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### Is Hormonal Contraceptive Use during Adolescence a Factor in Baseline Adult Muscle Mass and Function?

Berkley M. Sawester, Agnes V. Sydenstricker, Jacqueline E. Pina, Dana Al Kuisi, Mahmoud A. Almady, Jodi N. Dowthwaite. Binghamton University, Binghamton, NY

Hormonal contraceptive (HC) use is common in adolescence and emerging adulthood, while fat-free mass (FFM) and muscle strength are still accruing. Accordingly, long-term sarcopenia and dynapenia risk may be affected by the timing of this hormonal exposure. **PURPOSE:** We set out to evaluate whether HC use and HC type were associated with muscle characteristics in undergraduate women. **METHODS:** Using an electronic survey, undergraduate women were surveyed on key characteristics, including current exercise frequency, menstrual history and HC use. A subsample of respondents participated in anthropometrics and grip strength tests. Height (cm) was measured via portable stadiometer. Bioelectric impedance analysis assessed total, lean & fat mass (kg). Mid-upper arm circumferences and skinfold thicknesses (biceps, triceps, subscapular, suprailiac) were measured for use in arm muscle area (AMA) and %FFM calculations. Grip strength (kg) was measured via dynamometer. SPSS v24 was used to evaluate correlations among muscle outcomes and to perform ANOVA with covariates ( $\alpha=0.05$ ). Trends for associations were also noted ( $p<0.20$ ). ANOVA tested for group differences in %FFM, arm muscle area and grip strength, evaluating HC use groups (nonHC vs. useHC) and type groups (nonHC; progesterone only=proHC; estrogen/progesterone=comboHC). Covariates included height, menstrual irregularity and current exercise frequency. **RESULTS:** Anthropometric and HC data were provided by  $n=76$  (nonHC  $n=24$ , useHC  $n=52$ ; proHC  $n=12$ , comboHC  $n=40$ ). Left AMA correlated positively with grip strength ( $r=0.32$ ,  $p=0.005$ ). Grip strength was higher in useHC than nonHC ( $p=0.025$ ). Contradictory trends were observed for %FFM and AMA, with lower %FFM in useHC than nonHC ( $p=0.105$ ) and higher left AMA in useHC than nonHC ( $p=0.124$ ). HC type trends included: greater left AMA in proHC vs. nonHC; greater grip strength & %FFM for comboHC vs. nonHC (ANOVA  $p<0.09$ , post-hoc  $p<0.07-0.14$ ). **CONCLUSION:** It is unclear whether HC use affects musculoskeletal development during adolescence and emerging adulthood. Future research should evaluate these issues prospectively and look at long-term associations across the lifespan.

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