



## Exercise Biochemistry Review

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### Applied Research on Enhancing Respiratory Muscle Strength of Synchronized Swimmers by Using Respiratory Muscle Trainer

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**Objective** In research to date, powerbreath training to be tested were useful to improve the athletics' ability for training the breathe muscles, by the way to optimizing the Breathing technique. To further improve the synchronize swimming athletes' powerbreath of Beijing, enhancing the athletics level and express ability of whole team, to succeed in the finals.

**Methods** Six synchronize swimming athletes were the subjects of our research, the training takes place after the strength training, two times per week, 10 times of five weeks. The training frequency were 24~32 per minutes. At this stages we tested the changes of the breathe muscle by use the CHEST H-101 and Powerbreath K3 before and after the training. All the data were analyzed using SPSS17.0 software.

**Results** The research results shows, training the breathe muscle by spirotiger is the useful training methods to improve the synchronize swimming athletes's powerbreath. By five weeks training, the synchronize swimming athletes' lung volume capacity were significantly increased from 4.38L to 4.54L after powerbreath training, the rate of the enhancing were 3.65%. FVC were significantly increased from 3.80L to 3.93L after powerbreath training, the rate of the enhancing were 2.89%. MVV were significantly increased from 122.2L/min to 127.1L/min, the rate of enhancing were 4.0%, the strength of inspiratory muscle were significantly increased from 110.6cmH<sub>2</sub>O to 125.6cmH<sub>2</sub>O, the flow of inspiratory muscle were significantly increased from 6.2L/S to 6.8L/S. All the data shows that the power of the breathe muscles were enhancing efficiency after five weeks systematic training, and the variation rate of individual research shows that there were difference between the individuals.

**Conclusions** After five weeks systematic breathe muscle training, FVC and MVV were significantly increased, shows the synchronize swimming athletes' respiration muscle strength were significantly increased; the index were significantly increased of the strength of inspiratory muscle also shows that the breath muscle training were efficiency, and the training plan is helpful to enhancing the synchronize swimming athletes' powerbreath.