

氣喘兒童在運動後，相較於健康兒童有較高的副交感神經反應，但此結果可能會導致氣喘症狀的發作

## Heart Rate Variability in Asthmatic Children at Rest and during Exercise

陳淑如(Su-Ru Chen);陳五常(Wu-Charnng Chen);邱泓文(Hung-Wen Chiu);鄭綺(Chii Jeng)

### 摘要

本研究旨在比較氣喘兒童及一般健康兒童在休息狀態及活動狀態下心率變異度之差異，以立意取樣共收集 16 位氣喘兒童及 19 位健康兒童。兩組個案均給予 10 分鐘的靜坐休息，隨後再給予 10 分鐘的踏步運動，期間分別測量其休息狀態及活動狀態下後 5 分鐘的穩定心電圖作為心率變異度的頻譜分析，最後以t檢定比較兩組間之差異。研究結果顯示，在休息狀態下，兩者心率變異度無顯著差異，而活動狀態下，氣喘兒童之HF( $t=2.39$ ,  $p<0.05$ )及HFnu ( $t=4.12$ ,  $p<0.01$ )顯著高於健康兒童。顯示氣喘兒童在運動後，相較於健康兒童有較高的副交感神經反應，但此結果可能會導致氣喘症狀的發作。因此，未來在氣喘兒童的健康照護中，如何兼顧運動的好處及避免運動時氣喘的發作是所有醫護人員需繼續努力的方向。本研究結果不但可提供未來從事國內相關氣喘心率變異度研究之以較，並可作為醫護人員改善促進氣喘疾病照護品質之參考。

### Abstract

The purpose of this study was to compare the heart rate variability (HRV) between healthy and asthmatic children at rest and during exercise. A total of 16 asthmatic children and 19 healthy children were purposively recruited in this study. Children in both groups were asked to sit ten minutes and step exercise ten minutes. All children's steady EKGs were recorded after five minutes at rest and during exercise in order to analyze the changes of HRV using frequency domain. Finally, t-test was used to compare the differences between groups. The results showed that no difference of HRV was found at rest between two groups. However, the HF ( $t=2.39$ ,  $p<0.05$ ), and HFnu ( $t=4.12$ ,

$p < 0.01$ ) were significantly higher in asthmatic children than in healthy children during exercise. The finding implied that the parasympathetic response was more sensitive in children with asthma than those of healthy children, but it may cause asthma attack. Hence, health care providers should endeavor to balance the pro and con of exercise and to avoid asthma attack for the future asthma care. The findings of this study can serve as valuable information for future asthma HRV research comparison and for improving the quality of asthma care.