



Heart Rate Accuracy vs EKG

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April 30, 2013



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

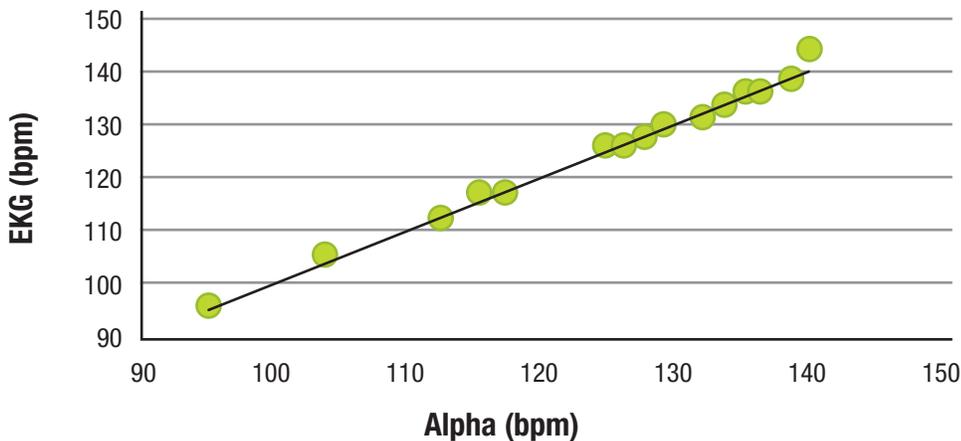
15 (8males/7 females) healthy university students volunteered to participate (ages 22-28 yrs.). Each test was conducted at the San Francisco State University Exercise Physiology Laboratory by Mark Gorelick, Ph.D. All subjects performed a standard YMCA cycle test (3-stage/3-min) followed by a treadmill 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 ± 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.

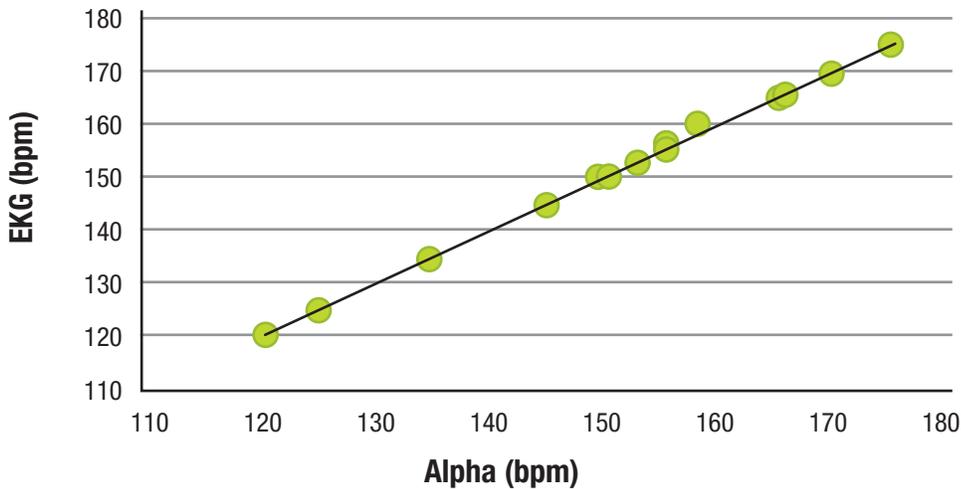
CYCLING (STAGE 3) – ALPHA VS EKG



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 ± 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 ± 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.