METHODS: Seventy-eight (males: n=45, females: n=33) Division-I collegiate athletes, from various sports, performed two trials of squat (SJ) and countermovement (CMJ) akimbo jumps, with the best effort included for analysis. BMD was collected via whole body dual-energy x-ray absorptiometry. Pearson correlations were conducted to determine the relationship between BMD and vertical jump performances (i.e., SJ and CMJ) as a group and within each gender.
RESULTS: For the entire group, a significant, positive, moderate correlation existed between BMD and SJ ($r = 0.58$, $p < 0.01$), as well as between BMD and CMJ ($r = 0.64$, $p < 0.01$). When factored by gender, there was no significant correlation between BMD and vertical jump for males (SJ: $r = 0.17$, $p = 0.27$; CMJ: $r = 0.28$, $p = 0.07$). However, females retained a significant, positive, low-to-moderate correlation between BMD and both jumps (SJ: $r = 0.35$, $p = 0.04$; CMJ: $r = 0.41$, $p = 0.02$).
CONCLUSION: Lower body power appears to be positively associated to BMD in a collegiate athletic population, particularly in female athletes. Due to the diverse nature of the sports included in the analysis (e.g., basketball, swimming, cheerleading, tennis, soccer), results may not reflect specific BMD adaptations for those sports requiring increased plyometrics and vertical loading.

2348 Board #12 May 31 9:30 AM - 11:00 AM

Variations In Physiological Fitness Of Starters Vs Non-starters During A Collegiate Women'S Basketball Season

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INTRODUCTION: The ability to maintain strength and conditioning components related to performance throughout an entire competitive season are an important aspect of training for athletes and coaches alike. Currently little is known about the ability of trained athletes to maintain performance components over the course of the season. **Purpose:** To examine potential changes between pre-season and post-season measures of speed, agility, power, and endurance between players who averaged 20 or more minutes per game and those that averaged less**.**
METHODS: 14 female collegiate basketball players (average age 18.7±0.21 years) participated. Participants engaged in 2 separate testing periods (end of pre-season and end of competitive season). During each testing period speed, agility, strength, endurance, anaerobic condition, and power were tested using 40-yard dash, Pro-agility test, squat, mile run time, and beep test, respectively. Paired t-tests were used to determine significant differences between testing period 1 and 2. Athletes were also identified as being either a starter (ST), which was an indicator of playing time averaging greater than 20 minutes per game, or non-starter (NST).
RESULTS: Performance components were measured at the beginning and end of the basketball season. At season start, ST and NST players were statistically similar in regards to all reported tests of performance. Of the components tested at the post-season time point, only two were found to change significantly. Pro-agility scores improved over the course of the season for both ST (pre-season 5.5±0.1, post season 5.1±0.07, t(5)=2.43, p=0.04) and NST (pre-season 5.6±0.07, post season 5.2±0.07, t(5)=2.85, p=0.01) players. NST players demonstrated a significant decrease in performance on the 40-yard-dash (pre-season 5.5±0.06, post-season 5.8±0.07, t(5)=-2.8, p=0.02) while ST players had no difference. For the mile run, NST athletes demonstrated a significant increase in time (3%) when compared to the ST players (0%), with a p=0.05.
CONCLUSION: These findings demonstrate the ability of female collegiate basketball athletes to maintain, and even improve upon, certain performance related components. For athletes with less playing time, some measures may suffer over the course of the season.

2349 Board #13 May 31 9:30 AM - 11:00 AM

Confirming The Coach's Bias: Power Begets Performance At The Plate

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Baseball coaches value specific traits in their batters; this is reflected in starting lineups. The success of those batters depends on their ability to produce base hits. This is a complex skill affected by many factors, but a key component is the kinematic fingerprint of the swing.
PURPOSE: To test which biomechanical domains of a baseball swing predict entry into the starting lineup, and which associate with the likelihood of getting base hits.
METHODS: We enrolled 13 batters from a D1 baseball team (7 starters, 6 non-starters) and conducted 3D analyses of swing mechanics using Proteus (Boston Biomotion, USA). Each athlete performed six sets of five swings at increasing loads between 1lb and 9lbs of magnetic resistance. Independent-samples t-tests measured the difference in performance between starters and non-starters, with special attention paid to mean swing power (MSP) and mean swing consistency (MSC, i.e., how accurately successive swings are replicated in 3D space). Logistic regression tested how MSP and MSC affected the odds of being in the starting lineup. Linear regressions measured the effect of MSP and MSC on the number of hits in a season and hits per at-bat.
RESULTS: Players in the starting lineup had 0.27 ± 0.03 hits per at-bat; non-starters had 0.17 ± 0.15 ($p = 0.170$). Starters exhibited a weak trend for lower consistency ($p = 0.092$) but generated more power ($p = 0.003$) and achieved greater bat speed ($p = 0.009$). MSP and MSC were not significant predictors of starting status: for each additional point of MSP, the odds of being a starter increased 29% ($p = 0.106$); for each additional point of MSC, the odds were decreased by 24% ($p = 0.123$). Owing to a small sample, power was not significantly different throughout the lineup, but consistency was lowest in batters 3-5 ($p = 0.048$). Linear regressions found each additional point of MSC to predict 2.1 fewer hits per season ($p = 0.029$) while each additional point of MSP predicted an increase of 0.7 hits per season ($p = 0.014$). When measuring these effects per at-bat, significance was lost. A post hoc power analysis revealed a need for 6 additional athletes to achieve significance.
CONCLUSIONS: Even in a small sample, analysis of swing mechanics is helpful in determining performance. An increase in swing power associated with more hits and an increase in consistency associated with fewer.

2350 Board #14 May 31 9:30 AM - 11:00 AM

Intervention Of Cordyceps Sinensis On Exercise Fatigue

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PURPOSE: To investigate the intervention of Cordyceps sinensis on exercise fatigue and search for the reasons of such phenomena.
METHODS: Forty 6-week SD rats were randomly divided into two groups: control group (n=15) and medicine group (n=15) treated with corduceps sinensis (0.004g/Ml). lasted for 10 days, then all rats were trained to swim until exhaustion. Immediately after the exhaustion, test its exhausting time and some biochemical indexes, such as BUN, Blood testosterone and Lactic acid.
RESULTS: Compared with the control group, Exhausted time of medicine group was significantly prolonged (108.23±42.12 vs. 199.05±62.18 min. p<0.001); the blood lactate level was higher(6.75±1.68 vs. 9.35±2.01 mmol/L); the blood testosterone level was higher(0.201±0.098 vs. 0.315±0.068 nmol/L,p<0.05); and the urea nitrogen level was lower(1.89±0.20 vs. 1.52±0.34 nmol/L,p<0.05).
CONCLUSIONS: Cordyceps sinensis has the ability to improve the exercise capacity of rats, increase the threshold of lactate, increase the secretion of serum testosterone, inhibit the catabolism of protein, and prevent the decline of lean body mass.