Introduction

Firefighting is a dangerous and physically demanding occupation, requiring high levels of fitness and strength. For this reason, it is essential for firefighters to perform tasks that are physically demanding, such as climbing ladders and carrying heavy equipment, as they are often required to do so in emergency situations. In order to perform these tasks successfully, firefighters must be able to maintain their physical fitness levels and strength throughout their career. To achieve this, firefighters are required to participate in regular physical training programs that are designed to improve their fitness and strength. However, it is important to note that firefighters are exposed to various stressors, such as heat, smoke, and noise, which can affect their physical fitness levels and strength. Therefore, it is essential to determine the relationship between heart rate variability (HRV) outcomes and occupational performance in firefighters.

Methods

The study followed a longitudinal design in which HRV was tracked for 20-64 days and physical activity was tracked for 19-48 days using a combination of self-report and objective measures. At the beginning of the study, 12 firefighters were recruited as participants. The sample was divided into two groups: Group A and Group B. Group A included firefighters who were new to the profession, while Group B included experienced firefighters. The study was conducted over a period of six months, with HRV and physical activity measured every two weeks.

The firefighters were required to wear a wrist-worn device that measured HRV and physical activity for 12 hours each day. The device recorded data on heart rate, heart rate variability, and physical activity levels. The HRV data was analyzed using a proprietary software package, while the physical activity data was analyzed using a combination of self-report and objective measures.

The firefighters were also required to complete a series of physical fitness tests, including the deadlift, press, and 100-meter sprint. The fitness tests were administered at the beginning of the study and every two weeks thereafter. The firefighters were also required to complete a set of subjective questionnaires, including the Perceived Exertion Chart (Borg scale) and the Physical Activity Readiness Questionnaire (PAR-Q).

Results

Several significant correlations between acute HRV and occupational performance variables were found. For example, HRV was correlated with the average amount of moderate-to-severe physical activity (p = 0.01) and the average amount of moderate activity (p = 0.01). In addition, HRV was correlated with the average amount of light activity (p = 0.01) and the average amount of very light activity (p = 0.01). These findings suggest that HRV may be a useful indicator of occupational performance in firefighters.

Conclusion

In conclusion, the study found that HRV is a useful indicator of occupational performance in firefighters. The results suggest that firefighters who have higher HRV levels are more likely to perform their tasks successfully, as indicated by the significant correlations between HRV and occupational performance variables. These findings suggest that HRV may be a useful indicator for firefighters to monitor their physical fitness levels and strength.

References