

## CHANGES IN RESPIRATORY FUNCTIONS DURING SOCCER GAME IN PHYSICAL EDUCATION CLASSES WITH PAST MEDICAL HISTORIES OF ASTHMA.

Takagi, Y. 1), Nakase, M. 2), Hayashi, S. 3) & Onodera, S. 4)

- 1) Graduate school, Kawasaki University of Medical Welfare, Japan
- 2) Kagawa National College of Technology, Japan
- 3) Graduate school, Hiroshima University, Japan
- 4) Kawasaki University of Medical Welfare, Japan

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### **Introduction**

The purpose of this study was to investigate changes in respiratory functions during soccer game in PE classes with past medical histories of asthma.

### **Method**

9 Japanese healthy males (age:  $18.3 \pm 0.5$  years) with a past medical history of asthma (=Asthma group) and 9 healthy controls (=Non-asthma group age:  $18.6 \pm 0.5$  years) volunteered to play the soccer game (15 minutes) in PE classes, in December 2010. Changes of participant's FEV%, PEF and SpO<sub>2</sub> were measured during rest time and after a lapse of 5 minutes of game over. Atmospheric temperature was  $6.8 \pm 0.4$  °C.

### **Result&Discussion**

There were no significant changes in measured value at rest between groups. Significant reductions in FEV% ( $78 \pm 9$  %), PEF ( $427 \pm 95$  L / min) and SpO<sub>2</sub> ( $95 \pm 1$  %) were observed after the game in Asthma group ( $p < 0.05$ ). No significant differences were found on them (FEV%:  $87 \pm 6$  %, PEF:  $531 \pm 82$  L / min, SpO<sub>2</sub>:  $97 \pm 1$  %) in Non-asthma group. Asthma group demonstrated lower each measurement after the game as compared with the values of Non-asthma group. Based on the results, stress on respiratory functions indicated greater after the soccer game in Asthma group. It was considered that caused significant decrease in FEV%, PEF and SpO<sub>2</sub> were enhanced airway reactivity by synergistic effects of increase of oral-breathing from high-intensity intermittent exercise and cold temperature. Though conditions in Asthma group after the game indicates mild asthma in clinical estimation, it was safety range of exercise.

### **Conclusion**

These data suggest that stress on respiratory functions indicated greater when playing a soccer game for 15 minutes in physical education classes under cold environment condition in individuals with past medical histories of asthma.