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Investigation of the Impact of Internet Gaming Disorder on Respiratory Functions and Respiratory Muscle Strength in Children and Adolescents: A Pilot Study

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Objectives: "Internet gaming disorder" (IGD) is defined as the pattern of lost a significant relationship, job or educational opportunities due to participation in internet games, along with excessive and prolonged gaming and withdrawal, tolerance, and loss of control. When it is thought that typical internet addicts spend about 40-80 hours per week on the computer and may stay at the computer for 20 hours a day without interruption, it is inevitable that the cardiorespiratory function is negatively impressed due to physical inactivity. It is the fact that, with the determination of the problems that may arise, early precautions can be taken in order to protect the respiratory functions of children and adolescents with IGD. Thus, we aimed to evaluate the impact of IGD on respiratory functions and respiratory muscle strength.

Methods: Fifteen voluntary male children and adolescents diagnosed as IGD were included (mean age: 14.42±3.27 years; BMI: 20.89±2.62 kg/m²). Respiratory functions were measured by a spirometer following the ATS and ERS guidelines using the Spirobank II (Medical International Research srl Rome, Italy). Respiratory muscle strength was assessed by maximum inspiratory pressure (MIP) and maximum expiratory pressure (MEP) which were measured with the subject seated, wearing a nose clip and with a plastic mouthpiece by a Micro Medical MicroRPM® (Carefusion Micromedical, Micro RPM, USA). The duration of time spent playing internet gaming a day was examined. Spearman correlation was used to explore the strength of relationship between independent variables; p<0.05 was considered statistically significant.

Results: The mean duration of time spent playing internet gaming was 8.45±4.36 hours a day. The mean value of FEV1 and FVC and FEV1/FVC ratio was 3.55±0.78(L), 3.24±0.60(L) and 93.27±4.68%, respectively. The average MIP and MEP value among participants was 72.20±22.34 and 75.73±18.29 cmH₂O. There is no correlation between duration of time spent playing the internet gaming and FVC (rho=-0.17, p=0.63), FEV1 (rho=-0.09, p=0.79), FEV1/FVC (rho=0.27, p=0.44), and MIP (rho=0.38, p=0.27). However, a significant correlation was found between the duration of time spent playing internet gaming and MEP (rho=0.67, p=0.03).

Conclusion: According to the results obtained from a small number of participants, respiratory function and respiratory muscle strength decreased in children and adolescents with IGD. In addition, the decrease in maximal expiratory muscle strength was associated with computer use time. In order to support the findings of the study, we continue our scientific studies in the context of the need for further studies with a larger sample group.

Keywords: Children, internet gaming disorder, maximal expiratory pressure, respiratory function, respiratory pressures