

Circulating Sclerostin Responses to Acute Weight and Non-Weight Bearing Sport Activity in Pre-Adolescent Males

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Mechanical loading, i.e. physical activity and/or exercise, promotes bone formation during growth. Sclerostin, a glycoprotein, mediates osteocytes' response to mechanical loading by inhibiting the Wnt/ β -catenin pathway thereby inhibiting bone formation. **PURPOSE:** to examine the response of circulating sclerostin following an acute session of three different sport activities. **METHODS:** Fifty-five pre-adolescent boys (age 10.1 \pm 1.2yrs) participated in a single practice of either soccer (N=20), running (N=17) or swimming (N=18). Anthropometry, habitual PA, nutritional intake, biological maturity, bone mineral density and content, and fitness status were measured at baseline. Blood samples were collected before and within 30 min post-exercise. Participants did not differ in any baseline measures. **RESULTS:** Sclerostin showed a modest decline ($P < 0.05$) in response to soccer (pre: 213 \pm 45 pg/ml vs. post: 189 \pm 41 pg/ml) and running (pre: 221 \pm 56 pg/ml vs. post: 193 \pm 49 pg/ml) but not in response to swimming (pre: 209 \pm 45 pg/ml vs. post: 203 \pm 58 pg/ml). Sclerostin changes (independent of group) were correlated with mean speed ($r=0.41$; $P < 0.05$), total number of accelerations and decelerations ($r=0.51$; $P < 0.05$) and number of jumps ($r=0.6$; $P < 0.05$). **CONCLUSION:** Results of this study suggest that acute weight bearing exercise inhibits sclerostin levels slightly. Further work is needed to determine if this slight reduction alters bone mineral content.