



CALIFORNIA STATE SCIENCE FAIR 2015 PROJECT SUMMARY

Name(s) Jasmine J. Cha	Project Number S0302
Project Title The Snitch on the Stitch	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals My objective to discover which suture technique could withstand the most stress, and whether a more intricate design would resist more weight.</p> <p>Methods/Materials I used chicken breasts because these are the closest material to tendon. I used a suture kit obtained from a practicing surgeon to suture the chicken, then made a weight system using a ring stand and metal rod. Following this, I attached binder clips onto the chicken, pierced nails through the clips (for stability), then hung mass weights onto the clips in increments of 100g every 30 seconds. I continued hanging masses until the chicken tore completely from the suture site.</p> <p>Results After testing out three different suturing techniques in three separate trials, the horizontal sutures endured an average of 333.336g more than the normal sutures. On the other hand, vertical sutures withheld about 66.667g more than normal sutures before tearing. The normal, and most simple, suture pattern resisted the least amount of stress compared to the vertical and horizontal suturing techniques, which withstood more weight and had more complex designs.</p> <p>Conclusions/Discussion In the end, the hypothesis that if the suture technique being tested has a more intricate design and goes over the incision more, then that method will withstand the most weight, had been confirmed. The vertical and horizontal sutures had a more elaborate design, and this enabled the chicken breasts to bear more weight. The horizontal sutures endured more stress than the vertical design because they are the only tested method that had a technique in which the suture went across the chicken breast, not just over the incision, and this may have aided in the greater amount of weight that the chickens with this performed method could bear. With this knowledge, a further experiment could be tested in which different suturing techniques that had a more complex design than a horizontal suture (i.e. Kraków running/locking sutures) should be tested in order to further confirm the validity of the hypothesis that if a suture techniques runs across the chicken breast horizontally, and not just across the incision, that the subject will uphold the most stress.</p>	
Summary Statement My project was centered around discovering which suture technique could endure the most weight without tearing the tendon.	
Help Received Used Mr. Betzelberger's classroom for my trials; Athletic trainer Diana Putignano obtained a suture kit from a practicing orthopedic surgeon.	