

Reference values for respiratory muscle strength in Portuguese healthy people

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Background: Maximal inspiratory (MIP) and expiratory pressures (MEP) are measures to assess respiratory muscle strength. Reference values are population-specific and are lacking for the respiratory muscle strength of the Portuguese population. Overcoming this absence is important, to avoid over- or underestimation of such values and to facilitate the identification of Portuguese individuals with respiratory muscle weakness, so tailored interventions can be delivered.

Objective: To determine reference values for MIP and MEP in middle aged and older Portuguese healthy people.

Methods: A cross-sectional study was conducted in the north and center regions of Portugal. Healthy participants were recruited from community centers. MIP and MEP were assessed using a respiratory pressure gauge (MicroRPM, CareFusion, Kent, United Kingdom). Descriptive statistics were used to determine reference values by age decades (50-59; 60-69; 70-79 and >80 years) and sex. Independent sample t-tests were used to analyse differences between sex in each age decade and one-way ANOVA with Bonferroni-correction to compare age decades.

Results: A total of 164 healthy participants were included in this study (67.7±9.7yrs, n=79 ♂, 28.0±4.8kg/m²). MIP and MEP reference values are shown in table 1. MIP and MEP values were higher in males (92.3±26.3; 139.1±35.2 cmH₂O) than in females (78.3±23.4; 104.3±25.6 cmH₂O) (p<0.001). MIP mean values were significantly different among age decades (F=5.4; p=0.002), specifically between 50-59 and >80years decades (p=0.01) and between 60-69 and >80years decades (p=0.003). The mean values of MEP were not significantly different across age decades.

Conclusion: In Portuguese healthy people, respiratory muscle strength differs between males and females and among age decades. This is part of an ongoing work that will increase the sample size to characterise respiratory muscle strength in the Portuguese healthy population.

Table 1. Age decades and sex-related reference values for MIP and MEP in Portuguese healthy people.

		[50-59 years] (n=11♂/26♀)	[60-69 years] (n=26♂/29♀)	[70-79 years] (n=29♂/20♀)	≥80 years (n=13♂/8♀)
MIP, cmH ₂ O	Males	102.5±27.3 [67.0-148.0]	103.1±25.6 [43.0-156.0]	87.9±23.4 [52.0-144.0]	71.9±19.3 [28.0-97.0]
	Females	85.8±26.8 [34.0-156.0]	81.7±16.3 [49.0-118.0]	70.6±25.6 [17.0-129.0]	64.6±18.2 [44.0-103.0]
MEP, cmH ₂ O	Males	150.3±32.1 [116.0-219.0]	147.4±31.3.3 [102.0-250.0]	135.5±39.1 [74.0-220.0]	121.0±30.3 [67.0-173.0]
	Females	120.4±30.5 [69.0-209.0]	101.0±18.4 [67.0-142.0]	95.6±21.0 [44.0-138.0]	87.4±14.5 [67.0-104.0]

Legend: ♂ Males; ♀ Females; Reference values: Mean±Std. Deviation; [Minimum-Maximum]

Conclusion: In Portuguese healthy people, respiratory muscle strength differs between males and females and among age decades. This is part of an ongoing work that will increase the sample size to characterise respiratory muscle strength in the Portuguese healthy population.

Keywords: Reference values; respiratory muscle strength; Portuguese healthy people.

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