

Introduction

Decreasing sedentary time and increasing physical activity in older populations improves all-cause mortality. Recent literature also suggests that increasing physical activity for clinical populations, such as people with stroke, during the inpatient rehabilitation phase of care may be beneficial to outcomes. With most of the stroke research, however, physical activity is quantified after hospital discharge, not during inpatient rehabilitation. Complicating understanding of the role of physical activity is the breath of activity monitors used to measure physical activity and sedentary behaviors. Some monitors appear to more accurately measure sedentary activity; whilst others tend to more accurately capture moderate to vigorous activity. For example, the Step Watch® (SW) monitor has been used extensively in stroke populations but few studies have quantified activity in the inpatient settings. There is also a concern that the SW may not accurately measure sedentary behavior due to its wear location (ankle) and that movement by a patient with acute stroke may be better measured at the torso. This study will pilot test 4 activity monitors on stroke survivors at NCH's Brookdale Center for Healthy Aging and Rehabilitation in-patient facility to determine which device is best for use in a larger scale clinical intervention (Phase 1). This research was supported by a Undergraduate Student Scholarship Support Award mini grant from FGCU.

Objectives

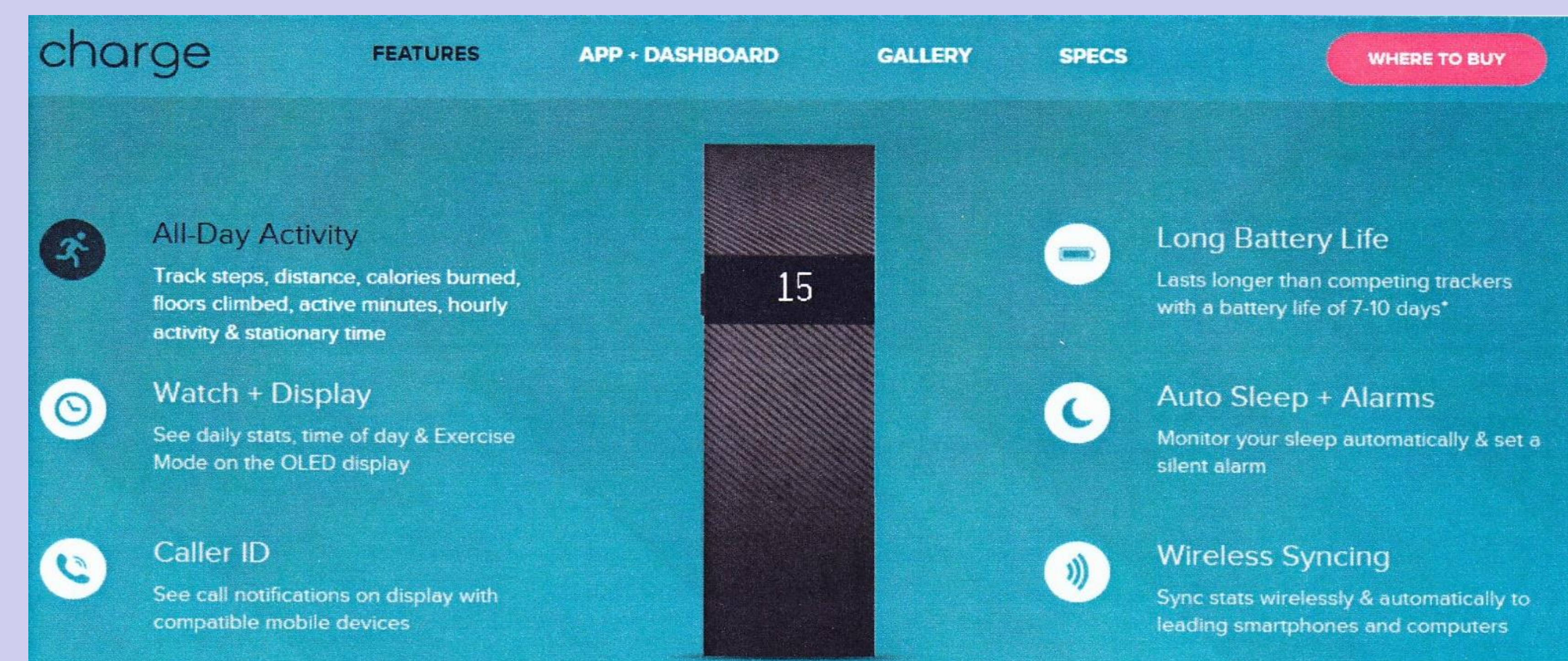
- Intensity of physical activity in the in-patient phase of stroke recovery can be difficult to accurately measure. The findings of this pilot study will facilitate further research aimed at prescribing optimal physical activity during in-patient stay to maximize recovery.
- This pilot study compared different activity monitors (2 research grade & 5 commercial) in an inpatient rehabilitation setting to determine which type and wear location is the most appropriate in stroke survivors.
- Wearing a CM early after stroke may condition a patient to use a CM to increase their activity post discharge.

Methods

- The Jawbone Up3 (Wrist) and UpMove (Chest), Fitbit Charge (Wrist) and One (Chest), VivoFit3 (Wrist) were worn by 3 patients for a period of 2 days.
- All monitors were placed on the same location regardless of the affected sides.
- Verbal feedback from the lead physical therapist provided comments on the ease of use of the CM from patient, family, and hospital staff.
- Study staff programed the CM prior to patient wear to determine ease of CM set up.

Results

- This study was conducted on 2 men and 1 woman (1 patient was excluded due to skin reactions with all wrist bands). Overall, the monitors were well received. No patient complained of discomfort/irritation with any monitor on any location.
- The biggest concern, for study staff, involved CMs worn on clothing (Chest/Waist). They were often left on the clothes when patients were changed and not noticed until daily therapy sessions resulting in missing data thus making them less desirable in this setting. No monitors, however, were lost.
- The challenge of the Jawbone and Garmin CMs was the need to have the synced device (phone) close by daily, not a typical action in the in-patient setting. Poor readability of the Garmin CM screen was also concern.
- The Fitbit CMs are able to sync with tablets thus easier to share output with the patients.



Device	Site	Implementation Issues	Pros	Cons	Recommendation
Actigraph wGT3X-BT	Waist or Wrist				Not Recommended
Motionwatch-8	Wrist		<ul style="list-style-type: none"> Better Sleep Assessment Easier Port for Data Download 		Recommended
Jawbone UpMove	Chest, Wrist, or Waist	Requires buying a device (phone) for each device – blue tooth connection issues		<ul style="list-style-type: none"> Sleep must be logged 	Not Recommended
Jawbone Up3	Wrist		<ul style="list-style-type: none"> Sleep Must Be Logged Complicated Wrist Attachment 	Not Recommended	
Garmin Vivo Fit 3	Wrist		<ul style="list-style-type: none"> Screen to Control Watch is Small and Hard to Read 	Not Recommended	
Fitbit Charge	Wrist	Can be used on Samsung tablets or Phone	<ul style="list-style-type: none"> Easy to read interface on a Tablet 	<ul style="list-style-type: none"> Taken Off Missing Data 	Recommended
Fitbit One	Chest, Waist				Not Recommended
Lumo Lift	Not an option, in Beta Test the Postural Vibration Feature is too Sensitive				

Conclusion

For the purposes of this study, the Fitbit Charge was chosen for future use in studies in this population because it is easy to sync with a phone or tablet, easy to view and understand, and it doesn't interfere with the duties of nurses and therapists.

Phase 1

- This pilot study is the initial phase of an ongoing multi-phase research project with the end goal of creating an evidence-based protocol for physical activity guidelines in inpatient stroke rehabilitation.
- Phase 1, titled "The correlation between activity levels and rehabilitation outcomes of patients post-stroke in an inpatient rehabilitation center", will focus on quantifying how much physical activity would be the most beneficial for the recovery of stroke survivors in inpatient rehab.

References

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