Abstract

Introduction: Environmental factors such as exercise participation and nutrition have often been linked to bone improvements. However, not all sports have the same effects, being non-osteogenic sports such as swimming defined as negative or neutral sports to practice regarding bone mass by some authors, similarly exercise-diet interaction in specific groups is still not clear.

Objective: To present the methodology of the RENACIMIENTO project that aims to evaluate body composition and more specifically bone mass by several techniques in adolescent swimmers and to observe the effects and perdurability of whole body vibration (WBV) and jumping intervention (JIN) on body composition and fitness on this population and explore possible diet interactions.

Design: Randomized controlled trial. Methods: 78 swimmers (12-17 y) and 26 sex- and age- matched controls will participate in this study. Dual energy X-ray, peripheral Quantitative Computed Tomography, Quantitative Ultrasound, Bioelectrical Impedance Analysis, and anthropometry measurements will be performed in order to evaluate body composition. Physical activity, nutrition, pubertal development and socio-economic status may act as confounders of body composition and therefore will also be registered. Several fitness factors regarding strength, endurance, performance and others will also be registered to evaluate differences with controls and act as confounders. A 7- month WBV therapy will be performed by 26 swimmers consisting of a training of 15 minutes 3 times per week. An 8 month JIN will also be performed by 26 swimmers 3 times per week. The remaining 26 swimmers will continue their normal swimming training. Four evaluations will be performed, the first one to describe differences between swimmers and controls. The second one to describe the effects of the interventions and the third and fourth evaluations to describe the perdurability of the effects of the WBV and JIN. Conclusion: The RENACIMIENTO project will allow to answer several questions regarding body composition, fitness, bone mass and interaction with diet of adolescent swimmers, describe swimming as a positive, negative or neutral sport to practice regarding these parameters and elucidate the effects and perdurability of WBV and JIN on body composition.

Keywords

Swimmers, Osteoporosis, Bone mass, pQCT, DXA.

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