

**Table 1: Comparison of peak power output across loads and repetitions**

Load	Body Mass	10% 1-RM	20% 1-RM	30% 1-RM	40% 1-RM
Reps	Mean (Standard Deviation)	Peak Power (W)			
1	3630.13 (960.18)	3483.33 (839.27)	3238.13 (717.25)	2964.13 (913.62)	2754.92 (648.23)
2	3636.80 (993.46)	3448.44 (841.02)	3186.50 (754.06)	2962.08 (825.25)	2792.28 (611.87)
3	3722.89 (984.68)	3460.41 (848.71)	3157.71 (697.94)	2932.55 (833.37)	2809.15 (626.98)
4	3760.57 (1014.45)	3456.11 (793.97)	3226.43 (771.16)	2956.52 (835.01)	2780.32 (647.74)
5	3656.93 (908.76)	3504.98 (863.70)	3187.07 (730.21)	2885.38 (756.98)	2792.29 (615.40)
6	3675.87 (942.74)	3485.76 (832.60)	3160.60 (741.91)	2951.95 (875.69)	2776.18 (629.87)
7	3732.89 (943.06)	3453.32 (854.91)	3212.34 (769.10)	2905.98 (797.48)	2757.56 (593.50)
8	3672.78 (936.05)	3448.70 (823.76)	3201.69 (773.74)	2869.54 (789.31)	2751.66 (601.74)
9	3682.29 (961.89)	3481.71 (841.41)	3192.18 (789.74)	2908.03 (870.22)	2751.07 (625.59)
10	3675.75 (916.56)	3442.13 (865.47)	3186.37 (766.68)	2894.70 (803.63)	2757.24 (634.83)

The optimal power load for squat jumps (with no countermovement) has been shown to be lower than the loads usually recommended for power training using Olympic lifts. Lower relative loads during squat jumps may permit the performance of additional repetitions prior to the onset of fatigue compared to heavier loads. **Purpose:** To identify the occurrence of decrements in performance, defined as a statistically significant decrease in peak power or jump height, during squat jumps with various loads. **Methods:** Male collegiate athletes ( $n = 16$ ;  $22.5 \pm 1.5$  years,  $178.5 \pm 7.2$  cm,  $72.85 \pm 8.59$  kg, 1 repetition maximum (1-RM) back squat =  $129.6 \pm 9.75$  kg). Participants performed sets of ten repetitions of squat jumps, using 5 loading conditions as determined by their best 1-RM performance (0, 10, 20, 30, 40% 1-RM back squat). The loading conditions were allocated in a randomized and balanced order, with 5–6 min rest permitted between sets. Squat jump performances were assessed using a ballistic measurement system incorporating a force plate (sampling at 600 Hz) to record the vertical ground reaction force and the linear position transducer (LPT) to record vertical displacement of the bar. To determine peak power, velocity of the centre of gravity (COG) of the system (barbell + body) was calculated from vertical ground reaction force (Fz) time data, based on the relationship between impulse and momentum, in which impulse is equal to the changes in momentum (forward dynamics approach). Power applied to the system was calculated as the product of velocity of the COG of the system and Fz at each time point. **Results:** Repeated measures analysis of variance (RMANOVA) revealed no significant differences ( $p > 0.05$ ) in peak vertical ground reaction force (vGRF), peak power or displacement, between repetitions in each loading condition (Table 1). A further RMANOVA, including Bonferroni post-hoc analysis, demonstrated that peak power output ( $3760.57 \pm 1014.45$  W) occurred in the 0% 1-RM loading con-

dition, which was significantly ( $p \leq 0.01$ ) greater than the 30% 1-RM ( $2964.13 \pm 913.62$  W) and 40% 1-RM ( $2809.15 \pm 626.98$  W) conditions, although this was not statistically ( $p \leq 0.05$ ) greater than the 10% 1-RM ( $3483.33 \pm 839.27$  W) or 20% 1-RM ( $3238.13 \pm 839.27$  W) conditions. **Conclusions:** These findings indicate that when performing squat jumps (with no countermovement) with a load  $\leq 40\%$  1-RM back squat,  $\geq 10$  repetitions can be completed without inducing fatigue. **Practical Applications:** When incorporating squat jumps (using relative low loads) into power training programs, it may be beneficial to recommend repetition ranges of  $\geq 10$ , as this study found no decrements in performance below this repetition range.

## THE RELATIVE IMPORTANCE OF OPEN- AND CLOSED-SKILL AGILITY PERFORMANCE FOR SELECTION AS A STARTER IN ADULT MALE BASKETBALL PLAYERS

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**Purpose:** Open-skill agility qualities have yet to be described in adult male basketball players. Further, the importance of open- and closed-skill agility for team selection remains unknown. Thus, this study aimed to: (a) describe the open- and closed-skill agility of adult male basketball players and (b) compare these properties between starting and non-starting players. **Methods:** A cross-sectional between-group design was used. Six starting (mean  $\pm$  SD: playing time,  $30.1 \pm 8.8$  min; age,  $30.5 \pm 4.8$  yr; height:  $192.1 \pm$

7.7 cm; body mass:  $100.5 \pm 15.0$  kg;  $\dot{V}O_{2\max}$ ,  $48.4 \pm 6.6$  mL·kg<sup>-1</sup>·min<sup>-1</sup>) and 6 non-starting ( $4.3 \pm 3.6$  min;  $21.3 \pm 5.0$  yr;  $185.7 \pm 7.4$  cm;  $94.4 \pm 17.9$  kg;  $50.6 \pm 3.9$  mL·kg<sup>-1</sup>·min<sup>-1</sup>) state-level basketball players completed multiple trials for the Change of Direction Speed Test (CODST) and Reactive Agility Test (RAT). **Results:** No statistically significant between-group differences were evident for CODST movement time (starters:  $1.652 \pm 0.047$  s; non-starters:  $1.626 \pm 0.040$  s,  $p = 0.68$ ; effect size = 0.24) or RAT decision-making time (starters:  $110.7 \pm 11.0$  ms; non-starters:  $147.3 \pm 14.2$  ms,  $p = 0.08$ ; effects size = 1.18). Starters possessed significantly faster RAT movement times than non-starters ( $2.001 \pm 0.051$  s vs.  $2.182 \pm 0.040$  s;  $p = 0.02$ ; effect size = 1.61). **Conclusions:** Our findings suggest that closed-skill agility properties are similarly developed in starting and non-starting players. In contrast, facets of open-skill agility performance such as anticipation, visual scanning, pattern recognition, and situational knowledge, might be central distinguishing qualities for team selection in basketball. **Practical Applications:** The development of perceptual and cognitive components of agility performance might be important in distinguishing starting from non-starting players in basketball. Basketball coaching and conditioning staff should incorporate sport-specific reactive training drills for all players during the annual conditioning plan.

### IMPACT OF 3% DEHYDRATION ON INTERMITTENT SPRINT PERFORMANCE

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**Purpose:** Hypohydration of 2% has been shown to impact aerobic exercise but the critical level in which anaerobic performance is affected has been suggested to occur at a higher level of dehydration. This study examined the effects of 3% dehydration on intermittent sprint performance and perceptual measures. **Methods:** Eight collegiate baseball players completed the intermittent sprints either dehydrated (DY) of 3% body mass or euhydrated (EU). All participants body mass was reduced by 3% via exercise in the heat with controlled fluid intake occurring 1 day prior to the trial. Participants completed  $24 \times 30$  meter sprints, divided into 3 bouts of 8 sprints with 45 sec rest between each sprint and 3 min each bout. Perceived Recovery Status Scale (PRS) was recorded prior to the start of each trial. Heart rate (HR), RPE (0–10 Omni scale),

and Perceived Readiness Scale (PR) was recorded after every sprint and session RPE (S-RPE) was recorded 20 min after completing the entire bout. **Results:** Results from a 2 (condition)  $\times$  3 (bout of sprints) repeated measures ANOVA revealed a significant main effect of condition on average sprint time ( $p = 0.03$ ), HR ( $p < 0.01$ ), RPE ( $p = 0.01$ ), and PR ( $p = 0.02$ ). Post-hoc follow-ups show significantly faster average sprint times during the EU vs. DY trial during the second ( $4.87 \pm 0.29$  vs.  $5.03 \pm 0.33$  s;  $p = 0.01$ ) and third bout of sprints ( $4.91 \pm 0.29$  vs.  $5.12 \pm 0.44$  s;  $p = 0.02$ ). HR was also found to be significantly lower for EU during the second bout (158 vs. 168 bpm;  $p = 0.05$ ) and third bout (161 vs. 171 bpm;  $p = 0.01$ ). Post-hoc measures also show significantly decreased ( $p \leq 0.05$ ) feelings of recovery (PRS) prior to exercise and increased ( $p \leq 0.05$ ) perceptual strain before each bout (PR) during the second and third bouts of repeated sprint work (i.e., RPE and PR) and following the total session (S-RPE) in the DY condition. **Conclusions:** Dehydration impaired sprint performance, decreased perception of recovery status prior to exercise, increased perceived exertion, and elevated heart rate. Results highlight the importance of adequate hydration during intermittent sprint performance. **Practical Applications:** Deleterious effects of dehydration are not limited to endurance-based sports. Athletes in intermittent sports are encouraged to pay special attention to hydration during practices without ignoring potential day to day fluid deficits. **Acknowledgments:** No sources of funding were used to assist in the preparation of this abstract. The authors have no conflicts of interest that are directly relevant to the content in this abstract.

### ASSISTED JUMP TRAINING MAY ALTER TEMPORAL MECHANICS DURING BODYWEIGHT JUMP PERFORMANCE

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**Introduction:** It has been demonstrated that performing assisted vertical jumps (a form of overspeed training) acutely improves vertical jump performance through a potentiating effect that increases velocity at take off. However, assisted jumping may also affect limb kinetics of the jump by altering the time intervals between peak force, peak power and peak velocity. Given these acute changes in vertical jump performance, it is possible that assisted vertical jump training could chronically affect temporal vertical jump mechanics. **Purpose:** To investigate the effects of assisted jump training on temporal jump