



# AANEM Reference Values

## Motor Nerve Reference Values

NERVE (muscle studied)	AGE	DISTAL LATENCY (ms)*/ GENDER)	AGE	AMPLITUDE (mv)**	SITE	AGE/HEIGHT	CONDUCTION VELOCITY (m/s)**
Median (APB) 8 cm	All	4.5	All	4.1		All	49
	19-49	4.6 M	19-39	5.9		19-39	49 M
		4.4 F	40-59	4.2		40-79	53 F
	50-79	4.7 M	60-79	3.8			47 M
4.4 F						51 F	
Ulnar (ADM) 8 cm	All	3.7	All	7.9	Below elbow	All	52
					Across elbow	All	43
					Above elbow	All	50
Fibular/ Peroneal (EDB) 8 cm	All	6.5	All	1.3		All	38
			19-39	2.6	Ankle to fibular head	19-39, <5'7"	43
						19-39, >5'7"	37
			40-79	1.1	Ankle to fibular head	40-79, <5'7"	39
						40-79, >5'7"	36
Across fibular head	--	42					
Tibial (AH) 8 cm	All	6.1	All	4.4		All	39
			19-29	5.8		19-49, <5'3"	44
						19-49, 5'3" -5'7"	42
			30-59	5.3		19-49, ≥5'7"	37
						50-79, <5'3"	40
			60-79	1.1		50-79, 5'3" -5'7"	37
50-79, ≥5'7"	34						

\*Upper limits 97<sup>th</sup>% of the observed differences distribution \*\*Low limits 3<sup>rd</sup>% of the observed differences distribution

Reference: Shan Chen, et al. AANEM Practice Topic: Electrodiagnostic reference values for upper and lower limb nerve conduction studies in adult populations. Muscle Nerve 2016;54: 371-377.

# Acceptable Amplitude/Conduction Velocity Drop

NERVE	SITE	AMP DROP	CV DROP
Ulnar Motor	Across Elbow		15 m/s or 23%
Fibular Motor	Ankle to below fibular head	32%	--
	Across fibular head	25%	6 m/s or 12%
Tibial Motor	Ankle to knee	10.3 mV or 71%	--

## Sensory Nerve Reference Values

NERVE	AGE	ONSET LATENCY (ms)	PEAK LATENCY (ms)	BMI	AMPLITUDE (µV)*	
					ONSET TO PEAK	PEAK TO PEAK
Superficial Radial (10 cm)	All	2.2	2.8	All	7	11
Median (second digit, wrist 14 cm, palm 7 cm)	All	3.3 (wrist)	4.0 (wrist)	All	11 (wrist)	13 (wrist)
		1.6 (palm)	2.3 (palm)		6 (palm)	8 (palm)
	19-49	--	--	<24	17	19
		--	--	≥24	11	13
	50-79	--	--	<24	9	15
		--	--	≥24	7	8
Ulnar (fifth digit, 14 cm)	All	3.1	4.0	All	10	9
	19-49	--	--	<24	14	13
		--	--	≥24	11	8
	50-79	--	--	<24	10	13
		--	--	≥24	5	4
MABC (10 cm)	--	--	2.6	--	4	3
LABC (10 cm)	--	--	2.5	--	5	6
Sural (14 cm)	--	3.6	4.5	--	4	4

\*The lower limits of onset-to-peak and peak-to-peak amplitudes are shown as mean – 2 SD, showing the statistically significant effects of age and BMI on the amplitudes of the median and ulnar sensory nerves at the wrist (P < 0.01).

## Median and Ulnar Latency Differences

MEDIAN-ULNAR (wrist)	SENSORY (14 cm)		MOTOR (8 cm)*	
	ONSET	PEAK	AGE	
Changes in Latencies (ms)*	0.5	0.4	All	1.5
			19-49	1.4
			50-79	1.7

\*Upper limits of normal is the 97th% of the observed differences distribution. These values only apply if the median is greater than the ulnar value, look up the normals if ulnar sensory is greater than median. The ulnar motor latency should not be longer than the median. If it is, then ulnar pathology at the wrist may be present.

Electrode placement: ground electrode always placed between the stimulating and recording electrodes. Temperature above 32°C for the upper extremities and above 31°C for the lower extremities, measured at the dorsum of the hands and feet.

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Charts created  
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