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well-being in women. Further research is needed to investigate the long-term impact on a broader range of psychological health outcomes, including quality of life, mood, and sleep. Additionally, researchers should explore the observed improvement in psychological well-being despite non-significant changes in psychological distress indicators.

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Effects Of Caffeine Supplementation On Athletic Performance In Basketball: A Systematic Review And Meta Analysis

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PURPOSE: To determine the effects of caffeine on basketball performance as there is no meta-analysis exists supporting the use of caffeine for basketball performance.
METHODS: Original articles determining the effects of caffeine on performance outcomes of basketball players were systematically searched in six databases (Cochrane Library, MEDLINE, PubMed, Web of Science, Scopus, and SPORTDiscus) up to November 2023. Fixed-effects meta-analyses, utilizing standardized mean differences (SMD, Hedge'g), were conducted to examine the influence of caffeine supplementation on basketball performance outcomes regarding skill performance (free throw percentage, 3-point field goals percentage, and dribble sprint time), physical performance (maximal countermovement jump height, linear sprint speed, and change of direction speed) and perceptional responses (rate of perceived exertion). Sub-analyses were performed according to sprint distance (5m/10m/20m). Data extraction was independently carried out by 2 authors using a piloted form. The Physiotherapy Evidence Database scale (PEDro) and the RoB 2 tool were utilized to assess methodological quality and the risk of bias.
RESULTS: Eleven (8.8%) of 125 studies, 170 participants were included in total. Overall, most studies were of excellent quality with a low risk of bias. The results showed that caffeine increased linear sprint speed (SMD=0.298, 95%CI: 0.030-0.566, p=0.029<0.05) and change of direction speed (SMD=0.434, 95%CI: 0.018-0.849, p=0.041<0.05) compared to placebo. Meta-analyses did not find significant differences for free throw percentage (SMD=-0.121, 95%CI: -0.500-0.257) and 3-point field goals percentage (SMD=0.131, 95%CI: -0.331-0.594), as well as maximal countermovement jump height (SMD=-0.310, 95%CI: -0.690-0.070) and rate of perceived exertion (SMD=0.164, 95%CI: -0.052-0.380). No heterogeneity and subgroup differences were observed.
CONCLUSIONS: Caffeine supplementation may be considered an effective ergogenic strategy for enhancing the physical performance of basketball players, particularly in anaerobic power and agility, but limited evidence exists for other outcomes at present. Further research should clarify the effects of caffeine on aerobic endurance in basketball and the impact of varying caffeine doses.
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Effects Of Multiple Loads Within A Set Of Resistance Training On Muscle Strength And Power

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PURPOSE: Changes in power performance due to resistance training are known for load-specific response. The present study examines the effects of load reduction within a set on power performance and muscle strength compared to different load protocols of the same volume.
METHODS: Thirty-six trained men (one subject dropped out) were randomly assigned to one of three resistance training groups with volume matched: high-load, HL (n=11); reduction-load, RL (n=12); low-load, LL (n=12). Exercise training was performed twice per week for 3 weeks. Resistance training for each group comprised the following: HL, three sets of five repetitions (reps) at 85% one-rep maximum (1RM); RL, three sets of two reps at 85% 1RM, two reps at 75% 1RM, and two reps at 55% 1RM; and, LL, three sets of eight reps at 55% 1RM. The rest interval between sets for all groups was 3 min. The exercise consisted of free weight bench press (BP). Participants performed a 1RM test and maximal isometric muscle strength (maximal voluntary contraction, MVC; rate of force development, RFD, at baseline and after each training program using the BP. Blood lactate concentrations were measured before and after first session of exercise.
RESULTS: Blood lactate concentrations were significantly higher in HL than in RL and LL after each exercise, p=0.007 and 0.003, respectively. 1RM and MVC changed before (6.0±12.2% for LL, 5.7±6.1% for HL, 3.3±7.6% for RL, p=0.006) and after1RM (2.0±3.2% for LL, 4.3±3.2% for HL, 4.7±4.2% for RL, p>0.001). There was an interaction in the RFD results (p=0.009). One-way analysis of variance (ANOVA) results showed higher changes for HL compared to LL and RL (p=0.02, p=0.03).
CONCLUSION: Our results show that load reduction training is associated with lower blood lactate concentration and similar changes in muscle strength compared with high load. However, only high load group shows significant RFD increase.

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Effects Of Wind Tunnel Simulation Oneffects Of Wind Tunnel Simulation On Muscle Function And Force Generation Characteristics In Nordic Combined

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PURPOSE: Past studies assessed training effects and mechanism using strength or speed monitoring, energy metabolism monitoring. This article aims to enrich research on wind tunnel training by studying the effects of wind tunnel simulation training on muscle function and strength.
METHODS: Six athletes from the China Nordic Combined national team (Age 20.6 ± 2.7, height 177.33 ± 3.19, weight 60.42 ± 3.31, training duration 4.33 ± 1.03), participated in a 16-week repeated-measures experimental design. In the initial 8 weeks, all the athletes underwent regular platform jumping training (Training period-1, TP-1). Subsequently, in the following 8 weeks(Training period-2, TP-2), all the athletes added 1 hour of wind tunnel simulation training on the basis of the original regular platform jumping training, and conducted 2 tests (pre-test Athletic ability testing-1, AT-1; post-test Athletic ability testing-2, AT-2) on the athletic qualities,