

# BMI and Activity Level Changes after Slipped Capital Femoral Epiphysis: A Prospective Study

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**INTRODUCTION:** Slipped capital femoral epiphysis (SCFE) is one of the most common pediatric hip disorders. While prior studies have found an association in body mass index (BMI) and incidence of SCFE, little is known about changes in BMI after surgical treatment of SCFE and the associated changes in activity level. The purpose of this study was to determine the changes in BMI and activity level that occur after in situ fixation of SCFE.

**METHODS:** A total of 30 patients (15 males, 15 females) who were surgically treated for SCFE were followed prospectively. Preoperative baseline BMI and UCLA activity score was measured during initial assessment and postoperative during subsequent medical evaluations. No self-reported BMI was utilized. Patients were grouped into postoperative cohorts of 1-2 years, 3-4 years, and 5+ years. Additionally, patients were grouped into “underweight” (BMI < 18), “normal” (BMI = 18-25), “overweight” (BMI = 25-30), “obese” (BMI = 30-35), “severely obese” (BMI = 35-40), and “morbidly obese” (BMI > 40). Furthermore, patients were classified to into “low,” “moderate,” or “high” physical activity based on a UCLA activity score of 1-4, 5-8, or 9-10 respectively. Timepoints were compared to baseline BMI and UCLA activity score using paired t-test.

**RESULTS:** The study includes 30 patients with a mean age of  $12.4 \pm 1.8$  years. At presentation, SCFE patients had a mean BMI of  $27.1 \pm 5.7$  kg/m<sup>2</sup> with 36.7% of patients being obese or greater, and 6.7% being severely obese or greater (Figure 1). At baseline, UCLA activity level was high in 53.3%, moderate in 40.0%, and low in 6.6% of patients. At final follow up of  $4.4 \pm 1.4$  years, SCFE patients had a significant increase in mean BMI ( $31.7 \pm 7.6$ , change  $4.5 \pm 6.8$ ,  $p=0.001$ ), with 60% of patients being obese or greater and 43.3% being severely obese or greater (Figure 1). BMI had increased in 76.7% of SCFE patients, with 33.7% increasing by 5 or more BMI points. The UCLA activity score was unchanged at final follow up, and the baseline or follow-up UCLA activity score was not predictive of change in BMI. Changes in BMI were only mildly correlated with follow-up duration ( $R = 0.228$ ).

**DISCUSSION AND CONCLUSION:** After surgical fixation of SCFE, BMI values increase approximately 5 points at a mean of 4 years postoperatively, with the rate of obesity nearly doubling from 36.6% to 60%.

