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

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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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