

# A Novel Dual-Mode Ambulatory and Home Blood Pressure Monitor: Validation according to the European Society of Hypertension International Protocol

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## Introduction

- Home blood pressure (HBP) and ambulatory blood pressure (ABP) are evaluated using different devices. This means that the intrinsic differences due to the devices are inevitably integrated in the assessment.
- A novel dual-mode device allowing both ABP and HBP monitoring (Microlife WatchBPO3) is now available.

## Objective

- To assess the accuracy of oscillometric device Microlife WatchBPO3 according to the European Society of Hypertension International Protocol

## Methods

- Simultaneous BP measurements were taken by 2 trained observers (Y tube connected mercury sphygmomanometers) 4 times, sequentially with 3 measurements taken using the tested device.
- Subjects were classified in 3 BP ranges: systolic BP 90-129, 130-160 and 161-180 mmHg; diastolic 40-79, 80-100 and 101-130 mmHg.
- The absolute differences BP2-BP1, BP2-BP3, BP4-BP3, BP4-BP5, BP6-BP5, BP6-BP7 were calculated and paired according to the device reading.
- **Phase 2.1 criterion:** BP differences classified into 3 zones (within 5, 10, 15 mmHg), separately for systolic and diastolic BP
- **Phase 2.1 criterion:** Number of readings with a difference within 5 mmHg was calculated for each individual.

## Results

- A total of 42 subjects were recruited and 33 were included in the final analysis (15 subjects in Phase 1 and additional 18 in Phase 2)

Phase 1		≤5 mmHg	≤10 mmHg	≤15 mmHg	Recomm.	Mean diff.	SD
Required	One of	25	35	40			
Achieved	SBP	33	43	44	Continue	0.7	5.4
	DBP	30	43	45	Continue	-3.3	4.4
Phase 2.1		≤5 mmHg	≤10 mmHg	≤15 mmHg	Recomm.	Mean diff.	SD
Required	Two of	65	80	95			
	All of	60	75	90			
Achieved	SBP	70	89	96	Pass	0.9	6.3
	DBP	67	95	99	Pass	-1.7	5.4
Phase 2.2		2/3 ≤5 mmHg	0/3 ≤5 mmHg	Recomm.			
Required		≥22	≤3				
Achieved	SBP	28	1	Pass			
	DBP	22	1	Pass			

SBP, systolic blood pressure; DBP, diastolic blood pressure; Recomm, Recommendation; Mean diff, mean difference; SD, standard deviation

## Conclusion

- The dual-mode ambulatory and home BP monitor (Microlife WatchBPO3) fulfils the validation requirements of the European Society of Hypertension International Protocol.

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Scatterplots presenting BP differences between the tested device and the observer readings (99 readings)

Recruitment limits regarding entry BP ranges (low, medium and high) are indicated by the vertical lines

