Accuracy of Moov Now™ Exercise Performance Measures in Recreational Swimmers

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INTRODUCTION: Wearable fitness technology has become an increasingly popular tool to measure activity levels and performance measures across multiple sports. As more users rely on these devices to measure and report activity, the accuracy of these devices require in-depth study and validation. The focus of traditional validation research of wearable fitness technology focuses on elite competitive populations, however as the general population’s consumption of these devices expands, it is important to reveal the accuracy of wearable fitness technology on recreational users.

PURPOSE: The purpose of this study is to assess the accuracy of the Moov Now, a wearable fitness motion sensor, in the detection of total distance swam and number of stroke cycles in a 200m, free-style swim on recreational users.

METHODS: 40 healthy recreational swimmers successfully completed one 200m, free-style lap swim while wearing the Moov Now. Moov Now recorded total stroke count and total swim distance. Measures were compared to manual counts from recorded real-time video.

RESULTS: A one-sample t-test ($p = 0.05$, 95% CI) revealed no significant difference ($p = .442$) between the known distance of 200m and total swim distance reported by the Moov Now. On average, however, the Moov Now underestimated swim distance by 1.56%. An Intraclass Correlation Coefficient (ICC) (95% CI) determined the Moov Now stroke count to be moderately accurate (.618) compared to real-time video manual count. Additionally, the Moov Now on average underestimated total stroke count by 4.03%.

CONCLUSION: Findings from this study suggest that the Moov Now may be an accurate and reliable device in measuring total freestyle swim distance but may not be accurate in detecting freestyle stroke count during a 200m swim when worn by recreational swimmers.