

# Association of Physical Activity with Bleeding Frequency in Children with Hemophilia A: A CHES PAEDs Study Analysis

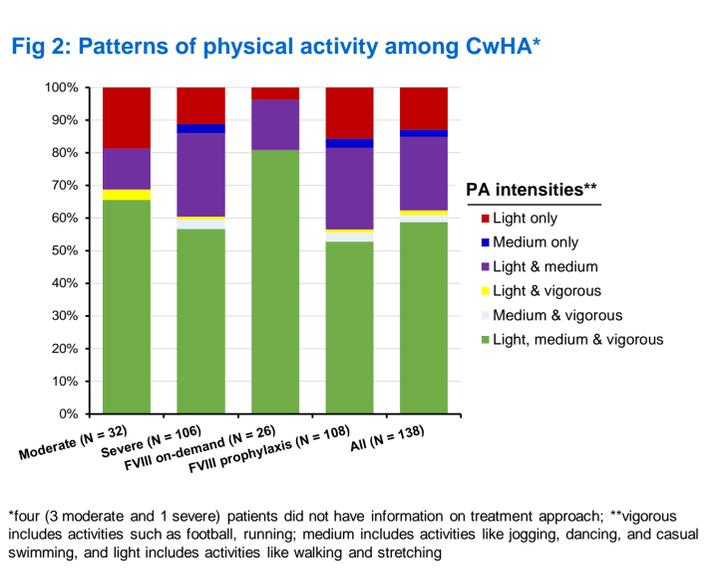
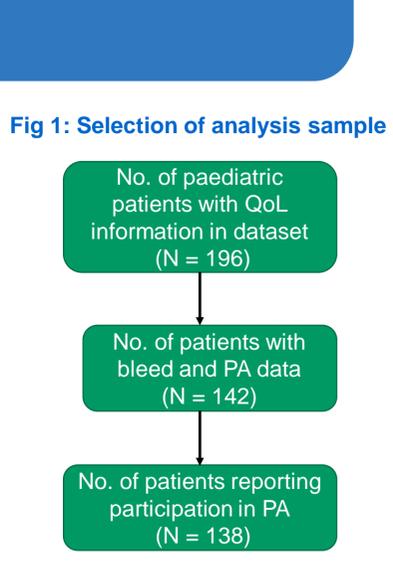
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## Background

- In children and adolescents with haemophilia A, physical activity (PA) may be essential in promoting joint, bone, and muscle health, as well as adequate weight control.<sup>1,2</sup>
- However, the relationship between PA and bleeding phenotype in children with haemophilia A (CwHA) remains poorly understood.
- Thus, the aim of this study was to examine the association between participation in PA and annualized bleed rate (ABR) among CwHA in a real-world setting.

## Methods

- Data from the Cost of Haemophilia across Europe - Socioeconomic Survey in paediatric population (CHES PAEDs) study, conducted in France, Germany, Italy, Spain, and the United Kingdom from December 2017 to March 2018 were utilized.
- Following ethics approval, haemophilia specialists provided information on CwHA they treated, including demographics, treatment type, and clinical outcomes.
- Patients and caregivers completed quality-of-life (QoL)-related questionnaires and reported physical activity levels.
- Descriptive analyses were performed.



\*four (3 moderate and 1 severe) patients did not have information on treatment approach; \*\*vigorous includes activities such as football, running; medium includes activities like jogging, dancing, and casual swimming, and light includes activities like walking and stretching

## Results

Table 1: Characteristics of CwHA according to treatment approach, HA severity, and PA patterns

	Severity		Treatment approach*		PA patterns		Overall (N = 138)
	Moderate (≥1 and ≤5 IU/dL) (N = 32)	Severe (<1 IU/dL) (N = 106)	On-demand (N = 26)	FVIII Prophylaxis (N = 108)	No vigorous activity (N = 52)	Vigorous activity** (N = 86)	
<b>Age (years)</b>							
Mean (SD)	10.6 (4.09)	10.5 (3.98)	10.2 (3.66)	10.7 (4.06)	10.3 (4.41)	10.7 (3.74)	10.5 (3.99)
Median (IQR)	10.5 (7.0-14.0)	10.0 (8.0-13.8)	10.0 (8.3-13.0)	11.0 (8.0-14.0)	10.5 (7.0-14.0)	10.0 (9.0-13.0)	10.0 (8.0-14.0)
<b>BMI (kg/m<sup>2</sup>)</b>							
Mean (SD)	19.7 (5.26)	22.8 (23.5)	28.7 (43.2)	20.8 (9.95)	21.9 (13.7)	22.1 (24.1)	22.0 (20.8)
Median (IQR)	20.0 (17.4-22.9)	19.9 (16.7-22.2)	21.2 (17.8-22.6)	19.7 (16.8-22.9)	20.3 (16.5-22.9)	19.8 (17.3-22.2)	20.0 (17.0-22.7)
<b>Has your haemophilia compromised your activities?</b>							
Don't know	2 (6.2%)	2 (1.9%)	0 (0.0%)	4 (3.7%)	1 (1.9%)	3 (3.5%)	2 (2.9%)
No	11 (34.4%)	22 (20.8%)	9 (34.6%)	22 (20.4%)	6 (11.5%)	27 (31.4%)	33 (23.9%)
Yes	19 (59.4%)	82 (77.4%)	17 (65.4%)	82 (75.9%)	45 (86.5%)	56 (65.1%)	101 (73.2%)
<b>Reported hours of PA per week</b>							
Mean (SD)	23.8 (24.8)	10.8 (11.3)	13.5 (10.5)	13.5 (17.7)	6.83 (8.99)	18.0 (18.3)	13.8 (16.3)
Median (IQR)	11.0 (8.0-29.5)	7.0 (5.0-12.8)	10.0 (7.3-17.5)	7.0 (5.0-13.3)	4.5 (3.0-6.0)	12.0 (8.0-20.8)	8.0 (5.0-14.8)
<b>Adapted treatment prior to PA<sup>‡</sup></b>	15 (46.9%)	68 (64.2%)	15 (57.7%)	67 (62.0%)	36 (69.2%)	47 (54.7%)	83 (60.1%)
<b>Number of bleeds/year</b>							
0	1 (3.1%)	9 (8.5%)	2 (7.7%)	8 (7.4%)	4 (7.7%)	6 (7.0%)	10 (7.2%)
≥1	31 (96.9%)	97 (91.5%)	24 (92.3%)	100 (92.6%)	48 (92.3%)	80 (93.0%)	128 (92.8%)

ABR = annualized bleed rate; SD = standard deviation; IQR = interquartile range; BMI = body mass index; \*four (3 moderate and 1 severe) patients did not have information on treatment approach; \*\*vigorous includes activities such as football, running; medium includes activities like jogging, dancing, and casual swimming, and light includes activities like walking and stretching; ‡treatment adaptation includes increased frequency before activity, increased dose before activity, or change of dose day for activity.

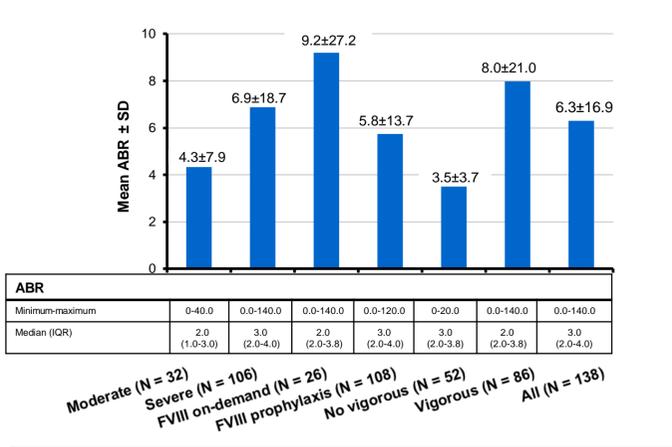
More than 73% of patients reported that HA has compromised their activities. CwHA who engaged in vigorous PA were similar in age and BMI to those who did not

Table 2: ABR of CwHA according to treatment adaptation prior to participation in PA

	Adapted treatment <sup>‡</sup>			Did not adapt treatment		
	All (N = 83)	Moderate (≥1 and ≤5 IU/dL) (N = 15)	Severe (<1 IU/dL) (N = 68)	All (N = 51)	Moderate (≥1 and ≤5 IU/dL) (N = 15)	Severe (<1 IU/dL) (N = 35)
<b>Minimum-maximum</b>	0.0-140.0	0.0-8.0	0.0-140.0	0.0-58.0	1.0-25.0	0.0-58.0
<b>Mean (SD)</b>	6.6 (20.1)	2.2 (2.1)	7.6 (22.1)	5.0 (9.51)	4.1 (5.8)	5.3 (10.8)
<b>Median (IQR)</b>	3.0 (2.0-4.0)	1.0 (1.0-2.5)	3.0 (2.0-4.0)	2.0 (2.0-3.0)	2.0 (2.0-3.0)	2.0 (2.0-3.5)

<sup>‡</sup>treatment adaptation includes increased frequency before activity, increased dose before activity, or change of dose day for activity.

Fig 3: Mean and median ABR by subgroups



- Mean ABR was higher in those who engaged in vigorous PA compared to those who did not, but proportions with zero bleeds were similar and median ABR was slightly higher in the latter population (Table 1).
- There was no clear pattern of differences in ABR between CwHA who adapted their treatment prior to engaging in PA compared to those who did not (Table 2).

## Conclusions and future directions

Data from this 2017-2018 study suggests a slightly higher mean ABR in CwHA with higher participation in PA

This could indicate that, although 78% of all CwHA were receiving FVIII prophylaxis, the treatment was suboptimal in real-world settings.

The findings should be interpreted with caution considering the small sample size and potential confounders; thus, further studies are needed.

## Summary

Limited published data characterizing the relationship between participation in physical activity (PA) and frequency of bleeding in children with haemophilia A (CwHA) exist

Data from a real-world multi-country study conducted from December 2017 to March 2018 was used to characterize the association between participation in PA and ABR among CwHA

The results of study may suggest suboptimal treatment in real world settings in CwHA from December 2017 to March 2018

Overall, bleed rates were high in this population, nearly 78% of whom were receiving FVIII prophylaxis. Moreover, a slightly higher mean ABR in CwHA with higher participation in PA was observed

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