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


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±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<0.5) in response to soccer (pre: 213±45 pg/ml vs. post: 189±41 pg/ml) and running (pre: 221±56 pg/ml vs. post: 193±49 pg/ml) but not in response to swimming (pre: 209±45 pg/ml vs. post: 203±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.