



Heart Rate Accuracy vs EKG

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## MIO ALPHA HEART RATE ACCURACY STUDY BRIEF

### Purpose

The purpose of this study was to assess the validity and accuracy of MIO Alpha's optical heart rate technology compared to electrocardiography (EKG) during cycling, walking, jogging and running.

### Methods

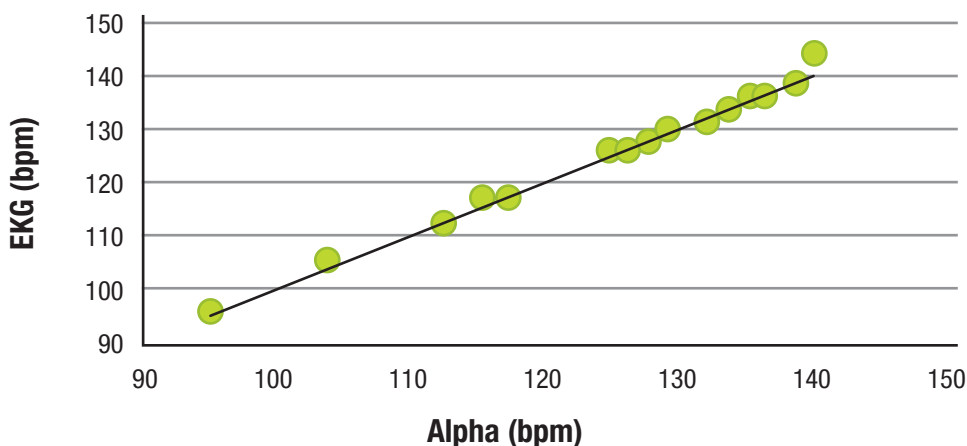
15 (8males/7 females) healthy university students volunteered to participate (ages 22-28 yrs.). Each test was conducted at the San Francisco State University Exercise Physiology Laboratory by Mark Gorelick, Ph.D. All subjects performed a standard YMCA cycle test (3-stage/3-min) followed by a treadmill test that included Walking (2mph), Jogging (4 mph) and Running (6mph) for 4-mins/ stage. Simultaneous recordings from the MIO Alpha and EKG were taken every 30s throughout the testing.

### Results

#### CYCLE RESULTS

Compared to a standard EKG signal as the reference, the MIO Alpha's optical HR technology showed a high correlation of 0.99 with an average difference between devices at all stages of  $0.33 \pm 1.19$  beats/min (mean  $\pm$  SEM). Throughout the cycling test MIO Alpha's HR was within 5 beats/min of EKG 93% of the time.

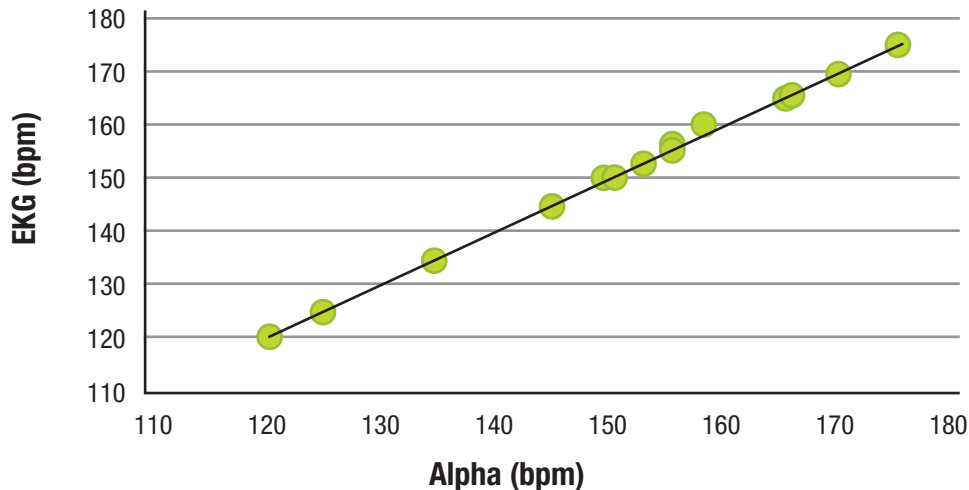
#### CYCLING (STAGE 3) – ALPHA VS EKG



## TREADMILL RESULTS

Compared to a standard EKG signal as the reference, the MIO Alpha's optical HR technology showed a high correlation of 0.99 at 4mph and 6 mph, with an average difference between devices at all speeds of  $0.26 \pm 1.13$  beats/min (mean  $\pm$  SEM). Throughout the treadmill test MIO Alpha's HR was within 5 beats/min of EKG 97% of the time. Additionally, to test the limits of the MIO Alpha, a single subject was tested at their maximal running speed of 14.4 mph. During the 1-minute trial the average difference between MIO Alpha and EKG was  $\pm 1$  beat/min.

### TREADMILL (6PMH) – ALPHA VS EKG



## Conclusion

MIO Alpha's optical heart rate technology provides an extremely valid and accurate measurement of heart rate during cycling, walking, jogging and running as compared to electrocardiography.