deceleration, athletes with higher ankle strength generate greater braking force and power, enabling them to complete the deceleration in a shorter time and distance. With the 10-m deceleration, knee strength is more likely to differentiate good deceleration performance.

3279

Female Soccer Players Experience Faster Recovery Following Practices And Games Later In The Competitive Season

Jaida M. Nyby[1], Ryann L. Martinez[1], Nathaniel J. Holmgren[1], Michael L. Bruneau, Jr, FACSM[2], Alex F. Roque[3], Jacob M. Cunha[1], Courtney D. Jensen[1]. *[1]University of the Pacific, Stockton, CA. [2]Drexel University, Philadelphia, PA. [3]Duke University, Durham, NC.*
(Sponsor: Michael L Bruneau, FACSM)
Email: j_nyby@u.pacific.edu
(No relevant relationships reported)

Recovery is crucial to performance in collegiate soccer players. Recovery duration may be impacted as the season progresses.
PURPOSE: To assess the adaptability of female soccer players to recover from practices and games.
METHODS: We monitored 30 female Division-1 soccer players with Polar Team Pro devices for 35 consecutive days; the tracking period included 20 practices and 7 competitions. Data exported were duration of activity, distance covered, mean and maximum speed, mean and maximum heart rate (HR), and Polar calculations of training load, cardio load, and duration of recovery. All performances (858 observations) were characterized with descriptive statistics. Linear regression on the 5th to 95th percentile and the 10th to 90th percentile were performed to estimate the effects of practice and game numbers on recovery duration, holding exercise intensity constant.
RESULTS: In games, athletes had a training load score of 132.52 ± 84.9, cardio load score of 151.6 ± 81.6, mean HR of 130.5 ± 21.9 bpm, and maximum HR of 188.3 ± 26.8 bpm. The duration of each game was 121.1 ± 26.1 min; the athletes covered 4,702.6 ± 2,937.7 m, had an average speed of 2.6 ± 1.6 km/h, and maximum speed of 24.9 ± 6.6 km/h. In practices, athletes had a training load score of 55.3 ± 39.0, cardio load score of 58.2 ± 39.4, mean HR of 132.2 ± 24.8 bpm, and maximum HR of 174.8 ± 33.4 bpm. The duration of each practice was 44.3 ± 23.8 min; the athletes covered 2,002.8 ± 1,277.3 m, had an average speed of 2.8 ± 1.1 km/h, and maximum speed of 19.7 ± 7.1 km/h. Holding training load constant, each additional game predicted a 2.8-hour decrease in recovery duration for the 5th to 95th percentile ($p < 0.001$; 95% CI of $\beta = -5.32$ to -0.23; $R^2 = 0.559$) and a 2.6-hour decrease in duration for the 10th to 90th percentile ($p < 0.001$; 95% CI of $\beta = -4.73$ to -0.46; $R^2 = 0.522$). Regarding practice, each additional session predicted a 0.5-hour decrease in recovery duration for the 5th to 95th percentile ($p < 0.001$; 95% CI of $\beta = -0.60$ to -0.48; $R^2 = 0.399$) and a 0.4-hour decrease in recovery duration for the 10th to 90th percentile ($p < 0.001$; 95% CI of $\beta = -0.38$; 95% CI of $\beta = -0.43$ to -0.33; $R^2 = 0.338$).
CONCLUSION: Players exhibited faster recovery durations with each successive practice session and competition. Coaching personnel may consider additional rest earlier in the competitive season.

3280

Exploring The Patterns Of Attention And Meditation In Archery Based On EEG Signal Analysis

Honglin Chen, Sixun Li, Zhonghui He, Bing Zhang. *Peking University, Beijing, China.*
(No relevant relationships reported)

PURPOSE: Meditation and attention in archery are associated with sports performance. The primary purpose of this study was to examine the fluctuating patterns of change in attention and meditation in archery. The secondary purpose was to compare the effects by systematic training in archery.
METHODS: The sample consisted of 50 college students and 4 representatives of the archery team. The archery action was divided into three phases: preparation, arrow releasing, and relaxation. The subjects were required to practice archery and record their electroencephalographic signal during each action in time. The EEG results were subjected to one-way analysis of variance and normality test.
RESULTS: Significant difference was observed between the attention level of general students in the arrow release phase and the relaxation phase ($F(2,15)=4.31$, $p=0.033$, $\eta 2=0.36$). Significant differences were observed in relaxation level between the preparation and arrow release phases and between the preparation and relaxation phases for general students ($F(2,15)=5.26$, $p=0.019$, $\eta 2=0.41$). The meditation level of students from the representative team was observed be lower ($F(1,18)=0.21$, $p=0.65$, $\eta 2=0.01$) and the concentration level was observed to be higher ($F(1,18)=0.21$, $p=0.65$, $\eta 2=0.01$) when releasing arrows than general students.
CONCLUSION: Significant fluctuating variations in students' attention and meditation occurred throughout the process of archery. In particular, changes in attention experienced fluctuations of increasing and then decreasing, while meditation was higher in the preparation phase and would remain lower in the two subsequent phases. Compared to general students, the systematically trained athletes of the representative team will be more relaxed (especially in arrow releasing phase) and less focused during archery.

3282

8 Weeks Of Instability Resistance Training Can Significantly Improve Pull-up Ability In Male College Students

Qian Li, Female, Lejun Wang, male, Jiaqi Yan, male. *Tongji University, Shanghai, China.*
Email: lyricli1120@gmail.com
(No relevant relationships reported)

Instability resistance training(IRT) has produced good results in lots of exercises, such as bench press and deep squats. It needs to be discussed whether the same effect can be achieved in pull-ups which has been included in the National Physical Fitness Test for college students in many countries.
PURPOSE: To investigate the effects and potential mechanisms of IRT to improve pull-up performance in male college students.
METHODS: 34 healthy male college students who can do at least 1 pull-up were equally divided into IRT (19±6 yrs) and resistance training (RT)(18±1 yrs) groups as study subjects. Based on the principle of specificity of training, subjects in both groups were required to do lat pull-down strength training interventions of 12 repetitions per set, 4 sets each time, 3 times per week, for 8 weeks. The IRT and RT groups separately completed tasks on an unstable and a conventional lat pull-down strength machine. Lat pull-down maximal voluntary isometric contraction peak force (MVIC), pull-up endurance (number of repetitions) and surface EMG signals of 8 upper and back muscles were recorded before and after the training intervention. Comparisons of variables were analyzed by 2-way ANOVA with repeated measures.
RESULTS: After 8 weeks of training, pull-up endurance was significantly improved in the IRT (2±1 vs. 8±3, $P<0.01$) and RT (2±2 vs.6±3, $P<0.01$) groups, and the