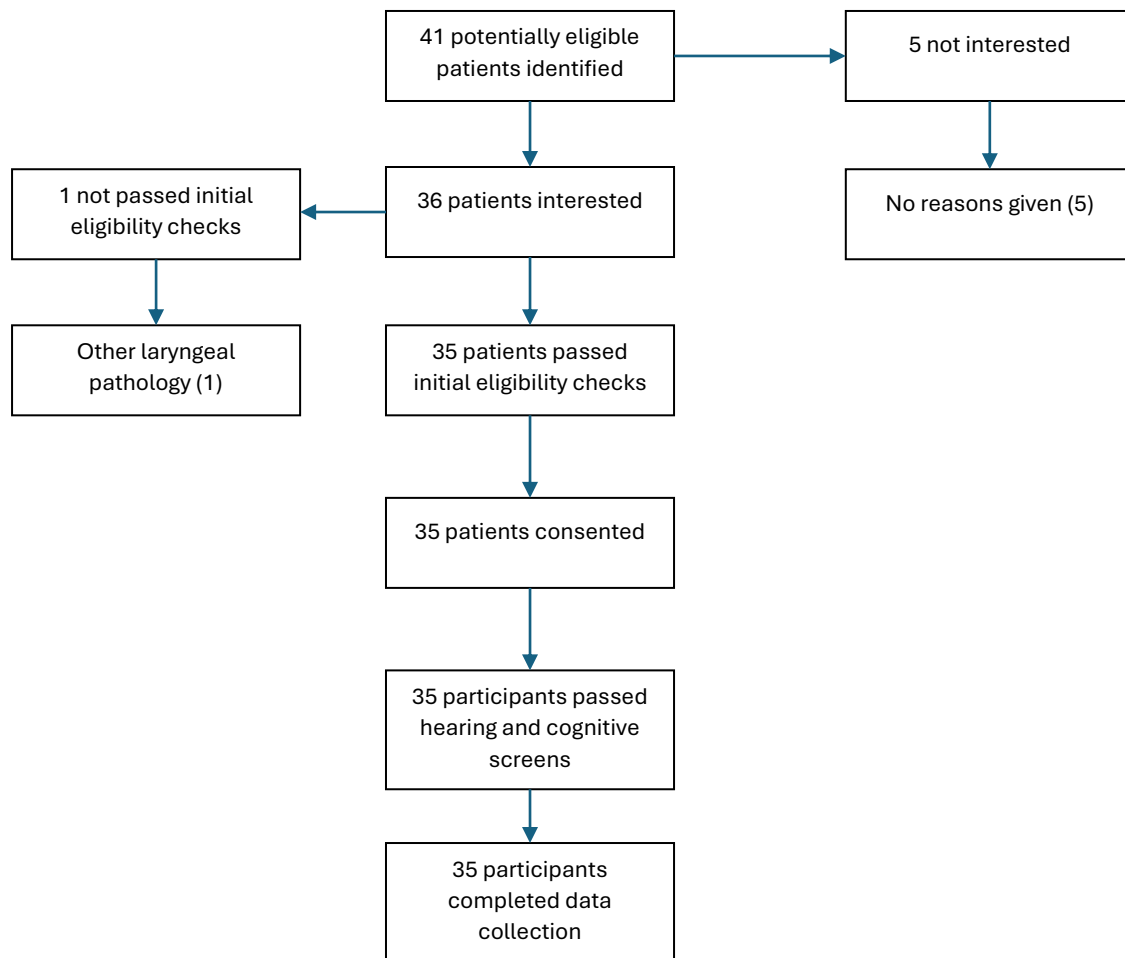


Participant Flow:



Baseline Characteristics

	All (n=35)	Presbyphonia Males (n=20)	Females (n=15)	Control Groups	
				Hoit (n=20)	Huber (n=23)
Mean Age (SD; Range)	80 (9.5; 63-101)	81 (9.9; 63-101)	78 (9.0; 65-91)	- (-; 72-78)	71.7 (4.4; 66-82)
<u>Ethnicity {N}</u>					
Caucasian	94% {33}	95% {19}	93% {14}	100% {20}	-
Black African	2.9% {1}	0.0% {0}	6.7% {1}	0.0% {0}	-
Asian Pakistani	2.9% {1}	5.0% {1}	0.0% {0}	0.0% {0}	-
<u>Smoking History {N}</u>					
Current	3% {1}	0% {0}	7% {1}	0% {0}	0% {0}
Past	57% {20}	55% {11}	60% {9}	-	-
None	40% {14}	45% {9}	33% {5}	-	-
Pack years	8.0 [4.0, 13.0]	12.5 [12.5, 12.5]	6.0 [1.5, 26.0]	-	-
Years quit	36 (26, 46)	31 (15, 47)	43 (29, 56)	-	-
<u>Respiratory Diagnoses {N}</u>					
	20% {7}	20% {4}	20% {3}	0.0% {0}	0.0% {0}
Asthma	11% {4}	10% {2}	13% {2}	0.0% {0}	0.0% {0}
COPD	2.9% {1}	5.0% {1}	0.0% {0}	0.0% {0}	0.0% {0}
Bronchitis	0.0% {0}	0.0% {0}	0.0% {0}	0.0% {0}	0.0% {0}
Pneumonia	5.7% {2}	5.0% {1}	6.7% {1}	0.0% {0}	0.0% {0}
Bronchiectasis	0.0% {0}	0.0% {0}	0.0% {0}	0.0% {0}	0.0% {0}
Lung cancer	2.9% {1}	5.0% {1}	0.0% {0}	0.0% {0}	0.0% {0}
Interstitial disease					
<u>Participant-Reported Measures</u>					
AVI (0-98)	38.8 (33.0, 44.6)	36.8 (28.2, 45.4)	41.5 (33.1, 49.8)	-	-

		All (n=35)	Presbyphonia Males (n=20)	Females (n=15)	Control Groups	
					Hoit (n=20)	Huber (n=23)
<u>Voice Quality</u>						
AVQI (0-10):		2.79 (2.23, 3.35)	3.00 (2.10, 3.91)	2.50 (1.88, 3.13)	-	-
ULN		29/35 (83%)	16/20 (80%)	13/15 (87%)	-	-
Overall Severity (0-100):		36.3 (30.3, 42.4)	35.0 (26.6, 43.5)	38.1 (28.4, 47.8)	-	-
<u>Laryngeal Aerodynamics</u>						
Airflow:	L/s	0.17 (0.12, 0.21)	0.20 (0.13, 0.27)	0.12 (0.08, 0.17)	-	-
	Z-score	-0.05 (-0.34, 0.25)	0.01 (-0.30, 0.32)	-0.12 (-0.73, 0.50)	-	-
Subglottic	cmH ₂ O	10.2 (9.1, 11.2)	10.8 (9.4, 12.2)	9.3 (7.7, 10.9)	-	-
Pressure:	Z-score	1.33 (0.81, 1.85)	2.09 (1.37, 2.82)	0.32 (-0.05, 0.68)	-	-
Resistance:		83 [53, 200]	55 [32, 133]	86 [72, 247]	-	-
cmH ₂ O/(L/s)		0.38 [-0.25, 3.41]	0.64 [-1.15, 6.97]	0.12 [-0.16, 3.21]	-	-
	Z-score					
<u>Laryngeal Morphology</u>		(n=33, NGGA n=28)	(n=19, NGGA n=15)	(n=14, NGGA n=13)		
BI					-	-
NGGA		7.94 (6.26, 9.61)	8.33 (5.90, 10.8)	7.40 (4.87, 9.93)	-	-
VALI _{AP}		0.00 [0.00, 0.13]	0.00 [0.00, 0.26]	0.00 [0.00, 0.45]	-	-
VALI _{MED}		1.91 (1.56, 2.26)	2.21 (1.74, 2.68)	1.50 (1.01, 1.99)		
		2.18 (1.76, 2.60)	2.58 (1.97, 3.19)	1.64 (1.16, 2.13)		

	All (n=35)	Presbyphonia Males (n=20)	Females (n=15)	Control Groups	
				Hoit (n=20)	Huber (n=23)
<u>Spirometry</u>					
FVC: Liters	2.91(2.60, 3.22)	3.41(3.02, 3.81)	2.23(2.01, 2.45)	-	-
Z-score	-0.20 (-0.52, 0.11)	-0.11 (-0.63, 0.41)	-0.32 (-0.65, 0.00)	-	-
LLN	2/35 (5.7%)	2/20 (10%)	0/15 (0%)	0/20 (0%)	0/23 (0%)
FEV₁: Liters	2.02 (1.80, 2.25)	2.32 (1.98, 2.66)	1.63 (1.50, 1.76)	-	-
Z-score	-0.58 (-0.93, -0.24)	-0.61 (-1.19, -0.02)	-0.55 (-0.85, -0.25)	-	-
LLN	4/35 (11%)	4/20 (20%)	0/15 (0%)	0/20 (0%)	0/23 (0%)
FEV₁/FVC ratio:	0.69 (0.66, 0.72)	0.67 (0.62, 0.72)	0.71 (0.67, 0.76)	-	-
Z-score	-0.79 (-1.16, -0.42)	-0.88 (-1.44, -0.32)	-0.67 (-1.16, -0.18)	-	-
LLN	7/35 (20%)	4/20 (20%)	3/15 (20%)	0/20 (0%)	0/23 (0%)
ULN	0/35 (0%)	0/20 (0%)	0/15 (0%)	-	-
MEP: cmH₂O	79.2 (70.9, 87.5)	84.6 (75.1, 94.2)	72.0 (56.7, 87.2)	-	-
LLN	8/35 (23%)	7/20 (35%)	1/15 (6.7%)	-	-
MIP: cmH₂O	58.8 (50.8, 66.8)	65.5 (54.8, 76.1)	49.9 (37.8, 62.0)	-	-
LLN	0/35 (0%)	0/20 (0%)	0/15 (0%)	-	-

Outcome measures

Monologue task

	COMFORTABLE			LOUD	
Means $\pm$ SD [95% CI]	Presbyphonia (n=35)	Huber Dataset (n=23)	Hoit Datasets (n=20)	Presbyphonia (n=35)	Huber Dataset (n=23)
LVI	13.9 $\pm$ 10.9	29.3 $\pm$ 14.0	22.8 $\pm$ 9.67	17.1 $\pm$ 13.1	28.5 $\pm$ 17.6
(%VC)	[10.1, 17.8]	[23.2, 35.4]	[18.2, 27.3]	[12.4, 21.7]	[20.1, 36.5]
LVT	-1.08 $\pm$ 9.63	10.6 $\pm$ 12.4	.015 $\pm$ 7.22	-.393 $\pm$ 13.0	8.55 $\pm$ 14.1
(%VC)	[-4.49, 2.33]	[5.22, 15.9]	[-3.36, 3.39]	[-5.00, 4.21]	[2.14, 15.0]
LVE	15.0 $\pm$ 4.21	18.7 $\pm$ 7.24	22.7 $\pm$ 5.07	17.5 $\pm$ 4.57	20.0 $\pm$ 7.79
(%VC)	[13.5, 16.5]	[15.6, 21.9]	[20.4, 25.1]	[15.8, 19.1]	[16.4, 23.5]
LVE _{SYL}	1.30 $\pm$ 0.64	1.41 $\pm$ 0.48	2.06 $\pm$ 0.71	1.58 $\pm$ 0.78	1.51 $\pm$ 0.48
(%VC/syl)	[1.09, 1.52]	[1.18, 1.62]	[1.75, 2.37]	[1.31, 1.85]	[1.29, 1.73]
Expiratory flow	7.34 $\pm$ 3.26	4.97 $\pm$ 1.29	Not reported	8.25 $\pm$ 3.86	5.28 $\pm$ 1.54
(%VC/sec)	[6.19, 8.50]	[4.39, 5.55]		[6.88, 9.62]	[4.58, 5.98]
Inspiratory Flow	23.2 $\pm$ 0.07	37.2 $\pm$ 0.12	Not Reported	25.6 $\pm$ 0.10	43.6 $\pm$ 0.13
(%VC/sec)	[20.5, 25.9]	[31.7, 42.7]		[22.0, 29.2]	[37.6, 49.7]
Utterance	10.6 $\pm$ 3.41	14.7 $\pm$ 3.82	14.8 $\pm$ 5.29	10.4 $\pm$ 2.78	14.7 $\pm$ 4.21
length (syl)	[9.43, 11.8]	[13.1, 16.4]	[12.3, 17.3]	[9.40, 11.3]	[12.8, 16.6]
Rate of speech	4.68 $\pm$ 0.67	4.03 $\pm$ 0.41	Not reported	4.51 $\pm$ 0.76	3.88 $\pm$ 0.34
(syllables/sec)	[4.45, 4.91]	[3.85, 4.21]		[4.25, 4.78]	[3.73, 4.04]
Intensity	62.3 $\pm$ 4.56	71.2 $\pm$ 2.66	Not reported	74.4 $\pm$ 4.51	80.3 $\pm$ 2.94
(dB SPL _{30cm})	[60.7, 63.8]	[70.1, 72.4]		[72.8, 75.9]	[79.0, 81.6]

Reading Task

	COMFORTABLE		LOUD
Means $\pm$ SD [95% CI]	Presbyphonia (n=35)	Hoit Datasets (n=20)	Presbyphonia (n=35)
LVI (%VC)	9.22 $\pm$ 6.81	17.0 $\pm$ 8.97	13.0 $\pm$ 11.9
	[6.77, 11.7]	[12.3, 21.7]	[8.70, 17.3]
LVT (%VC)	-6.24 $\pm$ 7.53	-4.99 $\pm$ 6.46	-4.66 $\pm$ 12.0
	[-8.96, -3.53]	[-8.01, -1.96]	[-9.00, -.326]
LVE (%VC)	15.5 $\pm$ 4.72	22.0 $\pm$ 7.59	17.6 $\pm$ 4.60
	[13.8, 17.2]	[18.4, 25.5]	[16.0, 19.3]
LVE _{SYL}	1.23 $\pm$ 0.51	1.40 $\pm$ 0.37	1.56 $\pm$ 0.71
(%VC/syl)	[1.05, 1.42]	[1.24, 1.56]	[1.31, 1.82]
Utterance	12.0 $\pm$ 3.99	18.1 $\pm$ 7.10	11.4 $\pm$ 3.88
length (syl)	[10.6, 13.4]	[14.8, 21.4]	[7.99, 12.1]

Adverse events

Transient dizziness during spirometry: N=1