

BIOTIX



LIQUID HANDLING



Ergonomix Technical Bulletin

Biotix Superior Ergonomics



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 pipettes 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.

Biotix has incorporated FlexFit into its own branded line of universal fit pipette tips with resulting better ergonomics across a range of pipettes. 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.



Figure 1 showcases a close up of the FlexFit technology.



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

Methods

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:

Full Cycle -- Test subjects completed a series of three full pipetting 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

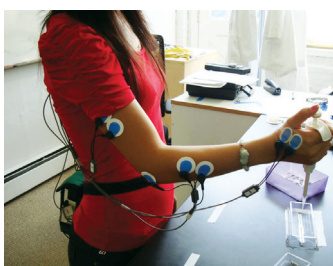


Figure 3
Test subject wired to EMG for muscle activity monitoring

tips against leading competitor tips. Two trials were conducted for each test and all data from the EMG were analyzed.

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 pipette brands while giving end-users more pipette choices when using Biotix pipette tips.

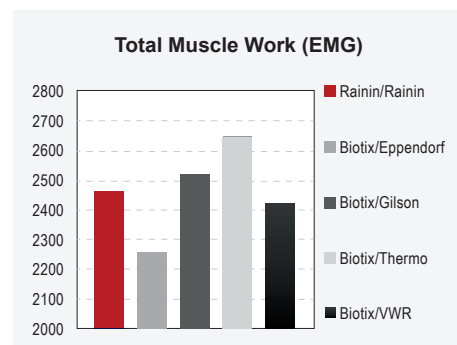


Figure 4

Summary

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



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