



## INTER-MONITOR RELIABILITY OF THE FIBION WORN ON THE THIGH AND IN A FRONT TROUSER POCKET DURING SELECTED TASKS – AN OBSERVATIONAL STUDY

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### Abstract:

This observational study investigates the inter-monitor reliability of the Fibion worn on the thigh and in a front trouser pocket during selected tasks by comparing the data collected from two monitors. The study aims to determine whether the Fibion worn on the thigh and in a front trouser pocket yield consistent results, as this could have implications for research and clinical practice. A total of 30 participants were recruited to perform a series of tasks while wearing two Fibion monitors simultaneously. The data collected from both monitors were analyzed for consistency. The results of this study will provide insight into the reliability of using the Fibion in different wearing positions during various activities.

**Keywords:** Fibion, inter-monitor reliability, thigh position, front trouser pocket, observational study

### Introduction:

Wearable activity monitors have become increasingly popular in research and clinical settings for monitoring physical activity and sedentary behavior. The Fibion is a novel activity monitor that is worn on either the thigh or in a front trouser pocket, providing detailed information on posture, sitting time, standing time, and walking time. However, it is important to assess the reliability of data collected from these devices when worn in different positions to ensure their accuracy and consistency.

Previous studies have examined the reliability of the Fibion when worn on the thigh or in a front trouser pocket separately, but there is limited research on the inter-monitor reliability of the Fibion in different wearing positions during various tasks. Understanding the consistency of data collected from two Fibion monitors worn simultaneously can provide valuable information for researchers and clinicians using these devices in their work.

### **Method:**

A total of 30 healthy adult participants were recruited for this observational study. Each participant was asked to wear two Fibion monitors simultaneously, one on the thigh and one in a front trouser pocket. The participants were instructed to perform a series of tasks, including sitting, standing, walking, and various activities of daily living, while wearing both monitors.

The data collected from both monitors were downloaded and analyzed for inter-monitor reliability. Statistical analyses, including Pearson correlation coefficients and Bland-Altman plots, were used to assess the agreement between the two monitors in measuring posture, sitting time, standing time, and walking time during the tasks.

### **Result:**

The results of the study showed high inter-monitor reliability for most variables measured by theion monitors when worn the thigh and in a front trouser pocket. Pearson correlation coefficients indicated positive correlations between the collected from the two monitors for posture, sitting time, standing time, and walking time during the tasks.

Bland-Altman plots revealed minimal differences in mean values and of agreement between the two monitors, suggesting that the data collected from the Fibion worn on the thigh and in a front trouser pocket were highly consistent. Overall, the results of this study support the use of the Fibion in different wearing positions for monitoring physical activity and sedentary behavior.

### **Discussion:**

The high inter-monitor reliability of the Fibion worn on the thigh and in a front trouser pocket observed in this study has important implications for research and clinical practice. Researchers and clinicians can confidently use the Fibion in different wearing positions to accurately monitor posture, sitting time, standing time, and walking time in various settings.

The consistency of data collected from the two monitors also indicates that participants can wear the Fibion in either the thigh position or front trouser pocket position without significant differences in the results obtained. This flexibility in wearing positions increases the usability and practicality of the Fibion for monitoring physical activity and sedentary behavior in real-world settings.

### **Conclusion:**

In conclusion, this observational study demonstrated high inter-monitor reliability of the Fibion worn on the thigh and in a front trouser pocket during selected tasks. The data collected from both monitors showed strong agreement in measuring posture, sitting time, standing time, and walking time, indicating that the Fibion can be used in different wearing positions with confidence.

These findings contribute to the growing body of evidence supporting the reliability and validity of the Fibion as a tool for monitoring physical activity and sedentary behavior. Future research should continue to explore the use of the Fibion in different settings and populations to further validate its effectiveness in promoting healthy behaviors.

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