PD21: Association between Heart Rate Variability and Physical Activity in Young Male Adults

Kamarulzaman SAAH[1], Ghazali AR[1], Farah NMF[2], Nordin NJ[3], Sulaiman AH[3]

[1]School of Diagnostic and Applied Health Sciences, Faculty of Health Sciences, Universiti Kebangsaan Malaysia, [2]School of Rehabilitation Science, Faculty of Health Sciences, Universiti Kebangsaan Malaysia, [3]Faculty of Medicine and Health Sciences, Universiti Sains Islam Malaysia

ABSTRACT

Introduction: Recent studies have claimed a positive effect of physical activity on heart rate variability (HRV). Lower HRV is an indicator of autonomic dysfunction and is associated with sedentary lifestyle and cardiovascular diseases (CVD). Due to increased incidence of young adults having at least one CVD risk factor, this study aimed to determine the association between heart rate variability and physical activity in young male adults. **Method:** This cross-sectional study was conducted in 31 apparently healthy university students (age: 21.2 ± 1.8 years; BMI: 20.3 ± 3.2 kg/m^2). Physical activity was determined using International Physical Activity (IPAQ-short). HRV indices were measured while performing supine-to-standing manoeuvre and assessed using time and frequency domains. **Results:** Standard deviation of successive differences between adjacent NN intervals (SDNN), which reflects the overall variability, was significantly higher in physically-active subjects (135.7 ± 48.4 ms) compared to the less active (99.4 ± 30.4 ms) (p=0.03). High-frequency (HF) power, a marker of vagal modulation, showed a greater trend in the physically-active (1290.7 ± 1335.4 ms) compared to the less active (728.3 ± 423.0 ms), however this was non-significant. Other HRV indices i.e low-frequency (LF) power and LF/HF ratio were not statistically different between both groups. No significant correlations were observed between HRV indices and time spent in physical activity. **Conclusion:** The physically-active individuals showed greater overall heart rate variability compared to the less active in response to orthostatic stress. Further studies with larger sample size and objective measurements of physical activity are warranted to elucidate the influence of physical activity on heart rate variability in young adults.

KEY WORDS:

Heart rate; physical activity; HRV, IPAQ

PD22: The Relationship between Body Mass Index and Waist Circumference on the Image Quality of Computed Radiography Abdomen

Ismail AA[1,2], Mohamad M[1], Ahmad R[1], Othman NS[2]

[1]Diagnostic Imaging and Radiotherapy Programme, School of Diagnostic & Applied Health Sciences, Faculty of Health Sciences, Universiti Kebangsaan Malaysia, [2]Hospital Raja Permaisuri Bainun (HRPB)

ABSTRACT

Introduction: Body sizes of patients undergoing x-ray examination vary in accordance with the range of body mass index (BMI) and waist circumference (WC). The aims of this study were to determine the relationship of BMI and waist circumference with image quality of computed radiography (CR) abdomen. **Method:** Anteroposterior (AP) supine abdomen projection was conducted on 69 patients from Hospital Raja Perempuan Bainun, Ipoh using a Siemens Multixtop general x-ray unit and the images were processed with CR Carestream Direct view Max. Samples were categorized into normal BMI (n = 23), overweight (n = 23), and obese (n = 23). Image quality was measured physically in signal to noise ratio (SNR) and subjectively, visual grading analysis (VGA) based on the European Commission (CEC) image criteria. Data were analyzed by using analysis of variance (ANOVA) and Pearson's correlation for comparison and relationship between BMI, WC and the image quality. **Results:** Results showed a significant difference ($p < 0.01$) in image quality of VGA_{mean} (normal 4.40 ± 0.15, overweight 4.35 ± 0.13, obese 4.03 ± 0.34) and SNR_{mean} (normal 59.76 ± 1.34, overweight 59.32 ± 1.37, obese 59.03 ± 1.30). A high negative correlation exists for BMI and WC on the quality image, BMI vs SNR (r = -0.73) , BMI vs VGA (r = -0.70) and WC vs SNR (r = -0.83), WC vs VGA (r = -0.79) with ($p < 0.01$). **Conclusion:** This study suggests that WC has a higher negative linear relationship compared to BMI and could also be used as a better image quality predictor for CR abdominal examination.

KEY WORDS:

Computed radiography; obesity; image quality; waist circumference; BMI