ABSTRACT

Cigarette smoking is a major public health concern that negatively affects cardiopulmonary function and autonomic regulation. Among female university students, increasing smoking trends may lead to reduced aerobic capacity and altered heart rate variability (HRV), indicating early cardiovascular risk. However, limited research has examined both parameters together in this population.

A comparative cross-sectional study will be conducted among 33 female university students aged 18–25 years, divided into smokers (n=12) and non-smokers (n=21). Aerobic capacity will be assessed using the 20-meter shuttle run test to estimate VO_2 max. HRV parameters (RMSSD, SDNN, LF, HF, LF/HF ratio) will be recorded at rest and post-exercise using a pulse oximeter. Statistical analysis will be performed using SPSS, applying appropriate tests such as independent t-test, paired t-test, and correlation analysis.

It is expected that smokers will demonstrate significantly lower VO_2 max and reduced HRV parameters compared to non-smokers. Increased LF/HF ratio and decreased RMSSD and HF values may indicate sympathetic dominance and reduced parasympathetic activity in smokers.

Cigarette smoking is likely to impair aerobic capacity and autonomic function in female university students. Early detection of these changes can help physiotherapists design preventive strategies and promote smoking cessation to reduce long-term cardiovascular risks.

Keywords: VO_2 max, Heart Rate Variability (HRV), Smoking, Aerobic Capacity, Autonomic Nervous System, Female University Students

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