Scandinavia goes St. Gallen

Special neurography techniques

Christoph Neuwirth
Muskelzentrum/ALS Clinic

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Kantonsspital
St.Gallen

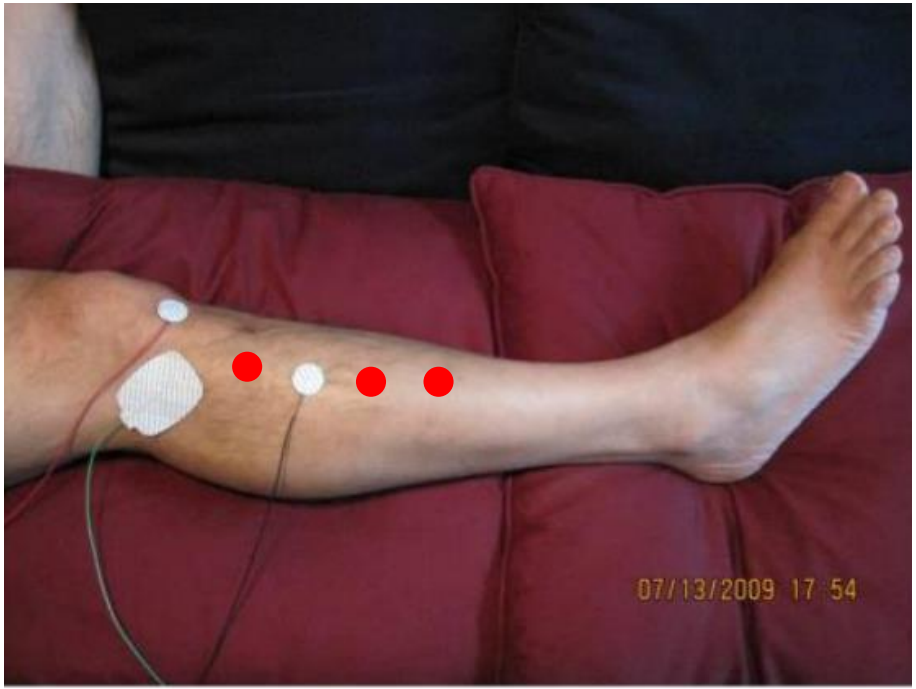
Less common nerve conduction studies

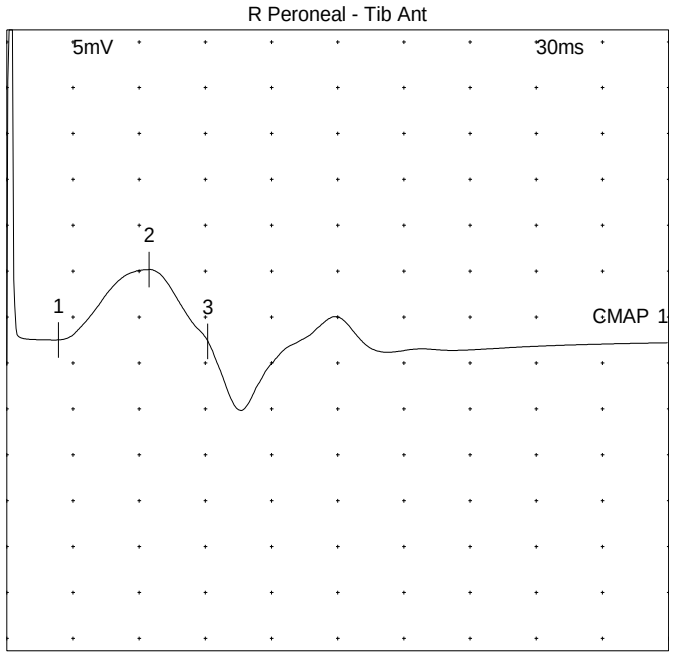
- Motor part of N. peoneus superficialis to tibial ant. muscle
- Sensory part of the superficial peroneal branch
- Sensory part of the deep peroneal branch
- N. cutaneus antebrachii dorsalis
- N. musculocutaneus → M. biceps brachii

Uncommon nerve conduction studies: deep peroneal nerve to TA

- Can be used as an additional NCS if EDB is wasted
  - sometimes EDB is wasted as a single incidental finding
- Can be used for follow-up monitoring in length-dependent neuropathies if EDB is wasted
- Consider signal from Mm. peronei longus and brevis (bimodal signal of CMAP)
- Consider 4 to 5 motor points in TA

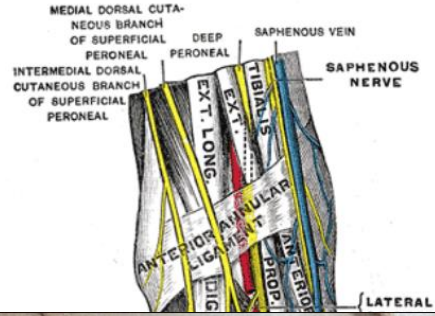
Uncommon nerve conduction studies: deep peroneal nerve to TA





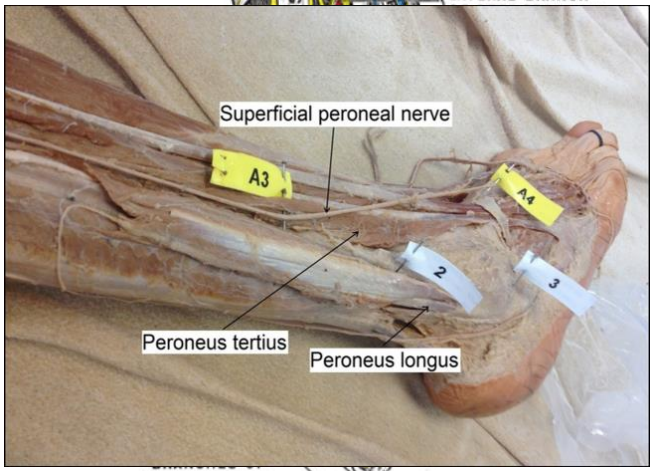
Nerve conduction studies: sensory superficial peroneal nerve (antidromic)

- Sensory part of the superficial peroneal nerve is easily done
  - Motor innervation M. peronei longus and brevis
  - Sensory 2 branches: cutaneus dorsalis med. and intermedius
    - N. cutaneus dorsalis lateralis → sural nerve
  - Becomes superficial in the lower third of the lateral lower leg



- Can be used as a PNP screening nerve

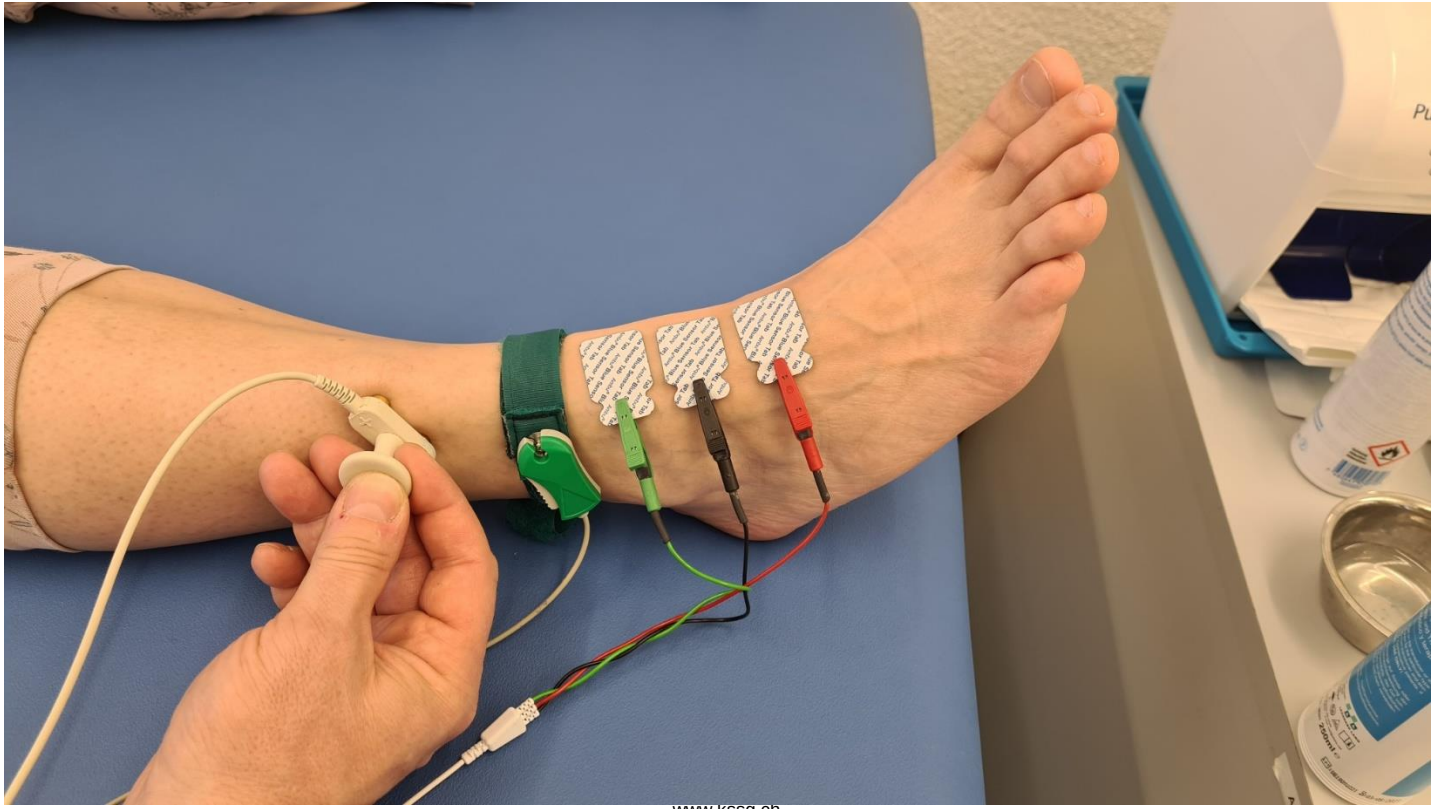
- Can be used eg. to distinguish in unclear clinical symptoms like foot drop or L5 syndrome



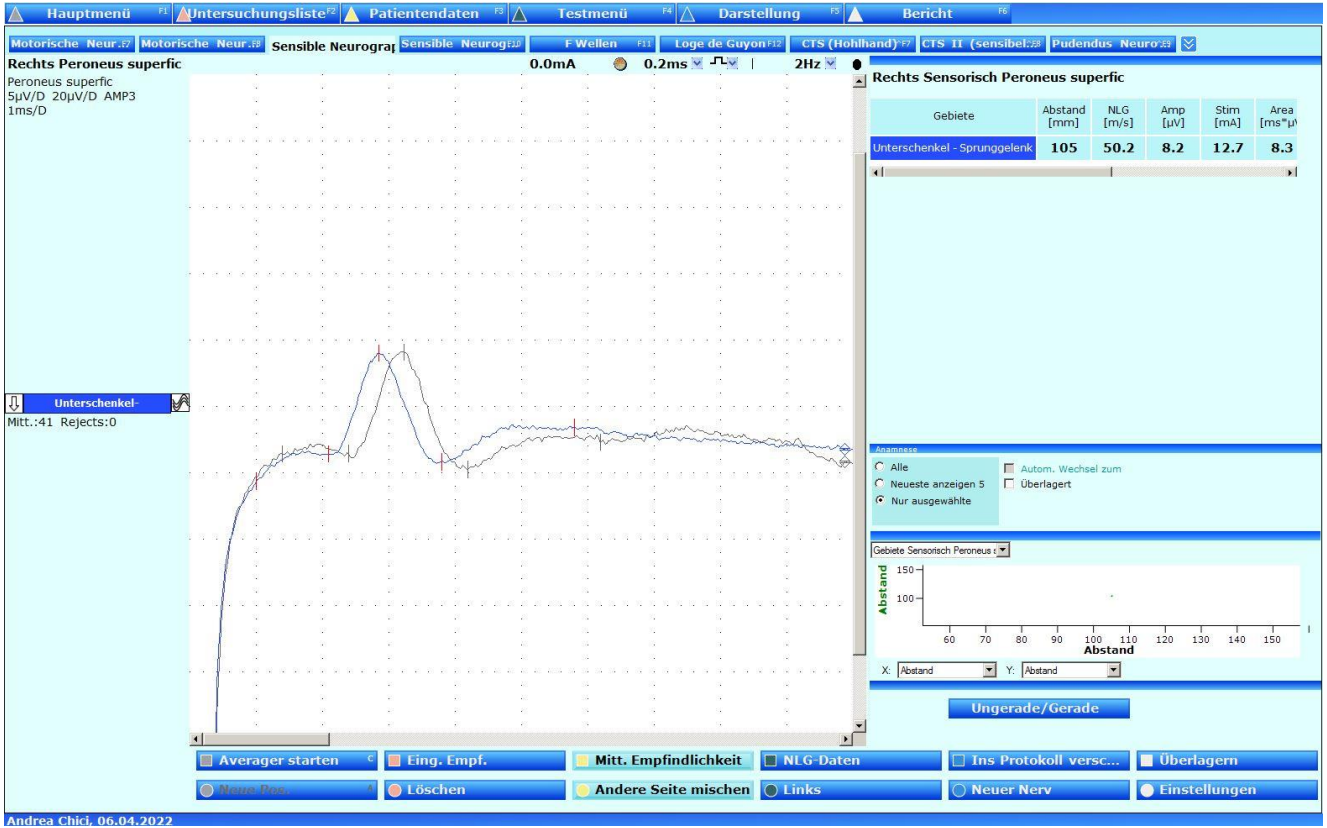
- Place electrodes below the malleoli to dig II and III

- Stimulate distal lateral lower leg 10 cm above mall. lat.
  - Ask the subject if he/she feels tingling dorsum of the foot

Less common nerve conduction studies: sensory superficial peroneal nerve (antidromic)

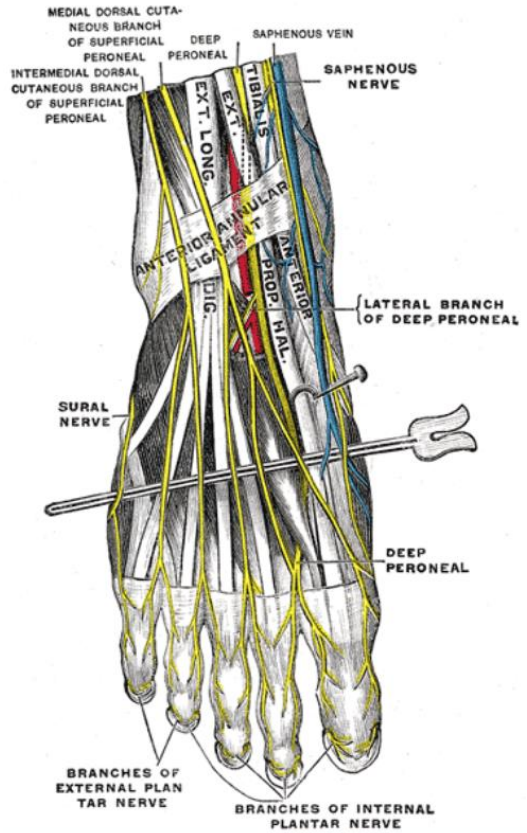


Uncommon nerve conduction studies: sensory superficial peroneal nerve (antidromic): example



Uncommon nerve conduction studies: sensory *deep* peroneal nerve (antidromic)

- Deep peroneal nerve innervates M. tib. ant, ext hallucis and dig. longus and EDB
  - A wasted EDB as a single finding does not necessarily mean fibular comm. nerve or deep peroneal nerve damage
- Invervates small region Dig I + II
- Motor stim. point → EDB activity/volume conduction/artifact
- Stimulation proximal dorsum of the foot → no motor activity
- Ask the subject about tingling, stim. superficial peroneal
- Cut self-adhesive electrodes for appropriate size



Uncommon nerve conduction studies: sensory deep peroneal nerve (antidromic) example

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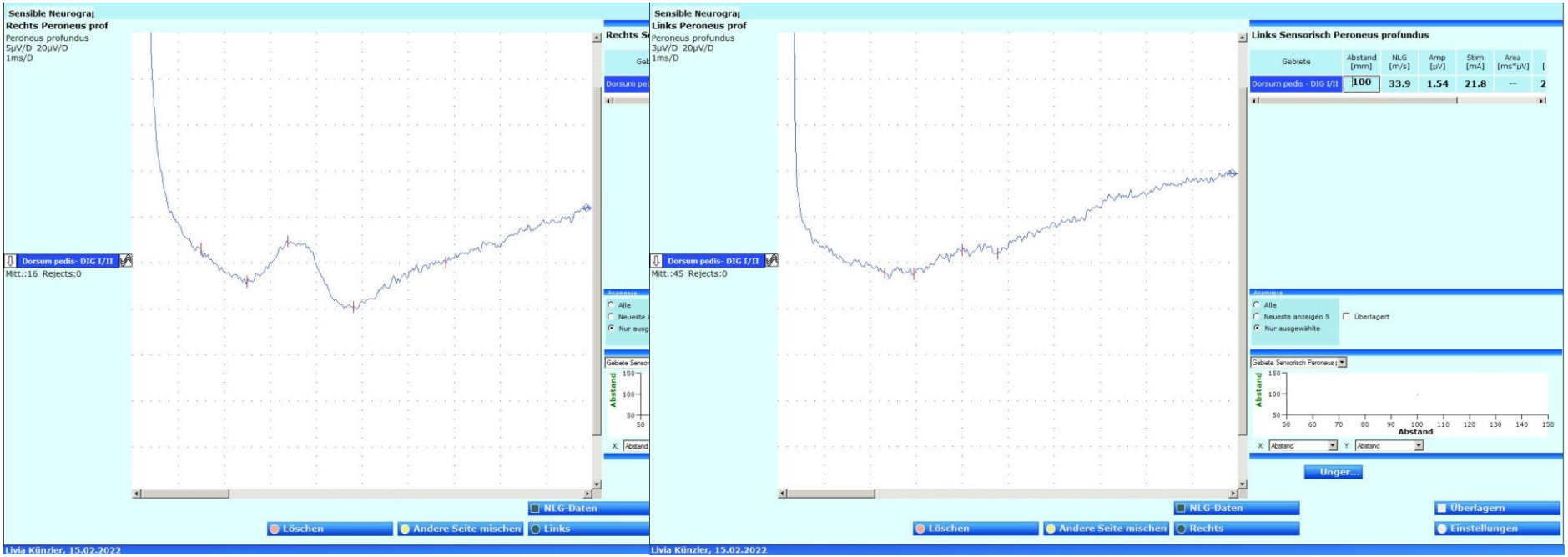
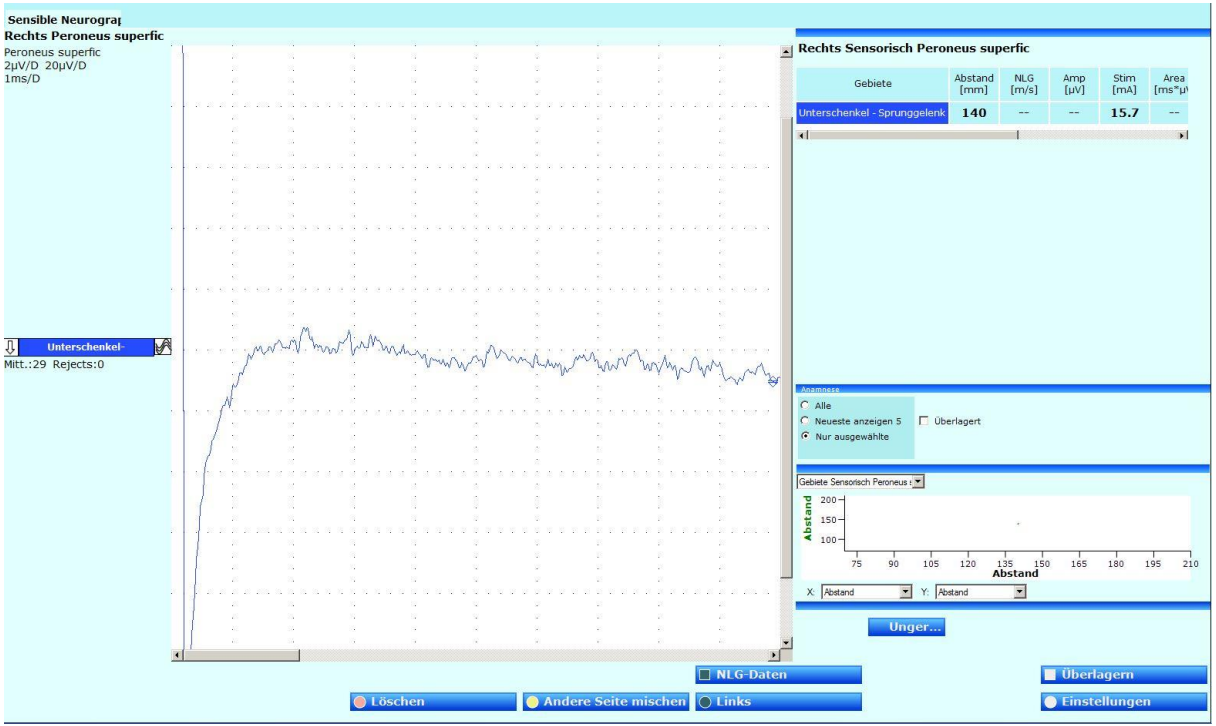


Uncommon nerve conduction studies: sensory deep peroneal nerve (antidromic) example
Stimulation superficial peroneal nerve→ no signal



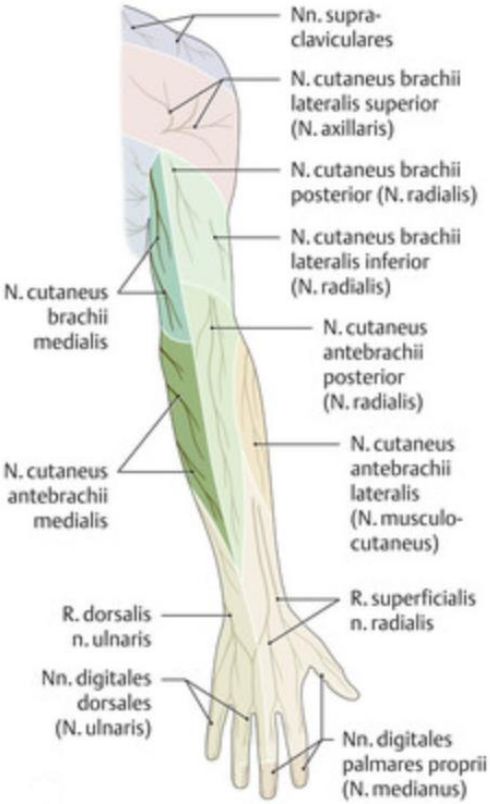
Uncommon nerve conduction studies: sensory deep peroneal nerve (antidromic) example
Stimulation superficial peroneal nerve→ no signal

Nerv	Distanz mm	Latenz ms	NLG m/s	Amplitude mV	Stimulus mA	F-Latenz ms	Temp. °C
Peroneus Motorisch Links							
OSG - EDB		29.9		--	39.0		
Dist. Cap. fib.-OSG		6.31	--	0.024	40.6		
Peroneus Motorisch Rechts							
OSG - EDB	70.0	4.35		12.2	34.4		

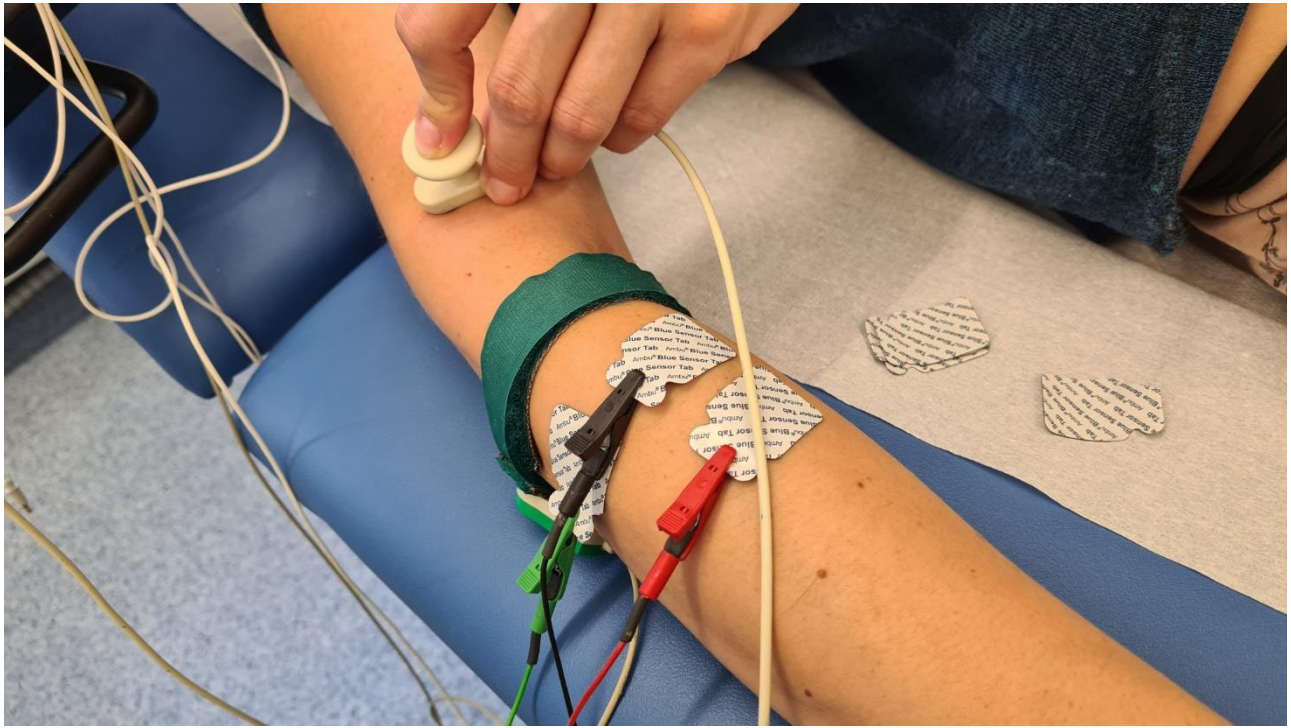
Nerv	Distanz mm	Latenz ms	NLG m/s	Amplitude uV	Stimulus mA	Temp. °C
Peroneus profundus Sensorisch Links						
Dorsum pedis - DIG I/II	100	2.95	33.9	1.54	21.8	
Peroneus profundus Sensorisch Rechts						
Dorsum pedis - DIG I/II	100	2.50	40.0	7.2	11.3	
Peroneus superfic Sensorisch Rechts						
Unterschenkel – DIG I/II	140	--		--	15.7	

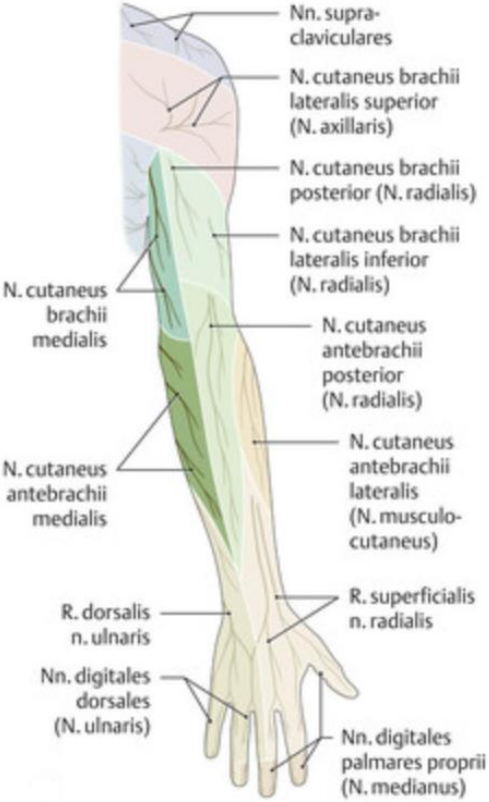
Nerve conduction studies: Nervus cutaneous antebrachii dorsalis (posterior)

- Sensory branch of the radial nerve
- Supplies dorsum of the forearm (ramus superficiales → dorsum hand)
- Can be evaluted e.g. to confirm CRPS type 2
- Always compare with contralateral side
- Recommensation: leave surface electrodes or mark position to adjust similar placing according to contralateral side
- Hint: stimulate your own nerve to find adequate stimulation point

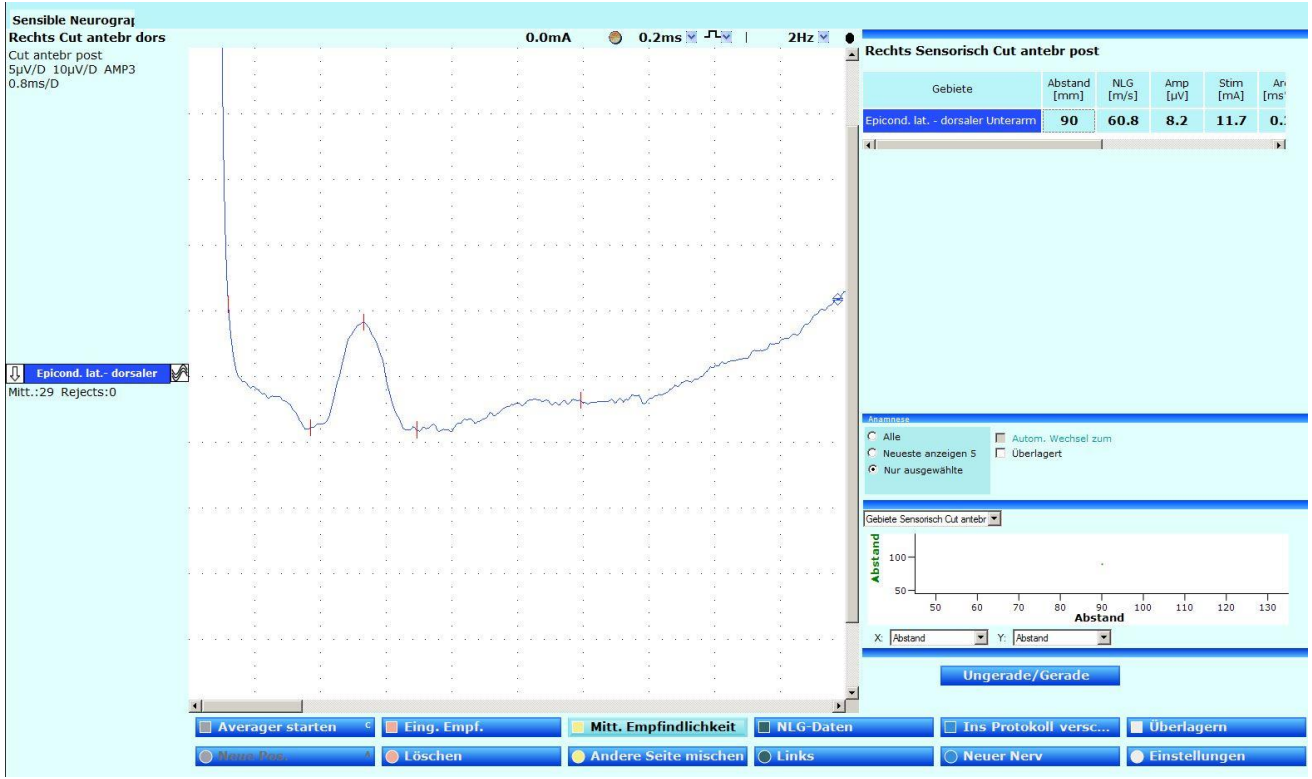


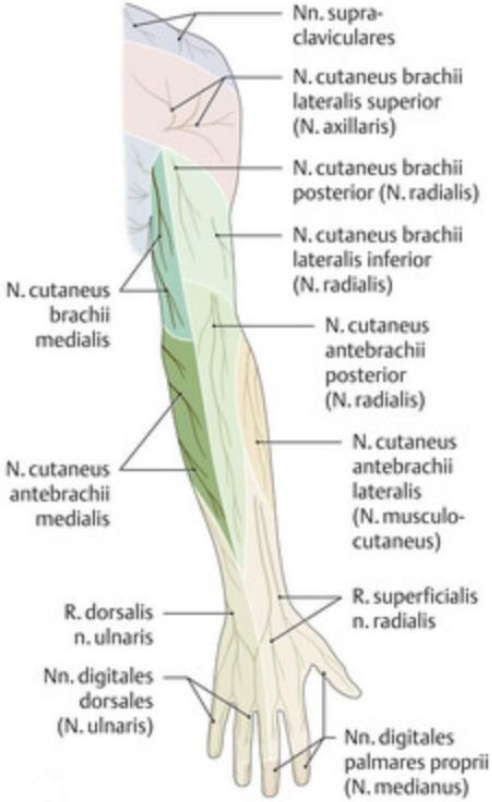
Nervus cutaneous antebrachii dorsalis (posterior) electrode placement





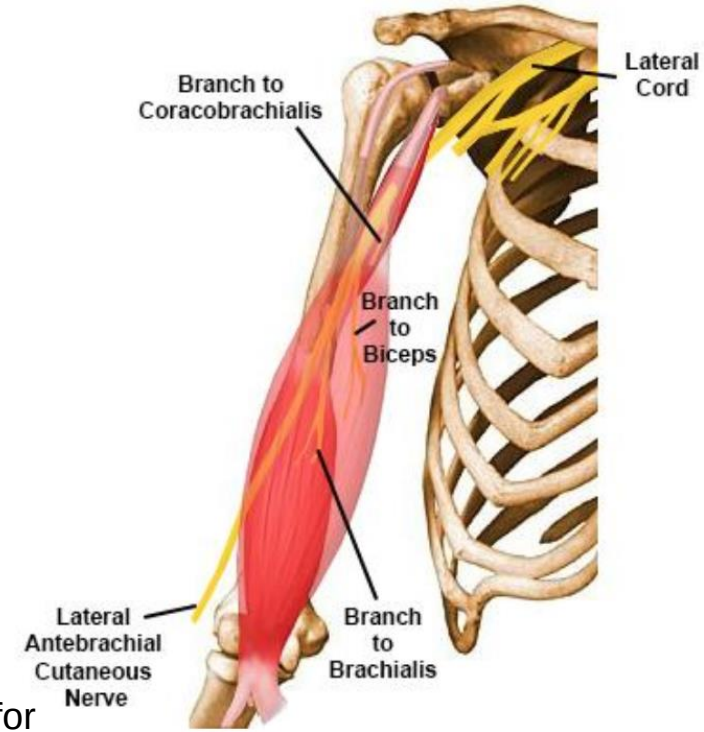
Nervus cutaneous antebrachii dorsalis (posterior) normal result



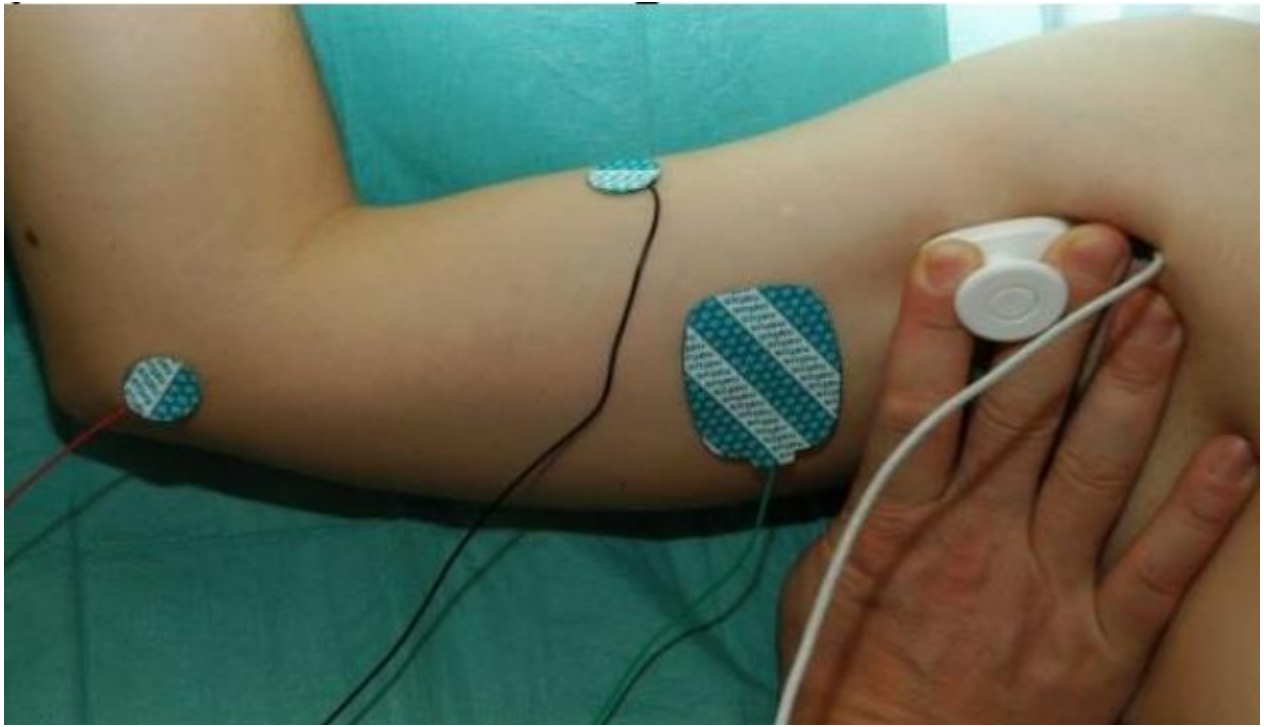


Uncommon nerve conduction studies: motor musculocutaneus nerve

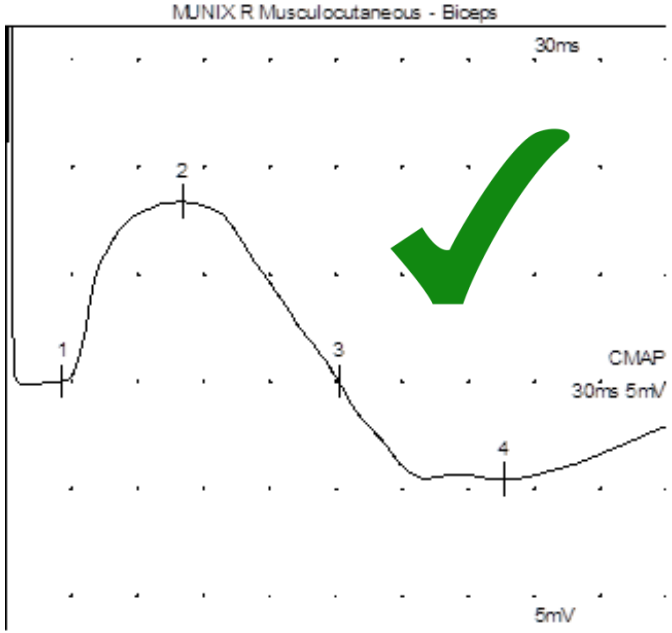
- Innervates M. biceps brachii and brachialis (coracobrachialis)
- Sensory → N. cutaneus antebrachii lateralis
- Often stimulated at Erb's point → «whole-am-CMAP»
- Stimulation at axillar region tricky but mater of practice
- Stimulation not painful, only tingling at forearm (not hand!)
- Pure biceps CMAP show typical features
- Hint: stimulate your own nerve to find adequate stimulation point and proper CMAP, look at finger/wrists
- Somtimes arm abductions or rotation helps to get better access for stimulation

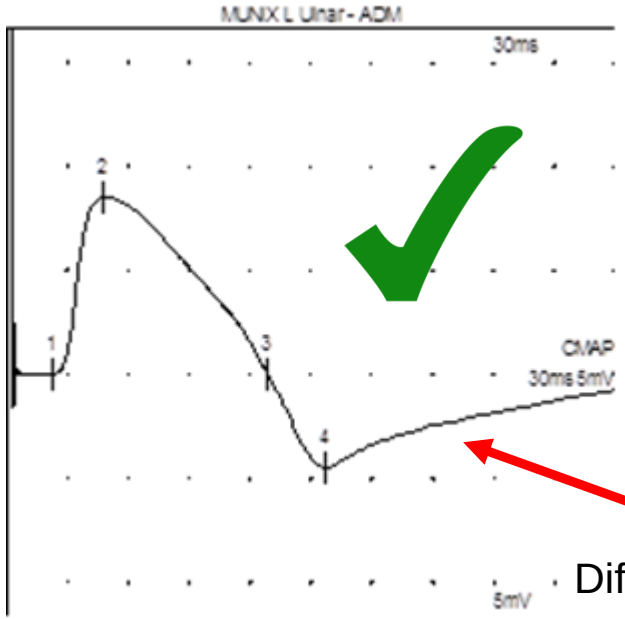


Uncommon nerve conduction studies: motor musculocutaneus nerve



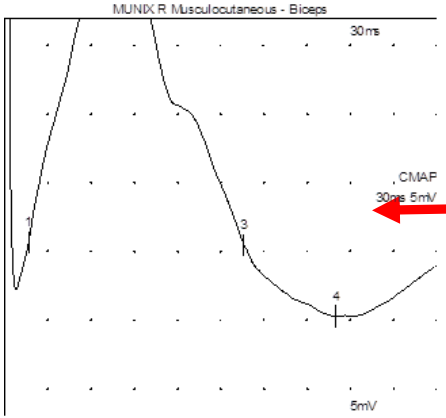
Musculocutaneus nerve: correct CMAP



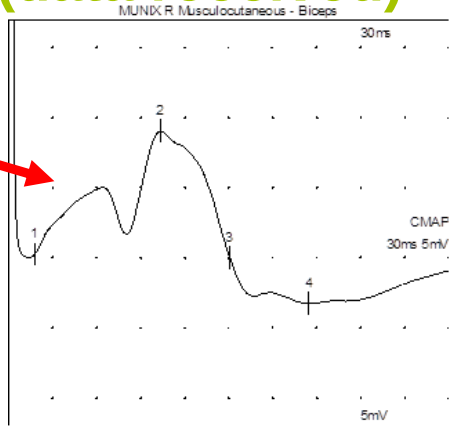


Different E1 position

Musculocutaneus nerve: incorrect CMAP (data received)



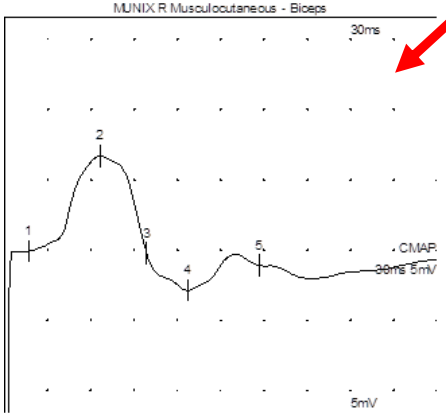
wrist flexors

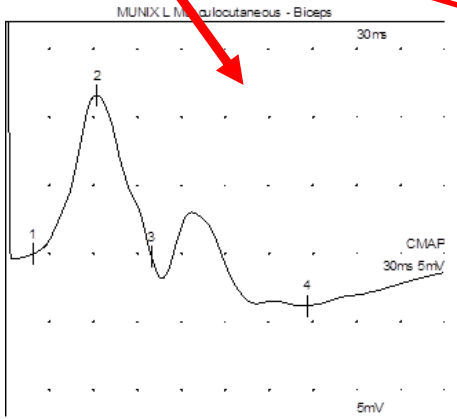


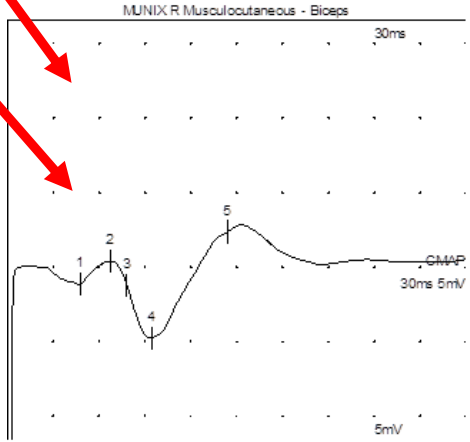
I have no idea..

finger flexors

Tricpes?







Comments? Suggestions? Questions… before going to practice…)