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Short Duration Jumping Increases Lean Tissue And Reduces Fat In Adolescent Boys But Not Girls: 1942: Board #83 May 28 9:00 AM - 10:30 AM

Weeks, Benjamin K.; Beck, Belinda R. FACSM

Author Information

Griffith University, Gold Coast, Queensland, Australia.

(No relationships reported)

Email: B.Weeks@griffith.edu.au

The dramatic rise in prevalence of chronic diseases, such as obesity, cardiovascular disease, and musculoskeletal conditions, is matched by a clear reduction in levels of physical activity among children and adolescents. There is an urgent need to implement preventative strategies during childhood that are community-based, widespread, and effectively target body systems most at risk in later life.

PURPOSE: To determine the effect of a regular, school-based, short duration, high intensity jumping regime on muscle, bone, and fat tissue in healthy adolescent boys and girls.

METHODS: We replaced regular warm up activities with jumping in the twice-weekly PE classes of early high school students for 8 months to observe the effect on lean and fat tissue. A total of 99 adolescents (46 boys, 53 girls; 13.8 ± 0.4 years) volunteered to participate. Intervention group subjects performed ten minutes of high intensity jumping activity, while control subjects performed their regular PE warm-up (i.e. jogging and stretching). Anthropometrics, Tanner staging, peak height velocity, and whole body bone mineral content (BMC), lean tissue, and fat mass (DXA-derived) were measured at baseline and follow-up. Physical activity was determined by questionnaire.

RESULTS: There were no differences in any measured variable between control and intervention groups at baseline. No group differences were detected for 8-month change in anthropometric or maturity measures for boys or girls. Analysis of 8-month change in grouped data revealed that jumpers increased whole body BMC ($p = 0.001$) and lean tissue mass ($p = 0.001$) significantly more than controls. Sex-specific analysis, however, showed that intervention boys gained more whole body BMC ($p = 0.001$) and lean tissue mass ($p = 0.001$) and lost more fat mass ($p = 0.03$) than controls, while intervention girls improved only whole body BMC ($p = 0.003$) over controls.

CONCLUSIONS: Short duration, high intensity jumping activity during adolescence appears to improve bone, lean tissue, and fat in a sex-specific manner. We found that boys gained more lean tissue and bone mass and lost more fat mass, while girls gained more bone mass with no differences in lean or fat tissue.

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