28th ECSS Anniversary Congress, Paris/France, 4-7 July 2023

# Immune monitoring alongside factors associated with upper respiratory illness in elite swimmers, over an 8-month training period leading into competition

**Baker, L.H., Wells, A.V., Desai, T.**

**University of Hertfordshire**

**INTRODUCTION:**
**Upper respiratory illness (URI) is the most frequently reported illness in athletes, resulting in lost training time and reduced success at competition. Due to the high physical demands on elite swimmers, individual athletic monitoring of mucosal immunity and identifying risk factors of URI is paramount. Therefore, the current study investigated the effect of training load (TL), sleep and Epstein Barr Virus (EBV) status on salivary immunoglobulin A (sIgA) and self-reported upper respiratory symptoms (URS).**
**METHODS:**
**Fourteen elite national and international swimmers (age ± SD= 19.9 ± 0.8 years) were observed for 8-months leading into the Commonwealth Games 2018 and Swim Cup Eindhoven. Self-reported URS, sleep quality and saliva samples were collected weekly. The periodised plan of TL for each week was classified by coaches as low, moderate, and high. When this was compared against swimmer's perceived weekly TL intensity, it was significantly correlated (p=0.003) and thus used for analysis. Blood samples were taken at study commencement to determine EBV status and quantitative sleep parameters were measured use wrist-worn actigraphy for 2-week bouts at different time points during the study.**
**RESULTS:**
**Over the 8-month observation, 70 URS episodes were recorded, leading to 34 days of missed training. Incidence (p=0.011) and severity (p = 0.001) of URS was significantly higher during high TL. Moreover, duration of URS was significantly longer during moderate (p=0.021) and high (p=0.001) TL, compared to low. Eight swimmers (61%) had evidence of past infection with EBV. However, EBV seropositivity had no relationship with incidence, severity, or duration of URS. When sIgA values were normalised to each individual's mean, relative sIgA concentration was 25% lower during URS than when no symptoms were present (p=0.033). Overall, swimmers spent 58% of the season below their individual 'healthy' sIgA average. Finally, average sleep duration was 6.5 hours and total sleep time was significantly lower during high (p=0.008) and moderate (p=0.002) TL, plus average sleep efficiency was 75% throughout the study.**
**CONCLUSION:**
**The importance of individual athlete monitoring for coaches and physiologists, to identify those at increased illness risk was highlighted. Identification of risk factors associated with URS, such as increased TL, lowered sIgA and inadequate sleep, may allow for modifications in training or other illness preventative strategies. Overall, elite swimmers showed inadequate sleep, therefore promoting the use of sleep hygiene strategies and napping. There was high prevalence of EBV seropositivity for the elite swimmers; however, it was not a predictor of URS. Low participant numbers could be considered for the lack of significant findings with EBV serostatus; there is ongoing debate that individual data and trends may be more useful in elite athletic research, compared to group statistical analysis.**

**Topic:** **Coaching**

**Presentation** **Poster**