THE EFFECT OF RESISTANCE training on women has received some attention from the sport science community. Information on physiological changes or adaptations in women performing resistance training can aid the practitioner when designing programs for them.

A recent article by W.J. Kraemer et al., "Changes in hormonal concentrations after different heavy-resistance exercise protocol in women" (Journal of Applied Physiology, Vol. 75, pp. 594-604, 1993) examined the hormonal response to several resistance training programs in women. The exercises performed were the bench press, double knee extension, military press, bent leg incline sit-up, seated rows, lat pull-down, arm curls, and leg press.

All exercise programs were performed during the early follicular phase of the menstrual cycle. The programs consisted of performing the exercises with either a 5-RM or 10-RM and either a 3-min rest or 1-min rest between sets and exercises.

The 5-RM and 3-min rest periods, the 5-RM with 1-min rest periods, and the 10-RM with 3-min rest periods did not significantly elevate serum growth hormone or serum testosterone above resting values. However, the 10-RM with 1-min rest periods did significantly elevate serum growth hormone above resting values halfway through the training session, 5 min after the training session, and 15 min after the training session. Serum growth hormone influences muscle growth.

Resting levels of growth hormone change throughout the menstrual cycle. Therefore it may be necessary to use different resistance training protocols to stimulate a central hormone response at different points of the menstrual cycle. The high resting levels of growth hormone seen in this study during the early follicular phase may demand an intense exercise protocol to cause an elevation of growth hormone at this point in the menstrual cycle.

Different resistance training protocols may cause different hormonal responses during the various stages of the menstrual cycle. This study indicated that the hormonal response of women differs according to different resistance training sessions. The practical applications of this work are, when designing a resistance training program to bring about increased muscle size in women, employ short rest periods and approximately 10 repetitions per set. ▲

Note: If you are aware of a recent article with practical applications for the strength and conditioning specialist or would like to contribute to this column, please contact Steve Fleck, Sport Science and Technology Division, U.S. Olympic Training Center, One Olympic Plaza, Building 22, Colorado Springs, CO 80909.