

# Technical Bulletin

## Superior Ergonomics with FlexFit



### The Risk of Repetitive Stress Injury

Repetitive Stress Injury (RSI) is caused by repetitive tasks, forceful exertions, or awkward positioning. The repetitive movement and overuse of muscles can cause mild to severe pain as well as lasting damage. The cost associated with the diagnosis as well as the treatment for RSI amounts to billions.

Laboratory technicians are highly vulnerable to RPI due to the repetitive nature of modern standard lab practices which include pipetting. The required force for insertion and ejection of pipette tips of chosen pipettors have resulted to many RSI cases.

### The Solution: FlexFit™

To improve the health of laboratory scientists, our engineers at Biotix® have put in the time and research into developing ergonomic pipette tips. The breakthrough was Biotix creating patented FlexFit® technologies that incorporated alternating thick and thin ribs along the proximal end *Figure 1 & 2*. The thicker regions maintain the integrity of the pipette structure while the thinner regions allow for flex. As a result, a secure seal is created with lesser insertion force required.



Figure 1 showcases a close up of the FlexFit technology.



Figure 2 showcases the flexibility of the proximal end as the pipette is manipulated.

Biotix has incorporated FlexFit into its own branded line of universal fit pipette tips with resulting better ergonomics across a range of pipettors. The patented technology has demonstrated superior ergonomics in comparison to competitor pipette tips. The study revealed that Biotix tips had the lowest insertion and ejection forces and was all around the most preferred tip.

### Ergonomic Testing

Professional ergonomists at U.S. Ergonomics conducted a controlled laboratory study where eleven lab technicians were recruited to be wired to an electromyography (EMG) *Figure 3* and were tasked with the following tests:

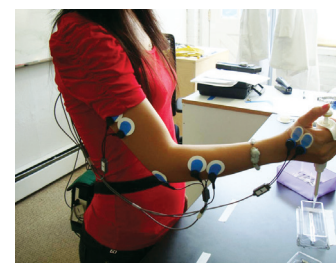


Figure 3 Test subject wired to EMG for muscle activity monitoring

Full Cycle -- Test subjects completed a series of three full pipettign cycles (apply tip, aspirate, dispense, tip ejection)

On/Off Test -- Test subjects completed a series of 12 applications of the tip followed by tip ejection

Step-by-step sequence of tip application, aspiration, dispense and tip ejection

These tests were completed with Biotix tips against leading competitor tips. Two trials were conducted for each test and all data deom the EMG were analyzed.

### Study Results

Overall, Biotix tips were rated the best in ergonomic performance among test subjects and based on EMG measurements.

As shown in *Figure 4*, Biotix tips can reach the standards of Rainin® LTS® with multiple pipettor brands while giving end-users more pipettor choices when using Biotix pipette tips.

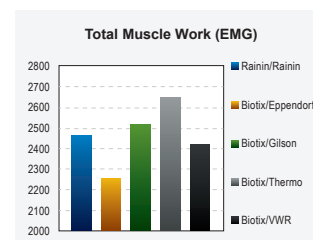


Figure 4

### Summary

Biotix's universal tips, infused with FlexFit technology, demonstrate ergonomic benefits across a range of competitor pipettors and provide users another way to adopt a more ergonomic lab program.