

# Evaluation of a Mobile Application for Multiplier Method Growth and Epiphysiodesis Timing Predictions.

Pablo Wagner, Shawn Standard y John Herzenberg

## Abstract

**BACKGROUND:** The multiplier method (MM) is frequently used to predict limb-length discrepancy and timing of epiphysiodesis. The traditional MM uses complex formulae and requires a calculator. A mobile application was developed in an attempt to simplify and streamline these calculations. We compared the accuracy and speed of using the traditional pencil and paper technique with that using the Multiplier App (MA).

**METHODS:** After attending a training lecture and a hands-on workshop on the MM and MA, 30 resident surgeons were asked to apply the traditional MM and the MA at different weeks of their rotations. They were randomized as to the method they applied first. Subjects performed calculations for 5 clinical exercises that involved congenital and developmental limb-length discrepancies and timing of epiphysiodesis. The amount of time required to complete the exercises and the accuracy of the answers were evaluated for each subject.

**RESULTS:** The test subjects answered 60% of the questions correctly using the traditional MM and 80% of the questions correctly using the MA ( $P=0.001$ ). The average amount of time to complete the 5 exercises with the MM and MA was 22 and 8 minutes, respectively ( $P<0.0001$ ).

**CONCLUSIONS:** Several reports state that the traditional MM is quick and easy to use. Nevertheless, even in the most experienced hands, performing the calculations in clinical practice can be time-consuming. Errors may result from choosing the wrong formulae and from performing the calculations by hand. Our data show that the MA is simpler, more accurate, and faster than the traditional MM from a practical standpoint.