



Physical Activity in Adults with Severe Hemophilia: A Feasibility Study



How you want to be treated.

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Introduction and Objectives: Adults with severe hemophilia are reported to be less physically active than adults without hemophilia resulting in a sedentary lifestyle, which negatively impacts joint health. There is a paucity of studies evaluating objective measurements of physical activity in adults with hemophilia. The aim of the study was to assess the feasibility of using an objective, direct and continuous measurement of physical activity.

Methods and Materials: Adults with severe Hemophilia A starting individualized prophylaxis were recruited and provided informed consent. Activity was assessed using an accelerometer-based activity monitor (SenseWear Pro Armband™) worn 24 hours/day for 7 days. Physical activity data was collected including steps per day, minute-by-minute energy expenditure (METs), amount of time sleeping and total daily calories. The patients were informally asked about the experience of wearing the accelerometer.

GALVANIC SKIN RESPONSE

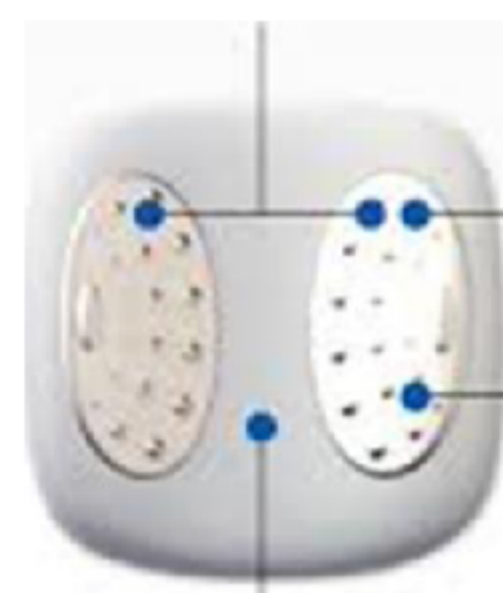
When you sweat, your skin becomes more electronically conductive. This measurement helps to see how active you

SKIN TEMPERATURE

Measures the surface temperature of the body

HEAT FLUX

Measures the rate at which heat is dissipating from your body



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3-AXIS ACCELEROMETER

Measures your motion and steps taken

Results: The accelerometer data was compared with the normal average steps per day and METs for the general population.

- 80% of the adults with hemophilia were classified as “low daily activity” (less than 7,499 steps per day)
- Of these patients 60% were “sedentary” with less than 5,000 steps per day
- For all the participants the average daily energy expenditure was less than 2 METs (light level of activity > 3 METs)
- Patient adherence was excellent with the majority of the patients wearing the accelerometer consistently over the 7 days
- Patients reported no issues with wearing the accelerometer

Patient Characteristics: 11 patients participated.

Data collected outlined in tables below:

Table 1:

	Mean	SD	Range
Age (years)	27.6	7.1	21-45
BMI	27.4	4.6	22-36
HJHS	18.7	25.6	0-83

Table 2:

Sports and Recreational Participation Level			
None	1-3 days/week	> 3 Days/week	
45%	18%	36%	
Lifestyle and Job			
Student	Sedentary Job (sitting)	Active Job (Standing/Walking)	Disability
45%	27%	18%	9%

Table 4:

	Mean	SD	Range
Total Energy Expenditure/ day (Joules)	13100	2957	8620-196192
Active Energy Expenditure/day (Joules)	1.54	0.31	1-2
Physical Activity Duration/day (METs)	1.54	0.05 (0.14-4.28)	0.14-4.28
# Steps/day	5734	2968	374-12273
Sleep Duration/day (hours)	6:34	0.05	5:19-9:19
Duration On Body/day (hours)	22:14	0.08	17:33-23:44

Figure 2: Number of steps/day for each patient

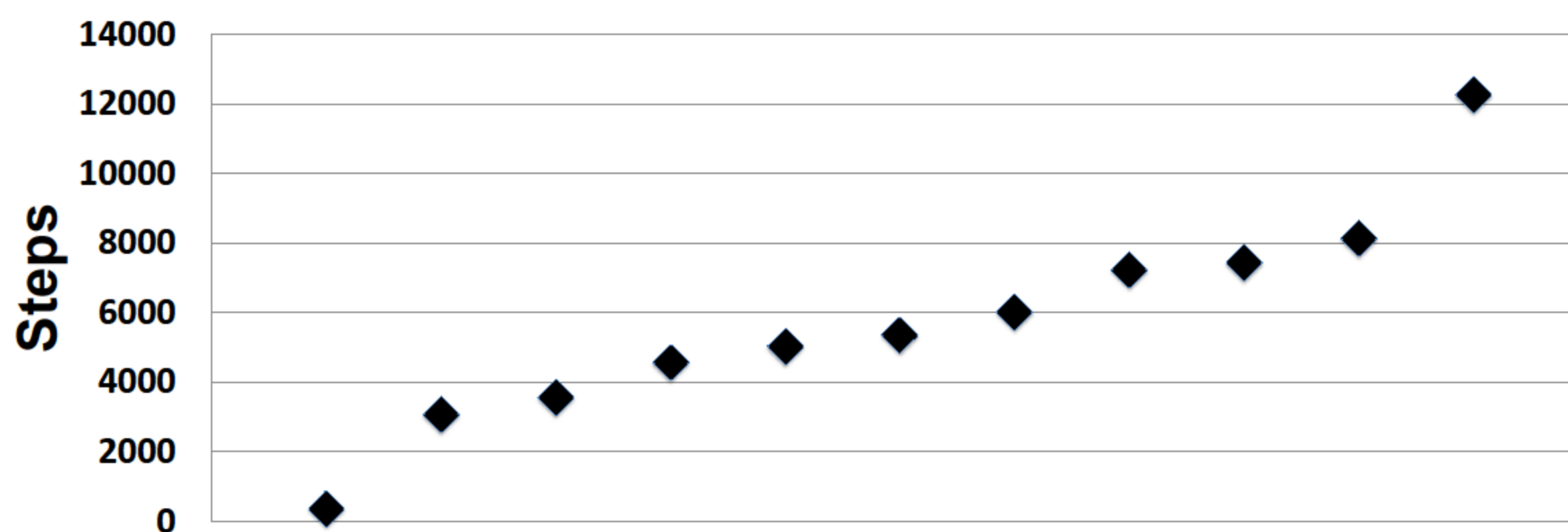
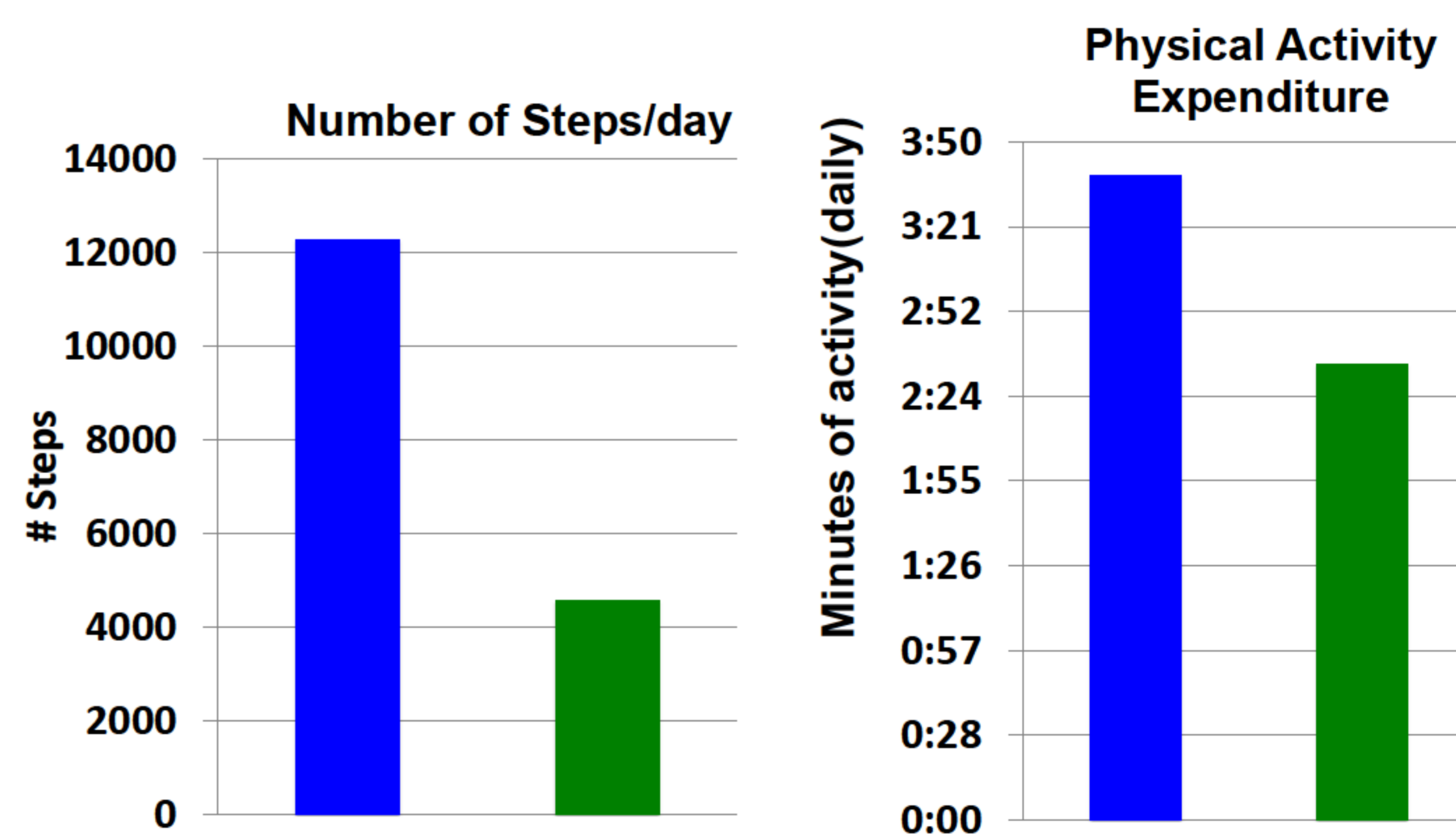


Figure 3:

Comparison of 2 patients starting individualized prophylaxis

Patient A= 26 year old, HJHS=0, active work, participates in sports

Patient B= 26 year old, HJHS=27, disability, sedentary



Conclusion:

- This pilot study indicates that an accelerometer is a practical and valuable tool to measure physical activity of adults with hemophilia
- Patients with hemophilia are inactive compared with a general adult population

Next Steps:

- Future research will investigate the benefits of individualized prophylaxis on increasing physical activity in adult patients with hemophilia
- Studies will explore the use of accelerometers as a tool to promote lifestyle change through measuring components of physical activity

