

# Evaluation of Reaction Time Using a Mobile Application

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Modern day consumer electronics are incorporating Micro Electro-Mechanical Systems nano-accelerometers that measure the instantaneous acceleration of an object. These devices are used to measure movement from any point on the body. One such device is the iPod and iPhone developed by Apple. A company named SWAY Medical LLC developed an application using these accelerometers to assist in measuring balance to manage concussions. A recent update to the SWAY Balance application included the measurement of reaction time. This is the first mobile application to assess this neurological response with a handheld device. Currently, there is no cost-effective field assessment for determining reaction time. With this application, there is a possibility of determining reaction time.

**Purpose:** The purpose of this study was to assess the consistency and effectiveness of the application for measuring reaction time.

**Methods:** 50 subjects participated in 3 different trials of reaction time testing. The individuals came in and read an informed consent. The test was explained to them and asked if there were any questions. From here, the individuals were told to stand legs spread shoulder width apart. The device was placed into their hands. They held the device with straight arms and reacted to the screen color change from white to orange. This was done five times. Sex, general health, and whether or not they were student athletes was recorded, participants were also asked if they played video games. Each participant was asked to test their reaction time in 3 trials with 5 times per trial. The participants overall did the test 15 times.

**Results:** ANOVA determined that there was no significant difference between the first test and the second test, but between the first and third there was a significant difference.

**Conclusion:** Currently, there is no data on baseline reaction time for the mobile application. The Reaction Time App has the potential to be a very cost-effective and fast method to assessing reaction time. Further studies are needed comparing the mobile application to validated laboratory equipment to determine its clinical value.