CONCLUSIONS: EPs should understand that correlations between repetitions achieved at different loads tend to be moderate.

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Prioritization of Resistance Training In NCAA Division I Track and Field Athletes  
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(No relationships reported)  
PURPOSE: Resistance training is a powerful systemic stimulus known to improve a multitude of physiological variables. These include but are not limited to musculoskeletal strength, power, muscle mass, bone mass, and connective tissue. The sport of track and field is composed of many different events that focus on strength, power, and muscular endurance. Therefore resistance training is typically a vital part of preparation for track and field athletes. The purpose of this study was to investigate specific manipulations of the acute program variables within the off-season resistance training program.  
METHODS: 34 NCAA Division I track and field student-athletes men participated in 12 week mesocycle of a non-linear periodized training program between the months of September and December. Groups were separated by needs of their athletic event and thus, performance primary goals (Group 1 (Power): n=12, age: 20.1±1.10, body mass: 87.8±13.3 kg; Group 2 (Local Muscular Endurance): n=12, age: 21.1±1.10, body mass: 82.9±10.4 kg; Group 3 (General Strength): n=10, age: 18.9±1.8, body mass: 80.4±4.1 kg). The training groups prioritized resistance loads and volume for development of power, local muscular endurance, and general strength, respectively. Performance variables were assessed at the beginning and end of this training program and consisted of counter movement vertical jump with arm swing, 1-repetition-maximum in the barbell bench press, and barbell back squat.  
RESULTS: The primary findings of this investigation are Group 1 saw significant (p≤0.05) statistical increases in vertical jump (4.4±1.1 cm), and back squat maximum (13.1±3.6 kg). Group 2 saw significant (p≤0.05) statistical increases in bench press maximum (14.2±0.5 kg), and back squat maximum (15.0±0.6 kg). Group 3 saw significant (p≤0.05) statistical increases in vertical jump (4.7±0.7 cm) and maximum back squat (20.0±5.0 kg).  
CONCLUSIONS: Our data indicate that the prioritization of strength within a 12 week mesocycle in the off-season training program had the best effect on the performance variables that were needed by each group. It appears that multiple stressors of the academic school year and athletic preparation are better mediated with a type of non-linear flexible program for competitive NCAA Division I track and field athletes.

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Optimal Load Based on Body Mass: A Pilot Study with The Hang Power Clean  
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(No relationships reported)  
A key factor for success in sports is the athletes’ capacity of producing mechanical power output. Implementation of weightlifting derivatives such as the hang power clean (HPC) in training programs have been utilized and substantial increases in muscle power are reached when the athletes train at the load in which they produce the peak power output, also defined as the optimal load. The optimal load is commonly determined as a relative percentage of the maximum weight one can lift a single time during a specific exercise, defined as the 1-repetition maximum (1RM) for that exercise. Given the disadvantages of 1RM tests utilization such as risk of injuries and excessive amount of time required for those assessments, it has become apparent the need for alternative strategies for the optimal load identification.  
PURPOSE: To estimate the optimal load of the HPC from body mass (BM) percentages.  
METHODS: Nine healthy young men (age: 21.3 ± 1.8, height: 174.6 ± 6.8 cm, weight: 80.6 ± 6.2 kg, 1RM HPC: 90.8 ± 9.6 kg, 1RM to weight ratio: 1.13 ± 0.07) participated in this study. Subjects performed a 1RM in the HPC in the first session and during the second session the peak power was calculated across loads of 30, 40, 50, 60, 70, 80, and 90% of their BM in the HPC in a randomized order.  
RESULTS: Our results showed significant differences among the power output and the percentages of the BM. Briefly, power output at 30% of the BM was similar in relation to 40% and 50% of the BM, whilst significantly lower than 60%, 70%, 80% and 90% of the BM. For 40% of the BM, it was observed similar result in relation to 50% of the BM, whilst results significantly lower than 60%, 70%, 80% and 90% of the BM. For 50% of the BM, similar result it was observed only 60% of the BM, while lower power output it was observed in comparison to 70%, 80% and 90% of the BM. For 60% of the BM, lower power output was observed when compared to 70%, 80% and 90% of the BM. Finally, no significant differences were observed between 70% and 80% and 90% of the BM, as well as 80% and 90% of the BM.  
CONCLUSION: Our results indicate that the optimal load based on BM for HPC exercise occurs at 70%, 80% and 90% of the BM.

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Comparing Relative Attempt Progressions Of Elite Male And Female Raw Powerlifters  
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(No relationships reported)  
PURPOSE: In powerlifting, each lifter is given 3 attempts to contest the back squat (BS), bench press (BP), and deadlift (DL). The summation of the best valid attempt for each discipline constitutes a powerlifting total (PT). However, little information is available regarding attempt selection strategies to maximize PT. Therefore, the purpose of this study was to determine and compare the magnitude of load progression from one attempt to the next for each lift between elite raw male and female powerlifters.  
METHODS: Data used in this study was retrieved from the International Powerlifting Federation (IPF) online database for all Classic World Championships from 2012-2018. Males (n=65) and females (n=41) from all weight classes who completed 9 out of 9 lifts successfully were included in the analysis. A Welch's t-test was used to compare relative attempt progressions (percent increase from attempt 1 to 2 and to 3) between males and females for all lifts with alpha level set at p≤0.05.  
RESULTS: Relative attempt progression was similar between females (0.08±2.11%) and males (5.59±1.80%) from attempt 1 and 2 on BS and from attempt 2 to 3 on DL (females: 4.33±2.01%; males: 3.75±1.84%). However, relative attempt progression was greater for females compared to males between attempt 1 and 2 on BP (6.50±2.10% vs 5.35±2.18%, p=0.008) and DL (6.76±4.19% vs 5.40±2.85%, p=0.03), and between attempt 2 and 3 on BP (4.28±1.74% vs 2.85±1.24%, p=0.001) and BS (4.04±1.89% vs 3.31±1.43%, p=0.03), respectively.  
CONCLUSIONS: These data indicate that successful elite male powerlifters are on average more conservative with their attempt progressions for each lift than females. This may be due to differences in opening attempt selection or perceived effort during subsequent attempts between males and females. Importantly, these findings provide general attempt progression guidelines for coaches working with elite raw (i.e., classic) male and female powerlifters.

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