RESULTS: The monthly training volume gradually increased from 825 to 1176 min in one-month (peaked value) before competition and decreased to 786 min in 2-weeks before the competition. However, the sleep quality (PSQI and ESS) did not show any difference among different training periods. The overall PMOS score exhibited no difference across varied training periods. However, the sub-elements of POMS in depression/dejection and fatigue/inertia were peaked in one-month before the national competition ($p<.05$), and the tension/anxiety element was significantly increased by 4-folds above baseline in 2-weeks before the competition ($p<.05$).
CONCLUSIONS: We demonstrate that the sleep quality was not affected during different training period. However, the depression/dejection, fatigue/inertia, and tension/anxiety appear to react differently in different timing patterns in response to varied training periods in these collegiate athletes. Our study may provide the evidence primarily focusing on the student collegiate triathletes, which would be important for coaches to closely monitor the timing of mood states changing across different training periods to achieve better training outcomes.

1857 Board #3 May 28 1:30 PM - 3:30 PM

Self-reported, Sleep Behaviors And Barriers Of Adolescent Athletes

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BACKGROUND: Many adolescent athletes fail to meet sleep duration recommendations, however little is known about self-reported barriers preventing adequate sleep.
PURPOSE: To investigate current and ideal sleep behaviors, as well as barriers to sleep in a group of adolescent athletes.
METHODS: Adolescent athletes (n = 258, 16.3 ± 1.4 y; 196 male, 62 female) from 8 sports completed a standardized electronic survey regarding sleep behaviors and perceived barriers to sleep. The survey assessed current and ideal sleep onset, offset, and duration. Athletes were presented a list of common pre-bed activities and asked if they ever engaged in each activity in the hour prior to bed. Similarly, a list of potential barriers to falling asleep once in bed were presented. Frequency of all barriers (nights per week) was assessed. Comparisons between ideal and current behaviors were made using ANOVA and t-tests as appropriate. Barriers were ranked to identify which were most responsible for impacting sleep behaviors. Normally and non-normally distributed data are presented as mean ± SD, and mean with associated 95% confidence interval [95% CI], respectively.
RESULTS: Significant differences were found between ideal (9:24 ± 1:18 (h:min)) and school night (8:14 ± 1:43), ideal and non-school night (9:56 ± 1:57), and school and non-school night sleep durations ($p<0.05$). The most frequent pre-bed activities were: engaging in social media (5.6 nights per week, 95% CI [5.3,5.9]), communication with others using technology (4.9 [4.6,5.2]), and socializing (4.9 [4.6,5.2]). School work (3.0 [2.7,3.2]) was the most cited barrier to getting into bed at the desired time, followed by engaging with social media (2.6 [2.2,2.9]) and communicating using technology (2.1 [1.8,2.4]). Once in bed, worrying about school work (1.5 [1.2,1.7]) and worrying about sport (1.4 [1.1,1.7]) were the two most cited barriers to falling asleep.
CONCLUSION: Discrepancies exist between actual and desired sleep duration with athletes preferring to obtain more sleep on school nights. School work as well as the use of technology are top barriers preventing adolescent athletes from achieving their ideal bedtime. Focus should be placed on behavior change strategies, including time management, to overcome these known barriers to sleep.

1858 Board #4 May 28 1:30 PM - 3:30 PM

The Effect Of Nap Duration On Sleep Inertia, Muscle Strength, And 3-km Cycling Time Trial Performance

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(No relationships reported)

PURPOSE: To determine the impact of napping (15-min and 30-min) on sleep inertia, peak muscle strength, and 3-km cycling time trial performance.
METHODS: Six recreationally-trained college-aged participants (Age, 22 ± 1 y; VO_{2max}, 43 ± 12 $ml \cdot kg^{-1} \cdot min^{-1}$) completed a familiarization- and 3 experimental trials in the afternoon. Following a night of modest sleep restriction (range: 4.6-5.8 h), participants underwent exercise testing without a nap and following 15-min (Nap15) and 30-min (Nap30) naps. Peak isokinetic leg extension force (120 $deg \cdot sec^{-1}$) and computer-simulated 3-km cycling time trial (TT) performance were assessed 30 min after napping. Sleep inertia was quantified using the Karolinska Sleepiness Scale and the Tower of London cognitive task before and after each nap. Repeated measures ANOVAs were used to assess differences in peak strength and 3-km TT performance between conditions, while a 3 x 2 (nap condition by time) repeated measures ANOVA was used to assess sleep inertia.
RESULTS: 3-km TT power output was similar across conditions (no-nap = 212 ± 84 W, Nap15 = 208 ± 95 W; Nap30 = 213 ± 95 W). Though peak strength following Nap30 was not statistically lower than no-nap ($p = 0.12$), peak strength was 8.0 ± 0.8% lower in Nap30 compared to Nap15 ($p < 0.05$). Sleep inertia was similar across conditions.
CONCLUSION: These data suggest that napping prior to competition will not improve performance but rather may impair peak power-oriented activities. Data should be gathered to assess the impact of longer duration napping and the potential performance benefits of napping following more severe sleep restriction.

1859 Board #5 May 28 1:30 PM - 3:30 PM

Sleep And Prior Exercise Influence Wingate Performance - Should These Be Controlled When Assessing Anaerobic Performance?

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A variety of factors can influence anaerobic performance, including time of day, training status, fatigue, sleep duration and quality, psychological state, hydration, and food intake. These variables may interact to influence performance.
PURPOSE: To compare anaerobic performance in individuals across three time periods of the day (morning, afternoon, and evening), and determine if sleep and/or prior exercise influence performance.
METHODS: Ten healthy, physically active adults were recruited to do three 30-second Wingate tests: Morning (6:00am to 11:59am), afternoon (12:00pm to 4:59pm), and evening (5:00pm to 9:00pm). The order of tests was randomized and all testing was completed over one week. Prior to each test, subjects were provided similar instructions, and they completed pre-test questionnaires evaluating the duration of sleep the previous night and whether they abstained from strenuous exercise during the past 24 hours. Standard 30-second Wingate parameters were collected during each trial. Repeated measures ANOVA examined performance across each time period.
RESULTS: All subjects completed the three testing protocols. There was no main effect of time of day on peak power ($p=0.989$). When subjects were grouped based on prior strenuous exercise there was a trend for significance in peak power ($p=0.070$) and a significant change in maximum speed ($p=0.039$). Those who abstained from strenuous exercise had higher peak power (32.7% improvement) and maximum speed (21.5% improvement). When subjects were grouped based on sleep, similar results were observed: those who slept at least seven hours had higher peak power (17.6% improvement; $p=0.055$) and higher maximum speed (15.7% improvement; $p=0.036$).
CONCLUSION: Pre-screening questions or guidelines for sleep and activity may be important to control when examining anaerobic performance. When subjects abstain from strenuous exercise and get adequate sleep they demonstrate improved Wingate performance.