

## **Injury Risk Associated with Sports Specialization in Youth**

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### **INTRODUCTION:**

Sports specialization has become increasingly common among youth. Although physical activity is beneficial for overall health, there are concerns that early sports specialization could increase risk of injury.

### **METHODS:**

Prospective analysis using data from 1997, 1998, 1999, and 2001 from 11,897 youth in the Growing Up Today Study, a prospective cohort study of youth throughout the United States and 2004 data on injury history completed by their mothers, who are registered nurses. The outcome was incident stress fracture, tendinitis, chondromalacia patella, or anterior cruciate ligament tear. Information on activity was collected on each of the four questionnaires sent to the study participants. Sports specialization was defined as engaging in one specific sport in the fall, winter, and spring. Cox proportional hazards were used in the gender-specific analyses.

### **RESULTS:**

In age-adjusted analyses, specialization in baseball (hazard ratio(HR)= 2.02, 95% confidence interval (CI)1.26-3.24) and cheerleading/gymnastics (HR=2.63, 95% CI 1.16-5.98) prospectively predicted an increased risk of injury among the boys. Among the girls, specialization in running (HR=1.33, 95% CI 1.09-1.61), swimming (HR=1.32, 95% CI 1.01-1.73), soccer (HR=1.34, 95% CI 1.03-1.74), volleyball (HR=1.36, 95% CI 0.98-1.88), and cheerleading/gymnastics (HR=1.43, 95% CI 1.09-1.87) were all independently predictive of developing an injury. Sports specialization was associated with greater volume of physical activity ( $p < 0.0001$ ). After adjusting for total hours per week of vigorous activity, the sports specialization results were attenuated among the girls, but not the boys. Among both the girls and boys, total hours per week of vigorous activity was predictive of developing injury, regardless of what other variables were included in the statistical model (males: HR=1.04, 95% CI 1.02-1.06; females: HR=1.06, 95% CI 1.04-1.08).

**DISCUSSION AND CONCLUSION:** Sports specialization is associated with higher volume of activity. Among boys, both sports specialization and total hours per week of vigorous activity are predictive of developing injury. Among the girls, hours per week of vigorous activity is a stronger predictor of injury than sports specialization. Parents, coaches, and medical providers need to be made aware of the volume threshold above which physical activity is excessive.