



# CALIFORNIA STATE SCIENCE FAIR 2004 PROJECT SUMMARY

<b>Name(s)</b> <b>Cody R. Lewis</b>	<b>Project Number</b> <b>S1007</b>
<b>Project Title</b> <b>Utilizing Counter-Movement Medicine Ball Throws to Increase Elite &amp; Non-Elite Athletes' Vertical Jump Heights-2 yr Study</b>	
<b>Abstract</b> <b>Objectives/Goals</b> Throughout history, many athletes have been forced into early retirement due to knee injuries and joint inflammation. The constant pounding on knee joints of athletes, in volleyball especially, can lead to an abrupt career end. This project was designed to increase an athlete's counter movement vertical jump (CMVJ) height by using repetitions of counter movement medicine ball throws (CMMBT). <b>Methods/Materials</b> This project was conducted in 3 trials over a 2-yr period, culminating in 24,859 CMMBT's. Trial #1: Non-elite high school athletes (males and females) threw a 4kg medicine ball 20x, 3x/wk. Every 3 wks, the experimental group (students throwing the medicine ball) and a non-throwing control group were tested for their maximum CMMBT throw and CMVJ height. This 15-wk trial was conducted in 2003. Trial #2: Elite collegiate volleyball players (males) threw a 4.54kg medicine ball 20x, 3x/wk. Every 3 wks, the experimental group and a non-throwing control group were tested for their maximum CMMBT throw and CMVJ height. This 8-wk trial was conducted in Oct.-Dec. of 2003. Trial #3: Club volleyball players (females, 17-18 yrs old) threw a 4kg medicine ball 20x, 2x/wk. Every 3 wks, the experimental group and a non-throwing control group were tested for their maximum CMMBT throw and CMVJ height. This 12-wk trial was conducted in Jan-March of 2004. <b>Results</b> Trial #1: the non-elite, male experimental group increased their CMVJ height (average) 2.0 inches ("). The male control group decreased (avg) 1.0". The non-elite, female experimental group increased their CMVJ height (avg) 1.8". The female control group decreased (avg) 2.2". Trial #2: the elite, collegiate male experimental group increased their CMVJ height (avg) .5". The control group decreased (avg) 1.4". Trial #3: the female, club volleyball experimental group increased their CMVJ height (avg) 1.0". The control group increased (avg) 2.0". <b>Conclusions/Discussion</b> Overall, the data did support the hypothesis. The results in Trials #1 and #2 show that it is possible to raise both elite and non-elite athletes' CMVJ height by an exercise regime that includes throwing a 4-4.54kg medicine ball 20x, 3x/wk. Trial #3, showing increases in both groups, did not support the hypothesis. This was probably due to the lower number of throws/wk (60 throws/wk in Trials #1 and #2 vs. 40 throws/wk in Trial #3).	
<b>Summary Statement</b> This project was designed to increase an athlete's counter movement vertical jump (CMVJ) height by using repetitions of counter movement medicine ball throws (CMMBT).	
<b>Help Received</b> Marv Dunphy (Pepperdine Head Men's Volleyball Coach) and Seth Burnham (AVVC 18-1's Head Girl's Volleyball Coach)- granted player usage. Dr. R. G. Haennel (University of Regina)- supplied the "Lewis Formula."	