

**PURPOSE:** To determine the sleep profiles of elite Chilean athletes before a mega sports event.

**METHODS:** A socio-demographic questionnaire was applied to elite Chilean athletes together with the ASSQ at 3 months (T1) and one week before (T2) the PanAmerican Games "Santiago 2023". The ASSQ measures several sleep parameters, such as sleep latency, total time and quality, which add up to a Sleep Difficulty Score (SDS) to stratify risk of developing sleep disorders, and also includes some modifiers like screen use and caffeine intake. Results were categorized by sex, age and sport. The sample was recruited from Centro de Alto Rendimiento in Chile. The initial survey was applied in person, while the follow up was applied online. Data was only taken after the approval of the informed consent. A Welch's T test was applied to compare the results at 90% confidence interval.

**RESULTS:** A total of 239 athletes were surveyed, where 42.6% were female athletes. Age ranged from 18 to 47 years, from individual sports such as judo, surf and track and field, and collective sports like volleyball, field hockey and handball. Only 72 athletes completed the follow up at T2. The average sleep difficulty scores were 6.27 and 6.01 at 3 months and one week before the event, respectively (mild risk). This variation was not significant. Male athletes improved their score significantly from 6.48 to 5.65 ( $p=0.08$ , IC: 90%). Of the 21 high risk athletes at T1 (SDS >10), 41% belonged to Combat Sports.

**CONCLUSIONS:** Several limitations were identified, like the percentage of follow-up loss, small sample size and the low availability of athletes before competitions. Nevertheless, we identified an important number of athletes with a moderate to high risk of developing sleep disorders thus showing the need for screening and developing interventions to improve the health and performance of athletes.

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### In-Season Cardiovascular Improvement Of Collegiate Field Hockey Players

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In collegiate field hockey, there is no defined cap on total practice volume. Therefore, it is important to understand the players' cardiovascular capacity as they progress through a competitive season.

**PURPOSE:** To examine the rates of improvement in cardiovascular parameters of field hockey players.

**METHODS:** We monitored 19 D1 field hockey players for 51 consecutive practices using Polar Team Pro monitors. Data exported were average heart rate (HR<sub>avg</sub>), maximum heart rate (HR<sub>max</sub>), average speed, distances in 5 speed zones, and Polar's calculation of training load score and recovery duration. Dependent variables were HR during practice and duration of recovery following practice. Linear regression models tested the point in the season (day or practice number) on dependent variables holding constant average speed and distances in the 5 zones. Secondary analyses held training load constant in the place of speed and distances.

**RESULTS:** Across all practices, HR<sub>avg</sub> was 138.3 ± 15.0 bpm, HR<sub>max</sub> was 189.4 ± 13.8 bpm, average speed was 2.9 ± 0.7 km/h, distance was 3.9 ± 1.6 km, and recovery time was 27.5 ± 36.9 hours. Holding speed and speed zone distances constant, each successive practice predicted 0.3 bpm lower HR<sub>avg</sub> ( $p<0.001$ ;  $\beta = -0.254$ ; 95% CI: -0.312 to -0.197) and 0.6 hours shorter recovery ( $p<0.001$ ;  $\beta = -0.620$ ; 95% CI: -0.760 to -0.480). There was no effect on the athletes' ability to achieve HR<sub>max</sub> ( $p=0.502$ ). Each additional day of the season predicted 0.1 bpm lower HR<sub>avg</sub> ( $p<0.001$ ;  $\beta = -0.135$ ; 95% CI: -0.168 to -0.103) and 0.4 hours shorter recovery ( $p<0.001$ ;  $\beta = -0.358$ ; 95% CI: -0.437 to -0.278); there was no effect on HR<sub>max</sub> ( $p=0.436$ ). Holding training load constant, each additional practice predicted 0.2 bpm lower HR<sub>avg</sub> ( $p<0.001$ ;  $\beta = -0.173$ ; 95% CI: -0.216 to -0.131) and 0.3 hours shorter recovery ( $p<0.001$ ; 95% CI: -0.409 to -0.199); HR<sub>max</sub> increased 0.1 bpm with each additional practice ( $p<0.001$ ;  $\beta = -0.090$ ; 95% CI: 0.036 to 0.144). Each successive day predicted 0.1 bpm lower HR<sub>avg</sub> ( $p<0.001$ ;  $\beta = -0.090$ ; 95% CI: -0.115 to -0.066) and 0.2 hours shorter recovery ( $p<0.001$ ;  $\beta = -0.181$ ; 95% CI: -0.240 to -0.122); HR<sub>max</sub> increased 0.1 bpm with each additional day ( $p<0.001$ ;  $\beta = -0.052$ ; 95% CI: 0.022 to 0.083).

**CONCLUSION:** Field hockey players may benefit from gradual increases in exertion and longer recovery periods earlier in the competitive season.

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### Developmental Stages' Impact On Sense Of Effort In Baseball Pitching: From Sub-maximal To Supra-maximal Instructions.

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**PURPOSE:** Controlling pitch speed is an important skill in baseball, yet it remains unclear how this skill improves with development and maturity. The present study aims to elucidate whether this ability differs between premature youth players and matured collegiate players by examining the relationship between subjective effort (SE) and ball speed.

**METHODS:** Six collegiate baseball players (20-22 yr) and seven youth baseball players (13-15 yr) participated in the experiment. The participants pitched to a net approximately 5 m away, throwing two pitches each at 20%, 40%, 60%, and 80% SE, and eight pitches each at 100%, 110%, and 120% SE, in that order. Each condition was not randomized because this study was designed to elicit a self-assessed maximal effort pitch from each participant, followed by an additional pitch at an even higher level of effort to investigate the possibility of surpassing their perceived maximal effort. Ball speed was calculated from camera images. For sub-maximal efforts, comparisons were made between youth and collegiate players. For super-maximal efforts, comparisons were made between conditions for youth and college, respectively.

**RESULTS:** The ratio of sub-maximal effort ball speed to 100% SE did not differ between youth and collegiate players. On the other hand, ball speed at supra-maximal effort compared to 100%SE increased for youth players (110%SE: 1.04 times 100%SE,  $p < 0.05$ ; 120%SE: 1.06 times 100%SE condition,  $p < 0.05$ , paired t-test), but not for collegiate players (110%SE: 1.01 times 100% SE, 120%SE: 1.01 times 100% SE, paired t-test).

**CONCLUSION:** Our results suggest that youth players may not realize the full potential of their abilities, and that the skill of controlling pitching speed may improve with growth and maturity.