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Effects of Caffeine on Agility Tests on One Women's Collegiate Volleyball Team

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OBJECTIVE

The purpose of this study was to investigate the effects of caffeine on agility tests (3-step approach, 2-hand vertical leap, 5-10-5 drill) on a women's collegiate volleyball team at one Division III institution.

DESIGN AND SETTING

Pretest-Posttest randomized. Principal investigator administered tests during practice in the gymnasium. Independent variables: one women's volleyball team. Dependent variable: effects of caffeine consumption on agility tests.

PARTICIPANTS

Eleven (N=11) participants (convenience sample). Received placebo or caffeine gum. 45% (n=5) received a placebo gum, 55% (n=6) received caffeine gum. 9% (n=1) blocker, 36% (n=4) defensive specialist, 46% (n=5) hitters and 9% (n=1) setter. 27% (n=3) seven years, 18% (n=2) eight years, 9% (n=1) nine years, 27% (n=3) ten years, and 18% (n=2) eleven years. 18% (n=2) eighteen years old, 55% (n=6) nineteen and 27% (n=3) twenty years old.

INTERVENTION

Two testing periods over span of two weeks: Day 1: warm up, weight recorded, baseline tests completed. Day 2: Test subjects consumed 3 mg/kg per body weight of caffeine gum/control group received placebo gum. Tests conducted: 3 step approach (jumping, touch highest notch on measuring device), 2-hand vertical leap (standing jump, touch the highest notch on device) and 5-10-5 drill (quickness drill). First measurements were a trial, second one recorded. Face validity and content validity was established. IRB approval obtained. Descriptive statistics

(frequency counts and percentages) and Wilcoxon Sign Rank test was used to test pre and post measurements. Kruskal Wallis tests was used to test grouping variables of volleyball positions, years of experience, and age. The alpha level was set at $p=.05$ *a priori*.

MAIN OUTCOME MEASUREMENT

Vertical jump measuring device measured 3-step approach and 2-hand vertical leap measurements. A stopwatch measured the 5-10-5 drill.

RESULTS

There was a statistically significant difference ($W = -2.814$, $p = .005$) between the pre and post measurements of the 3-step approach test, 91% (n=10) decreased. 2-hand vertical leap test and 5-10-5 drill had no statistically significant difference between pre and post measurements. 9% (n=1) of caffeine subjects increased (2-hand), 73% (n=8) decreased (5-10-5). There was no significant difference in 3-step approach, 2-hand vertical and 5-10-5 drill of volleyball specific positions, years of experience, and age. 3 step approach, 75% (n=3) defensive specialist decreased. 2-hand vertical leap, 20% (n=1) hitters increased. 5-10-5 drill, 80% (n=3) hitters decreased. 3-step approach, 100% 8-11 years decreased. 2-hand vertical, 33% (n=1) 7 years increased. 5-10-5 drill, 67% (n=2) 10 years increased. In 3-step approach, 100% (n=3) 20-year-olds decreased. 2-hand vertical, 50% (n=1) 18-year-olds increased. 5-10-5 drill, 67% (n=4) 19-year-olds decreased.

CONCLUSION

Caffeine consumption had no effect on agility tests in this study. The decreased scores could be due to lack of proper warm up (day two). It is important that athletic trainers educate

their athletes to understand how caffeine and other supplements may or may not improve physical performance.

KEY WORDS: *3-Step Approach, 2-Hand Vertical Leap, 5-10-5 Drill, Caffeine, Collegiate Volleyball Players*