

Statistical Analysis: The data were analysed using the descriptive analysis for the outcomes.

Results: The mean and standard deviation for body mass index was 17.06(3.70) kg/m2 and for waist hip ratio was 0.89(0.05). The mean and standard deviation for PImax value was 52.03(18.05) cmH2O and PEmax value was 55.60(19.20) cmH2O.

Conclusion: The PImax and PEmax values were significantly lower by mean of 20 cmH2O in Indian children when compared to Brazilian, Mexican and Australian population. Ethnicity has a strong influence on respiratory muscle strength values. Therefore, there arises the need to evaluate normative values for the assessment of respiratory muscle strength of Indian children.