WEBVTT

00:00:10.290 --> 00:00:12.645 going to talk today about

00:00:12.645 --> 00:00:14.529 the examination of muscles.

00:00:14.530 --> 00:00:16.644 Now, weakness can be a very subjective

00:00:16.644 --> 00:00:18.924 term if we're talking about fatigue and

00:00:18.924 --> 00:00:22.034 the ability to do things, but in fact,

00:00:22.034 --> 00:00:24.962 weakness should be used very objectively.

00:00:24.970 --> 00:00:27.256 So weakness is the inability to

00:00:27.256 --> 00:00:29.594 take full resistance at the full

00:00:29.594 --> 00:00:31.826 kind of movement of muscle groups,

00:00:31.830 --> 00:00:34.686 and we test for weakness to both

00:00:34.686 --> 00:00:37.347 evaluate function and look for the

00:00:37.347 --> 00:00:40.065 presence of muscle or neurologic disease.

00:00:40.070 --> 00:00:43.206 The patterns of weakness we're looking for

00:00:43.206 --> 00:00:46.148 are with myopathies such as polymyositis,

NOTE Confidence: 0.91212374

00:00:46.150 --> 00:00:48.046 tomatomyositis, steroid myopathy,

NOTE Confidence: 0.91212374

00:00:48.046 --> 00:00:51.206 you will get symmetric proximal

NOTE Confidence: 0.91212374

00:00:51.206 --> 00:00:52.470 muscle weakness.

NOTE Confidence: 0.91212374

00:00:52.470 --> 00:00:55.134 So the shoulder muscles will be

NOTE Confidence: 0.91212374

00:00:55.134 --> 00:00:57.670 weaker than the wrist muscles.

NOTE Confidence: 0.91212374

00:00:57.670 --> 00:01:00.662 The hip muscles will be weaker than the

NOTE Confidence: 0.91212374

00:01:00.662 --> 00:01:03.470 ankle muscles in patients with a myopathy.

NOTE Confidence: 0.91212374

00:01:03.470 --> 00:01:05.214 In a peripheral neuropathy,

NOTE Confidence: 0.91212374

00:01:05.214 --> 00:01:08.924 you will have involvement of all the muscles

NOTE Confidence: 0.91212374

00:01:08.924 --> 00:01:11.469 from one particular peripheral nerve.

NOTE Confidence: 0.91212374

00:01:11.470 --> 00:01:13.310 So we see peripheral neuropathy

NOTE Confidence: 0.91212374

00:01:13.310 --> 00:01:14.782 in patients with diabetes,

NOTE Confidence: 0.91212374

00:01:14.790 --> 00:01:17.082 patients with vasculitis and with mechanical

NOTE Confidence: 0.91212374

00:01:17.082 --> 00:01:20.069 problems such as a carpal tunnel syndrome.

NOTE Confidence: 0.91212374

00:01:20.070 --> 00:01:22.366 So an example of a peripheral neuropathy

NOTE Confidence: 0.91212374

00:01:22.366 --> 00:01:25.288 is a femoral neuropathy often seen in

NOTE Confidence: 0.91212374

00:01:25.288 --> 00:01:27.628 patients with socalled diabetic amyotrophy.

NOTE Confidence: 0.91212374

00:01:27.630 --> 00:01:29.898 And they will have isolated weakness of

NOTE Confidence: 0.91212374

00:01:29.898 --> 00:01:32.305 the hip flexor and the knee extensor

NOTE Confidence: 0.91212374

00:01:32.305 --> 00:01:34.357 because those two muscle groups get

NOTE Confidence: 0.91212374

00:01:34.425 --> 00:01:36.825 their innovation from the femoral nerve.

NOTE Confidence: 0.91212374

00:01:36.830 --> 00:01:39.515 If we see a patient with foot drop and

NOTE Confidence: 0.91212374

00:01:39.515 --> 00:01:41.790 there's no involvement of the hip muscles,

NOTE Confidence: 0.91212374

00:01:41.790 --> 00:01:43.589 so there's a weakness of the ankle

NOTE Confidence: 0.91212374

00:01:43.589 --> 00:01:45.629 and foot and great toe dorsiflexor,

NOTE Confidence: 0.91212374

00:01:45.630 --> 00:01:48.346 but full strength of the hip muscles,

NOTE Confidence: 0.91212374

00:01:48.350 --> 00:01:52.190 that tells us that we're dealing with a

NOTE Confidence: 0.91212374

00:01:52.190 --> 00:01:54.170 perineal palsy for nerve root weakness.

NOTE Confidence: 0.91212374

00:01:54.170 --> 00:01:56.350 And this is where the exam can be very,

NOTE Confidence: 0.91212374

00:01:56.350 --> 00:01:57.152 very helpful.

NOTE Confidence: 0.91212374

00:01:57.152 --> 00:01:59.558 The conditions that give us nerve

NOTE Confidence: 0.91212374

00:01:59.558 --> 00:02:01.618 root weakness are disc herniation

NOTE Confidence: 0.91212374

00:02:01.618 --> 00:02:03.988 and the cervical and lumbar spine,

NOTE Confidence: 0.91212374

00:02:03.990 --> 00:02:07.430 a Caloquinos syndrome, cervical osteophytes.

NOTE Confidence: 0.91212374

00:02:07.430 --> 00:02:09.002 And it's the pattern of weakness

NOTE Confidence: 0.91212374

00:02:09.002 --> 00:02:10.840 that is very, very helpful.

NOTE Confidence: 0.91212374

00:02:10.840 --> 00:02:14.616 So if a patient has L4L5 and

NOTE Confidence: 0.91212374

00:02:14.616 --> 00:02:16.908 L5S1 lumbar disk disease,

NOTE Confidence: 0.91212374

00:02:16.910 --> 00:02:18.110 they're going to have weakness

NOTE Confidence: 0.91212374

00:02:18.110 --> 00:02:19.750 not only of the hip muscles,

NOTE Confidence: 0.91212374

00:02:19.750 --> 00:02:22.109 their hip abductors and their hip extensors,

NOTE Confidence: 0.91212374

00:02:22.110 --> 00:02:23.894 but concomitant weakness of

NOTE Confidence: 0.91212374

00:02:23.894 --> 00:02:26.124 their ankle and foot muscles,

NOTE Confidence: 0.91212374

00:02:26.130 --> 00:02:27.640 the ankle dorsal flexor and

NOTE Confidence: 0.91212374

00:02:27.640 --> 00:02:28.848 the great toe extensive.

NOTE Confidence: 0.91212374

00:02:28.850 --> 00:02:31.604 So that concomitant weakness tells us

NOTE Confidence: 0.91212374

00:02:31.604 --> 00:02:34.648 that we're dealing with a back problem.

NOTE Confidence: 0.91212374

00:02:34.650 --> 00:02:38.066 A child with the so-called herbs palsy

NOTE Confidence: 0.91212374

00:02:38.066 --> 00:02:40.686 will have C5C6 weakness and then

NOTE Confidence: 0.91212374

00:02:40.686 --> 00:02:43.140 you'll have weakness of the shoulder

NOTE Confidence: 0.91212374

00:02:43.217 --> 00:02:45.367 abductors and the elbow flexes.

NOTE Confidence: 0.91212374

00:02:45.370 --> 00:02:49.846 But the elbow extensors are fine.

NOTE Confidence: 0.91212374

00:02:49.850 --> 00:02:52.100 Cord lesions are due to conditions

NOTE Confidence: 0.91212374

00:02:52.100 --> 00:02:54.300 such as spinal cord injuries,

NOTE Confidence: 0.91212374

00:02:54.300 --> 00:02:55.635 tumors, developmental abnormalities,

NOTE Confidence: 0.91212374

00:02:55.635 --> 00:02:57.860 and here you'll have weakness

NOTE Confidence: 0.91212374

00:02:57.860 --> 00:03:00.216 at one level all the way down.

NOTE Confidence: 0.91212374

00:03:00.220 --> 00:03:01.660 You'll sometimes have skip areas,

NOTE Confidence: 0.91212374

00:03:01.660 --> 00:03:02.551 but generally speaking,

NOTE Confidence: 0.91212374

00:03:02.551 --> 00:03:05.020 if a patient has a spinal cord tumor,

NOTE Confidence: 0.91212374

00:03:05.020 --> 00:03:05.900 they're going to have weakness.

NOTE Confidence: 0.91212374

00:03:05.900 --> 00:03:09.114 If they have a weakness at at L2,

NOTE Confidence: 0.91212374

00:03:09.114 --> 00:03:13.660 all the muscle groups below L2 will be weak.

NOTE Confidence: 0.91212374

00:03:13.660 --> 00:03:15.820 The central nervous system lesions in

NOTE Confidence: 0.91212374

00:03:15.820 --> 00:03:18.639 the brain such as a stroke or a tumor,

NOTE Confidence: 0.91212374

00:03:18.640 --> 00:03:20.716 you'll see weakness in the distribution

NOTE Confidence: 0.91212374

00:03:20.716 --> 00:03:22.801 of the lesion and usually you'll

NOTE Confidence: 0.91212374

00:03:22.801 --> 00:03:25.013 have weakness of both the arm and

NOTE Confidence: 0.91212374

00:03:25.013 --> 00:03:27.362 the leg on one side of so-called

NOTE Confidence: 0.91212374

00:03:27.362 --> 00:03:28.674 hemiparesis when you have

NOTE Confidence: 0.9311493

00:03:28.680 --> 00:03:31.520 a central nervous system lesion.

NOTE Confidence: 0.9311493

00:03:31.520 --> 00:03:34.005 So the technique of the manual muscle

NOTE Confidence: 0.9311493

00:03:34.005 --> 00:03:36.821 exam is first of examine the muscles

NOTE Confidence: 0.9311493

00:03:36.821 --> 00:03:38.664 looking for wasting pseudohypertrophy,

NOTE Confidence: 0.9311493

00:03:38.664 --> 00:03:41.000 asymmetry of the muscle,

NOTE Confidence: 0.9311493

00:03:41.000 --> 00:03:43.744 mass fasciculations or involuntary

NOTE Confidence: 0.9311493

00:03:43.744 --> 00:03:46.488 movements such as chorea.

NOTE Confidence: 0.9311493

00:03:46.490 --> 00:03:49.070 Most importantly, you want to palpate

NOTE Confidence: 0.9311493

00:03:49.070 --> 00:03:51.729 the muscle looking for muscle tone.

NOTE Confidence: 0.9311493

00:03:51.730 --> 00:03:53.174 If there is fascidity,

NOTE Confidence: 0.9311493

00:03:53.174 --> 00:03:54.618 we're probably dealing with

NOTE Confidence: 0.9311493

00:03:54.618 --> 00:03:56.649 a lower motor neuron lesion.

NOTE Confidence: 0.9311493

00:03:56.650 --> 00:03:59.050 If there is spasticity, particularly

NOTE Confidence: 0.9311493

00:03:59.050 --> 00:04:00.970 so-called class knife spasticity,

NOTE Confidence: 0.9311493

00:04:00.970 --> 00:04:02.658 we're usually dealing with

NOTE Confidence: 0.9311493

00:04:02.658 --> 00:04:04.768 an upper motor neuron lesion.

NOTE Confidence: 0.9311493

00:04:04.770 --> 00:04:07.752 So the exam itself is an excellent

NOTE Confidence: 0.9311493

00:04:07.752 --> 00:04:09.612 method of ascertaining patterns

NOTE Confidence: 0.9311493

00:04:09.612 --> 00:04:12.818 of weakness and the presence of

NOTE Confidence: 0.9311493

00:04:12.818 --> 00:04:14.885 weakness and subtle peripheral

NOTE Confidence: 0.9311493

00:04:14.885 --> 00:04:17.410 nerve or nerve root weakness.

NOTE Confidence: 0.9311493

00:04:17.410 --> 00:04:19.831 And what I've tried to do is

NOTE Confidence: 0.9311493

00:04:19.831 --> 00:04:21.336 choose muscle groups which give

NOTE Confidence: 0.9311493

00:04:21.336 --> 00:04:23.370 me the most bang for the buck.

NOTE Confidence: 0.9311493

00:04:23.370 --> 00:04:25.162 So I'm going to look only at

NOTE Confidence: 0.9311493

00:04:25.162 --> 00:04:26.608 the shoulder abductors when I'm

NOTE Confidence: 0.9311493

00:04:26.608 --> 00:04:27.848 looking at shoulder muscles,

NOTE Confidence: 0.9311493

00:04:27.850 --> 00:04:29.602 because all the rest of the

NOTE Confidence: 0.9311493

00:04:29.602 --> 00:04:31.530 shoulder muscles are also C5C6 and

NOTE Confidence: 0.9311493

00:04:31.530 --> 00:04:33.050 then multiple peripheral nerves,

NOTE Confidence: 0.9311493

00:04:33.050 --> 00:04:35.634 so they don't add very much to my

NOTE Confidence: 0.9311493

00:04:35.634 --> 00:04:37.968 diagnostic human in the lower extremities.

NOTE Confidence: 0.9311493

00:04:37.970 --> 00:04:39.776 I'm going to look at all four

NOTE Confidence: 0.9311493

00:04:39.776 --> 00:04:41.801 groups of hip muscles because they

NOTE Confidence: 0.9311493

00:04:41.801 --> 00:04:43.781 each have different nerve root

NOTE Confidence: 0.9311493

00:04:43.781 --> 00:04:45.719 and peripheral nerve innervation.

NOTE Confidence: 0.9311493

00:04:45.720 --> 00:04:48.856 The hip abductors, adductors,

NOTE Confidence: 0.9311493

00:04:48.856 --> 00:04:49.640 flexors,

NOTE Confidence: 0.9311493

00:04:49.640 --> 00:04:53.840 and extensors all have different innervation.

NOTE Confidence: 0.9311493

00:04:53.840 --> 00:04:56.168 So technique for group muscle testing

NOTE Confidence: 0.9311493

00:04:56.168 --> 00:04:59.272 is first of all to fix the bone

NOTE Confidence: 0.9311493

00:04:59.272 --> 00:05:02.320 adjacent to the joint that you're testing.

NOTE Confidence: 0.9311493

00:05:02.320 --> 00:05:05.890 So if I'm looking for wrist extension,

NOTE Confidence: 0.9311493

00:05:05.890 --> 00:05:08.039 I want to fix the forearm because

NOTE Confidence: 0.9311493

00:05:08.039 --> 00:05:10.557 I don't want to recruit the elbow

NOTE Confidence: 0.9311493

00:05:10.557 --> 00:05:12.462 muscles and shoulder muscles in

NOTE Confidence: 0.9311493

00:05:12.462 --> 00:05:14.250 that particular maneuver.

NOTE Confidence: 0.9311493

00:05:14.250 --> 00:05:16.656 I want to position the patient

NOTE Confidence: 0.9311493

00:05:16.656 --> 00:05:18.886 in an anti gravity position.

NOTE Confidence: 0.9311493

00:05:18.890 --> 00:05:22.892 But most importantly I want to

NOTE Confidence: 0.9311493

00:05:22.892 --> 00:05:26.282 resist the person's maneuver and

NOTE Confidence: 0.9311493

00:05:26.282 --> 00:05:29.464 and activity as close as I can to

NOTE Confidence: 0.9311493

00:05:29.464 --> 00:05:31.969 the fulcrum of the joint itself.

NOTE Confidence: 0.9311493

00:05:31.970 --> 00:05:34.154 So if I resist shoulder abduction

NOTE Confidence: 0.9311493

00:05:34.154 --> 00:05:35.246 at the wrist,

NOTE Confidence: 0.9311493

00:05:35.250 --> 00:05:37.668 I'm taking the socalled lever arm

NOTE Confidence: 0.9311493

00:05:37.668 --> 00:05:40.090 advantage and becomes very subjective.

NOTE Confidence: 0.9311493

00:05:40.090 --> 00:05:41.878 If I resist shoulder abduction as

NOTE Confidence: 0.9311493

00:05:41.878 --> 00:05:44.129 close as I can to the shoulder,

NOTE Confidence: 0.9311493

00:05:44.130 --> 00:05:46.512 the patient has the lever arm

NOTE Confidence: 0.9311493

00:05:46.512 --> 00:05:49.167 advantage and it's a much more

NOTE Confidence: 0.9311493

00:05:49.167 --> 00:05:51.127 objective test of strength.

NOTE Confidence: 0.9311493

00:05:51.130 --> 00:05:51.976 Now fortunately,

NOTE Confidence: 0.9311493

00:05:51.976 --> 00:05:53.668 the British Medical Research

NOTE Confidence: 0.9311493

00:05:53.668 --> 00:05:56.563 Council has given us a very good

NOTE Confidence: 0.9311493

00:05:56.563 --> 00:05:58.448 system for grading muscle strength.

NOTE Confidence: 0.9311493

00:05:58.450 --> 00:05:59.974 Zero is no contracture.

NOTE Confidence: 0.9311493

00:05:59.974 --> 00:06:02.260 1A Trace is contracture of the

NOTE Confidence: 0.9311493

00:06:02.335 --> 00:06:03.959 muscle but no movement.

NOTE Confidence: 0.9311493

00:06:03.960 --> 00:06:05.958 Two or poor is contraction with

NOTE Confidence: 0.9311493

00:06:05.958 --> 00:06:08.125 full range of motion but not

NOTE Confidence: 0.9311493

00:06:08.125 --> 00:06:09.277 with gravity involved.

NOTE Confidence: 0.9311493

00:06:09.280 --> 00:06:11.844 So you have to eliminate gravity to

NOTE Confidence: 0.9311493

00:06:11.844 --> 00:06:15.402 get a two or a poor for a three you do

NOTE Confidence: 0.9311493

00:06:15.402 --> 00:06:18.156 full range of motion against gravity.

NOTE Confidence: 0.9311493

00:06:18.160 --> 00:06:19.375 5 is normal,

NOTE Confidence: 0.9311493

00:06:19.375 --> 00:06:20.995 can take full resistance,

NOTE Confidence: 0.9311493

00:06:21.000 --> 00:06:24.598 and four is between 3:00 and 5:00.

NOTE Confidence: 0.9311493

00:06:24.600 --> 00:06:26.532 So the technique I'm going to use

NOTE Confidence: 0.9311493

00:06:26.532 --> 00:06:28.685 today in muscle testing is to detect

NOTE Confidence: 0.9311493

00:06:28.685 --> 00:06:30.920 groups of muscles and I've selected them.

NOTE Confidence: 0.9311493

00:06:30.920 --> 00:06:33.279 I'm going to start with shoulder abduction.

NOTE Confidence: 0.9311493

00:06:33.280 --> 00:06:35.392 I'm then going to look at the flexors

NOTE Confidence: 0.9311493

00:06:35.392 --> 00:06:36.860 and extensors of the elbow and

NOTE Confidence: 0.9311493

00:06:36.860 --> 00:06:38.680 then I go look at wrist extension,

NOTE Confidence: 0.9311493

00:06:38.680 --> 00:06:40.120 finger abduction and thumb

NOTE Confidence: 0.9311493

00:06:40.120 --> 00:06:42.280 opponents in the hand and wrist.

NOTE Confidence: 0.9311493

00:06:42.280 --> 00:06:43.692 For the lower extremity.

NOTE Confidence: 0.9311493

00:06:43.692 --> 00:06:45.457 I'm going to again look

NOTE Confidence: 0.9311493

00:06:45.457 --> 00:06:47.009 at hip flexion extension,

NOTE Confidence: 0.9311493

00:06:47.009 --> 00:06:48.116 abduction and adduction.

NOTE Confidence: 0.9311493

00:06:48.116 --> 00:06:50.330 I'm going to look at knee

NOTE Confidence: 0.9380147

00:06:50.398 --> 00:06:52.519 extension and I'm going to look at

NOTE Confidence: 0.9380147

00:06:52.519 --> 00:06:54.520 ankle and great toe dorsiflexion,

NOTE Confidence: 0.9380147

00:06:54.520 --> 00:06:58.839 ankle E version and ankle plantar flexion

NOTE Confidence: 0.9380147

00:06:58.840 --> 00:07:01.828 with the patient seated facing me.

NOTE Confidence: 0.9380147

00:07:01.830 --> 00:07:04.161 I'm going to start with proximal muscles

NOTE Confidence: 0.9380147

00:07:04.161 --> 00:07:06.310 and I'll ask the patient to abduct

NOTE Confidence: 0.9380147

00:07:06.310 --> 00:07:08.896 or pick up his or her arm and I'm

NOTE Confidence: 0.9380147

00:07:08.896 --> 00:07:10.970 going to resist here and the patient

NOTE Confidence: 0.9380147

00:07:10.970 --> 00:07:12.510 should always be able to beat me.

NOTE Confidence: 0.9380147

00:07:12.510 --> 00:07:14.120 If I take the lever arm advantage

NOTE Confidence: 0.9380147

00:07:14.120 --> 00:07:15.110 and come out here,

NOTE Confidence: 0.9380147

00:07:15.110 --> 00:07:16.434 it becomes very subjective.

NOTE Confidence: 0.9380147

00:07:16.434 --> 00:07:18.771 So you always want to get close

NOTE Confidence: 0.9380147

00:07:18.771 --> 00:07:20.780 to the joint so that the patient

NOTE Confidence: 0.9380147

00:07:20.780 --> 00:07:22.668 has the lever arm advantage.

NOTE Confidence: 0.9380147

00:07:22.670 --> 00:07:24.790 Looking at shoulder abduction.

NOTE Confidence: 0.9380147

00:07:24.790 --> 00:07:27.748 Sometimes in the shoulder I'll be

NOTE Confidence: 0.9380147

00:07:27.748 --> 00:07:29.843 interested in what's called the

NOTE Confidence: 0.9380147

00:07:29.843 --> 00:07:31.630 serator seratus anterior muscle,

NOTE Confidence: 0.9380147

00:07:31.630 --> 00:07:33.700 and that's innervated by the long

NOTE Confidence: 0.9380147

00:07:33.700 --> 00:07:36.230 thoracic nerve and that fixes the scapula.

NOTE Confidence: 0.9380147

00:07:36.230 --> 00:07:37.903 So they ask the patient to hold

NOTE Confidence: 0.9380147

00:07:37.903 --> 00:07:39.190 their hand back like this,

NOTE Confidence: 0.9380147

13

00:07:39.190 --> 00:07:40.750 like they're going to stop traffic.

NOTE Confidence: 0.9380147

00:07:40.750 --> 00:07:43.027 I'll put my hand here and I'll push back.

NOTE Confidence: 0.9380147

00:07:43.030 --> 00:07:45.137 And if I push back and the

NOTE Confidence: 0.9380147

00:07:45.137 --> 00:07:46.710 scapula comes back this way,

NOTE Confidence: 0.9380147

00:07:46.710 --> 00:07:49.265 this weakness of the serratus

NOTE Confidence: 0.9380147

00:07:49.265 --> 00:07:51.309 anterior muscle indicating an

NOTE Confidence: 0.9380147

00:07:51.309 --> 00:07:53.989 injury to the long thoracic nerve.

NOTE Confidence: 0.9380147

00:07:53.990 --> 00:07:55.130 Now with the elbow,

NOTE Confidence: 0.9380147

00:07:55.130 --> 00:07:56.840 I want to check elbow flexion

NOTE Confidence: 0.9380147

00:07:56.904 --> 00:07:58.068 and elbow extension,

NOTE Confidence: 0.9380147

00:07:58.070 --> 00:08:00.430 so I'm going to hold the upper arm.

NOTE Confidence: 0.9380147

00:08:00.430 --> 00:08:01.780 I'm going to ask the patient

NOTE Confidence: 0.9380147

00:08:01.780 --> 00:08:03.149 to simply take their arm back,

NOTE Confidence: 0.9380147

00:08:03.150 --> 00:08:04.095 take their wrist,

NOTE Confidence: 0.9380147

00:08:04.095 --> 00:08:05.985 bring it back to their shoulder,

NOTE Confidence: 0.9380147

00:08:05.990 --> 00:08:07.750 and then I'll try to overcome the patient.

NOTE Confidence: 0.9380147

00:08:07.750 --> 00:08:09.230 So again, I'm pulling here,

NOTE Confidence: 0.9380147

00:08:09.230 --> 00:08:10.229 not up here,

NOTE Confidence: 0.9380147

00:08:10.229 --> 00:08:12.896 and the patient should be able to beat

NOTE Confidence: 0.9380147

00:08:12.896 --> 00:08:14.510 me if there's normal muscle strength.

NOTE Confidence: 0.9380147

00:08:14.510 --> 00:08:17.470 So that's elbow flexion.

NOTE Confidence: 0.9380147

00:08:17.470 --> 00:08:18.760 Elbow extension is very important

NOTE Confidence: 0.9380147

00:08:18.760 --> 00:08:20.675 because I use it all the time

NOTE Confidence: 0.9380147

00:08:20.675 --> 00:08:22.110 looking at cervical disc disease.

NOTE Confidence: 0.9380147

00:08:22.110 --> 00:08:24.046 So here I'm going to grab the upper

NOTE Confidence: 0.9380147

00:08:24.046 --> 00:08:26.122 arm and I'm going to ask the patient to

NOTE Confidence: 0.9380147

00:08:26.122 --> 00:08:27.448 simply straighten out his or her arm.

NOTE Confidence: 0.9380147

00:08:27.450 --> 00:08:28.836 So I'll demonstrate what I want them

NOTE Confidence: 0.9380147

00:08:28.836 --> 00:08:30.750 to do and then I'll simply resist them

NOTE Confidence: 0.9380147

00:08:30.750 --> 00:08:32.278 so they're straighten out your arm

NOTE Confidence: 0.9380147

00:08:32.278 --> 00:08:33.926 good and the patient should be able to,

NOTE Confidence: 0.9380147

00:08:33.930 --> 00:08:36.010 again, easily push me out.

NOTE Confidence: 0.9380147

00:08:36.010 --> 00:08:38.390 I don't want to do here because

NOTE Confidence: 0.9380147

00:08:38.390 --> 00:08:39.410 that becomes subjective.

NOTE Confidence: 0.9380147

00:08:39.410 --> 00:08:41.183 I want to do here and ask the patient

NOTE Confidence: 0.9380147

00:08:41.183 --> 00:08:43.208 to straighten their arm completely out.

NOTE Confidence: 0.9380147

00:08:43.210 --> 00:08:45.285 So I've done elbow flexion

NOTE Confidence: 0.9380147

00:08:45.285 --> 00:08:46.530 and elbow extension.

NOTE Confidence: 0.9380147

00:08:46.530 --> 00:08:48.606 Now looking at the hand muscles,

NOTE Confidence: 0.9380147

00:08:48.610 --> 00:08:50.050 I'm going to look at the brachial plexus,

NOTE Confidence: 0.9380147

00:08:50.050 --> 00:08:51.940 innovative muscles of the hand

NOTE Confidence: 0.9380147

00:08:51.940 --> 00:08:53.858 and I'm going to start with the

NOTE Confidence: 0.9380147

00:08:53.858 --> 00:08:55.620 radial nerve or wrist extensor.

NOTE Confidence: 0.9380147

00:08:55.620 --> 00:08:58.014 And again I want to hold the upper arm.

NOTE Confidence: 0.9380147

00:08:58.020 --> 00:09:00.130 So I'm not recruiting the

NOTE Confidence: 0.9380147

00:09:00.130 --> 00:09:01.818 elbow or shoulder muscles.

NOTE Confidence: 0.9380147

00:09:01.820 --> 00:09:03.675 I asked the patient to pull their

NOTE Confidence: 0.9380147

00:09:03.675 --> 00:09:05.656 hand back and I try to resist him.

NOTE Confidence: 0.9380147

00:09:05.660 --> 00:09:09.325 So this is radial nerve, it's C6C7.

NOTE Confidence: 0.9380147

00:09:09.325 --> 00:09:11.395 So patient with a radial nerve

NOTE Confidence: 0.9380147

00:09:11.395 --> 00:09:13.530 palsy is socalled saty, not saty.

NOTE Confidence: 0.9380147

00:09:13.530 --> 00:09:15.305 Night palsy will have isolated

NOTE Confidence: 0.9380147

00:09:15.305 --> 00:09:17.259 weakness of the radial nerve.

NOTE Confidence: 0.9380147

00:09:17.260 --> 00:09:20.466 Now the finger abductors or the muscles

NOTE Confidence: 0.9380147

00:09:20.466 --> 00:09:23.270 that simply spread the fingers part.

NOTE Confidence: 0.9380147

00:09:23.270 --> 00:09:23.843 OK,

NOTE Confidence: 0.9380147

00:09:23.843 --> 00:09:27.281 now the finger abductors are innervated

NOTE Confidence: 0.9380147

00:09:27.281 --> 00:09:31.243 by the ulnar nerve as well as C7C8T1.

NOTE Confidence: 0.9380147

00:09:31.243 --> 00:09:33.708 So if somebody has significant

NOTE Confidence: 0.9380147

00:09:33.708 --> 00:09:36.642 weakness of their ulnar nerve you're

NOTE Confidence: 0.9380147

00:09:36.642 --> 00:09:39.270 going to see some wasting here,

NOTE Confidence: 0.9308037

00:09:39.270 --> 00:09:40.434 so-called inter osceo wasting.

NOTE Confidence: 0.9308037

00:09:40.434 --> 00:09:42.834 And the test is simply to have the

NOTE Confidence: 0.9308037

00:09:42.834 --> 00:09:44.339 patient straight pull their fingers

NOTE Confidence: 0.9308037

00:09:44.339 --> 00:09:46.387 apart and you try to overcome them.

NOTE Confidence: 0.9308037

00:09:46.390 --> 00:09:48.388 Again, close here, not out here.

NOTE Confidence: 0.9308037

00:09:48.390 --> 00:09:52.830 Here. So this is finger abduction,

NOTE Confidence: 0.9308037

00:09:52.830 --> 00:09:54.072 C7C8T1, ulnar nerve.

NOTE Confidence: 0.9308037

00:09:54.072 --> 00:09:57.477 And the third muscle group I'm going to

NOTE Confidence: 0.9308037

00:09:57.477 --> 00:10:00.466 look at is the so-called opponent's polycus.

NOTE Confidence: 0.9308037

00:10:00.470 --> 00:10:02.430 And here I'll have the patient take their

NOTE Confidence: 0.9308037

00:10:02.430 --> 00:10:04.470 thumb and hold it to their little finger.

NOTE Confidence: 0.9308037

00:10:04.470 --> 00:10:06.304 Now I'm interested in these muscles here,

NOTE Confidence: 0.9308037

00:10:06.310 --> 00:10:07.130 not these muscles here,

NOTE Confidence: 0.9308037

00:10:07.130 --> 00:10:08.630 so I'm not going to do this.

NOTE Confidence: 0.9308037

00:10:08.630 --> 00:10:10.262 That's not a good way of

NOTE Confidence: 0.9308037

00:10:10.262 --> 00:10:11.350 testing the opponent's polycus.

NOTE Confidence: 0.9308037

00:10:11.350 --> 00:10:13.024 The way to test the opponent's

18

NOTE Confidence: 0.9308037

00:10:13.024 --> 00:10:14.801 polycus is have the person hold

NOTE Confidence: 0.9308037

00:10:14.801 --> 00:10:16.607 their thumb to their fifth finger

NOTE Confidence: 0.9308037

00:10:16.607 --> 00:10:18.496 and then pull at the base Here,

NOTE Confidence: 0.9308037

00:10:18.500 --> 00:10:20.876 And this is a very important one because

NOTE Confidence: 0.9308037

00:10:20.876 --> 00:10:23.361 this is the median nerve and patients

NOTE Confidence: 0.9308037

00:10:23.361 --> 00:10:25.593 with a carpal tunnel syndrome will

NOTE Confidence: 0.9308037

00:10:25.593 --> 00:10:27.973 get weakness of their median nerve and

NOTE Confidence: 0.9308037

00:10:27.973 --> 00:10:30.280 their their opponent's polycus muscle.

NOTE Confidence: 0.9308037

00:10:30.280 --> 00:10:33.520 So for the hands extension Abduction

NOTE Confidence: 0.9308037

00:10:33.520 --> 00:10:35.738 and opponent's polycus thumb

NOTE Confidence: 0.9308037

00:10:35.738 --> 00:10:37.858 to the little finger.

NOTE Confidence: 0.9308037

00:10:37.860 --> 00:10:40.740 So just to point out the anatomy here,

NOTE Confidence: 0.9308037

00:10:40.740 --> 00:10:43.620 we looked at shoulder abduction which

NOTE Confidence: 0.9308037

00:10:43.620 --> 00:10:46.842 is C5C6 and we looked at shoulder

NOTE Confidence: 0.9308037

00:10:46.842 --> 00:10:49.199 pushing the ceratus anterior muscle

NOTE Confidence: 0.9308037

00:10:49.199 --> 00:10:51.857 which is the long thoracic nerve.

NOTE Confidence: 0.9308037

00:10:51.860 --> 00:10:56.660 We also looked at elbow flexion which is

NOTE Confidence: 0.9308037

00:10:56.660 --> 00:11:00.958 C5C6 and elbow extension which is C7C8.

NOTE Confidence: 0.9308037

00:11:00.958 --> 00:11:02.986 And in the hands and wrists

NOTE Confidence: 0.9308037

00:11:02.986 --> 00:11:05.260 we looked at wrist extension,

NOTE Confidence: 0.9308037

00:11:05.260 --> 00:11:08.660 which is radial nerve C6C7.

NOTE Confidence: 0.9308037

00:11:08.660 --> 00:11:10.620 We looked at thumb opposition,

NOTE Confidence: 0.9308037

00:11:10.620 --> 00:11:12.880 the opponent's polycus muscle,

NOTE Confidence: 0.9308037

00:11:12.880 --> 00:11:15.551 and that's median nerve C6C7.

NOTE Confidence: 0.9308037

00:11:15.551 --> 00:11:18.017 And we looked at finger abduction,

NOTE Confidence: 0.9308037

00:11:18.020 --> 00:11:20.785 which is the ulnal nerve C8T1.

NOTE Confidence: 0.9308037

00:11:20.785 --> 00:11:23.385 So if you see a person that only

NOTE Confidence: 0.9308037

00:11:23.385 --> 00:11:26.585 has weakness of finger abduction has

NOTE Confidence: 0.9308037

00:11:26.585 --> 00:11:29.375 perfectly normal elbow muscle strength,

NOTE Confidence: 0.9308037

00:11:29.380 --> 00:11:30.748 you're probably dealing with

NOTE Confidence: 0.9308037

00:11:30.748 --> 00:11:31.774 an ulna neuropathy,

NOTE Confidence: 0.9308037

00:11:31.780 --> 00:11:34.405 very commonly seen in patients

NOTE Confidence: 0.9308037

00:11:34.405 --> 00:11:35.980 with diabetic neuropathy.

NOTE Confidence: 0.9308037

00:11:35.980 --> 00:11:39.060 If you see a patient with elbow extension

NOTE Confidence: 0.9308037

00:11:39.060 --> 00:11:41.759 weakness and finger abduction weakness,

NOTE Confidence: 0.9308037

00:11:41.760 --> 00:11:44.610 you're looking for C7C8

NOTE Confidence: 0.9308037

00:11:44.610 --> 00:11:46.920 cervical disc disease.

NOTE Confidence: 0.9308037

00:11:46.920 --> 00:11:48.120 So when I examine the hips,

NOTE Confidence: 0.9308037

00:11:48.120 --> 00:11:50.280 I'm going to violate one of my rules

NOTE Confidence: 0.9308037

00:11:50.280 --> 00:11:52.280 and that is for some of the maneuvers.

NOTE Confidence: 0.9308037

00:11:52.280 --> 00:11:54.050 I'm going to give the patient

NOTE Confidence: 0.9308037

00:11:54.050 --> 00:11:54.640 mechanical advantage,

NOTE Confidence: 0.9308037

00:11:54.640 --> 00:11:56.416 but do it distally and hopefully

NOTE Confidence: 0.9308037

00:11:56.416 --> 00:11:57.600 you can understand that.

NOTE Confidence: 0.9308037

00:11:57.600 --> 00:11:59.840 So for the hip muscles,

NOTE Confidence: 0.9308037

00:11:59.840 --> 00:12:01.704 we're particularly interested in

NOTE Confidence: 0.9308037

00:12:01.704 --> 00:12:04.034 nerve roots and peripheral nerves.

NOTE Confidence: 0.9308037

00:12:04.040 --> 00:12:06.714 So one way to remember the nerve

NOTE Confidence: 0.9308037

00:12:06.714 --> 00:12:09.084 root innervation of the hip muscles

NOTE Confidence: 0.9308037

00:12:09.084 --> 00:12:11.382 is a Doolittle iris step dance,

NOTE Confidence: 0.9308037

00:12:11.390 --> 00:12:15.670 and that is the hip flexors are L2L3.

NOTE Confidence: 0.9308037

00:12:15.670 --> 00:12:18.670 The hip adductors towards the

NOTE Confidence: 0.9308037

00:12:18.670 --> 00:12:20.372 midline are L3L4.

NOTE Confidence: 0.9308037

00:12:20.372 --> 00:12:23.886 They have abductors away from the midline

NOTE Confidence: 0.9308037

00:12:23.886 --> 00:12:27.750 are L4L5 and the hip extensors are L5,

NOTE Confidence: 0.9308037

00:12:27.750 --> 00:12:28.376 S 1.

NOTE Confidence: 0.9308037

00:12:28.376 --> 00:12:29.628 So you simply go

NOTE Confidence: 0.92430526

00:12:33.150 --> 00:12:36.150 to 334-4551 and you got the nerve roots

NOTE Confidence: 0.92430526

00:12:36.150 --> 00:12:37.950 testing the lower extremity muscles.

NOTE Confidence: 0.92430526

00:12:37.950 --> 00:12:39.930 The patient should be lying down.

NOTE Confidence: 0.92430526

00:12:39.930 --> 00:12:41.568 We're going to start with a hip

NOTE Confidence: 0.92430526

00:12:41.568 --> 00:12:43.282 and we're going to violate one of

NOTE Confidence: 0.92430526

00:12:43.282 --> 00:12:44.716 our rules about being close to

NOTE Confidence: 0.92430526

00:12:44.772 --> 00:12:46.367 the fulcrum for obvious reasons.

NOTE Confidence: 0.92430526

00:12:46.370 --> 00:12:48.170 So I'm going to start with a hip flexor,

NOTE Confidence: 0.92430526

00:12:48.170 --> 00:12:49.754 ask the patient to pick their

NOTE Confidence: 0.92430526

00:12:49.754 --> 00:12:52.154 leg up off the bed and I'll try

NOTE Confidence: 0.92430526

00:12:52.154 --> 00:12:54.736 to push it down and that's L2L3.

NOTE Confidence: 0.92430526

00:12:54.736 --> 00:12:57.298 I'll next look at the hip add

NOTE Confidence: 0.92430526

00:12:57.298 --> 00:12:58.969 doctors towards the midline,

NOTE Confidence: 0.92430526

00:12:58.970 --> 00:13:00.450 and here patients don't like

NOTE Confidence: 0.92430526

00:13:00.450 --> 00:13:01.930 it grabbing in their groin,

NOTE Confidence: 0.92430526

00:13:01.930 --> 00:13:04.121 so I'm going to look use the

NOTE Confidence: 0.92430526

00:13:04.121 --> 00:13:06.229 trying to pull the feet apart.

NOTE Confidence: 0.92430526

00:13:06.230 --> 00:13:08.090 So a normal person should

NOTE Confidence: 0.92430526

00:13:08.090 --> 00:13:09.950 be able to overcome me.

NOTE Confidence: 0.92430526

00:13:09.950 --> 00:13:11.987 Their legs are stronger than my arms,

NOTE Confidence: 0.92430526

00:13:11.990 --> 00:13:13.635 so if they can hold their feet

NOTE Confidence: 0.92430526

00:13:13.635 --> 00:13:15.550 together and I can't pull them apart,

NOTE Confidence: 0.92430526

00:13:15.550 --> 00:13:18.268 they've got pretty normal hip adductors.

NOTE Confidence: 0.92430526

00:13:18.270 --> 00:13:22.510 That's L3L4 for hip abduction.

NOTE Confidence: 0.92430526

00:13:22.510 --> 00:13:24.148 I'll bring the leg out here,

NOTE Confidence: 0.92430526

00:13:24.150 --> 00:13:25.886 ask the patient to hold the leg

NOTE Confidence: 0.92430526

00:13:25.886 --> 00:13:27.787 out there and I'll push back here.

NOTE Confidence: 0.92430526

00:13:27.790 --> 00:13:32.578 And that tests L4L5 for hip extension.

NOTE Confidence: 0.92430526

00:13:32.580 --> 00:13:34.542 What I'm going to do here is I'm going

NOTE Confidence: 0.92430526

00:13:34.542 --> 00:13:36.740 to overcome the gluteus maximus muscle.

NOTE Confidence: 0.92430526

00:13:36.740 --> 00:13:38.532 So I'm going to ask the patient

NOTE Confidence: 0.92430526

00:13:38.532 --> 00:13:40.552 to fix their leg on the bed and

NOTE Confidence: 0.92430526

00:13:40.552 --> 00:13:42.100 I will try to overcome that.

NOTE Confidence: 0.92430526

00:13:42.100 --> 00:13:43.711 So I ask the patient to fix the leg

NOTE Confidence: 0.92430526

00:13:43.711 --> 00:13:45.551 on the bed and I'll try to pick it up

NOTE Confidence: 0.92430526

00:13:45.551 --> 00:13:47.616 and I shouldn't be able to pick the leg up.

NOTE Confidence: 0.92430526

00:13:47.620 --> 00:13:51.436 And that's a pretty good way of testing the

NOTE Confidence: 0.92430526

00:13:51.436 --> 00:13:54.857 gluteus maximus muscle or the hip extensor.

NOTE Confidence: 0.92430526

00:13:54.860 --> 00:13:55.884 So for the knee,

NOTE Confidence: 0.92430526

00:13:55.884 --> 00:13:58.100 I'm going to look at knee extension.

NOTE Confidence: 0.92430526

00:13:58.100 --> 00:13:59.315 It's very simple.

NOTE Confidence: 0.92430526

00:13:59.315 --> 00:14:00.935 Bend the patient's leg.

NOTE Confidence: 0.92430526

00:14:00.940 --> 00:14:03.124 I'm going to ask them to straighten

NOTE Confidence: 0.92430526

00:14:03.124 --> 00:14:05.404 out their leg and they bend

NOTE Confidence: 0.92430526

00:14:05.404 --> 00:14:07.612 the leg and straighten it out.

NOTE Confidence: 0.92430526

00:14:07.612 --> 00:14:07.940 Again,

NOTE Confidence: 0.92430526

00:14:07.940 --> 00:14:10.580 I'm giving the patient the mechanical

NOTE Confidence: 0.92430526

00:14:10.580 --> 00:14:13.378 advantage this test the quadriceps and

NOTE Confidence: 0.92430526

00:14:13.378 --> 00:14:17.458 tests L4L 3L4 as a very simple maneuver.

NOTE Confidence: 0.92430526

00:14:17.460 --> 00:14:19.230 Then the patient's legs come down

NOTE Confidence: 0.92430526

00:14:19.230 --> 00:14:20.974 through that and we're going to

NOTE Confidence: 0.92430526

00:14:20.974 --> 00:14:22.738 look at the ankle and foot muscle.

NOTE Confidence: 0.92430526

00:14:22.740 --> 00:14:25.844 So we're going to start with the ankle

NOTE Confidence: 0.92430526

00:14:25.844 --> 00:14:27.739 dorsiflexor tibialis anterior muscle,

NOTE Confidence: 0.92430526

00:14:27.740 --> 00:14:31.835 that's L4L5 and it's a perineal nerve.

NOTE Confidence: 0.92430526

00:14:31.840 --> 00:14:34.315 So I ask the patient to pull their foot

NOTE Confidence: 0.92430526

00:14:34.315 --> 00:14:38.200 back and I try to overcome that both sides.

NOTE Confidence: 0.92430526

00:14:38.200 --> 00:14:40.936 Now the problem with this maneuver is the

NOTE Confidence: 0.92430526

00:14:40.936 --> 00:14:42.958 tibialis anterior muscles pretty strong,

NOTE Confidence: 0.92430526

00:14:42.960 --> 00:14:46.335 so I'm going to miss subtle weakness of L4L5.

NOTE Confidence: 0.92430526

00:14:46.335 --> 00:14:49.350 So the best way to pick up subtle weakness

NOTE Confidence: 0.92430526

00:14:49.424 --> 00:14:51.797 is to test the great toe extensor.

NOTE Confidence: 0.92430526

00:14:51.800 --> 00:14:53.802 So here I'll ask the patient to

NOTE Confidence: 0.92430526

00:14:53.802 --> 00:14:55.712 pull their great toe back and I

NOTE Confidence: 0.92430526

00:14:55.712 --> 00:14:57.436 will simply try to at the base of

NOTE Confidence: 0.92430526

00:14:57.436 --> 00:14:59.146 the toe see if I can overcome the

NOTE Confidence: 0.92430526

00:14:59.146 --> 00:15:00.790 patient's ability to hold it back

NOTE Confidence: 0.92430526

00:15:00.790 --> 00:15:02.497 and I shouldn't be able to,

NOTE Confidence: 0.92430526

00:15:02.500 --> 00:15:03.700 if I can,

NOTE Confidence: 0.92430526

00:15:03.700 --> 00:15:06.500 this weakness of the great toe extensor.

NOTE Confidence: 0.92430526

00:15:06.500 --> 00:15:08.876 So the last two muscle groups of the

NOTE Confidence: 0.92430526

00:15:08.876 --> 00:15:11.376 foot are what's called the ankle inverter.

NOTE Confidence: 0.92430526

00:15:11.380 --> 00:15:13.298 And here they have the patient pull

NOTE Confidence: 0.92430526

00:15:13.298 --> 00:15:14.991 their ankle out like this and I

NOTE Confidence: 0.92430526

00:15:14.991 --> 00:15:16.540 try to push it in like this.

NOTE Confidence: 0.92430526

00:15:16.540 --> 00:15:19.300 So the ankle inverters are L5,

NOTE Confidence: 0.93227726

00:15:19.300 --> 00:15:22.775 S 1, the superficial perineal nerve and

NOTE Confidence: 0.93227726

00:15:22.775 --> 00:15:25.935 the last group is the ankle plantar flexor.

NOTE Confidence: 0.93227726

00:15:25.940 --> 00:15:28.362 And here I'll ask the patient to

NOTE Confidence: 0.93227726

00:15:28.362 --> 00:15:30.638 push down their foot against me

NOTE Confidence: 0.93227726

00:15:30.638 --> 00:15:33.160 and that's the tibial nerve S1S2.

NOTE Confidence: 0.93227726

00:15:33.160 --> 00:15:36.640 So that's the completion of the

NOTE Confidence: 0.93227726

00:15:36.640 --> 00:15:38.380 lower extremity examination.

NOTE Confidence: 0.93227726

00:15:38.380 --> 00:15:40.820 So to review with you the anatomy of

NOTE Confidence: 0.93227726

00:15:40.820 --> 00:15:43.098 the lower extremity muscle groups,

NOTE Confidence: 0.93227726

00:15:43.100 --> 00:15:45.300 why we do this examination?

NOTE Confidence: 0.93227726

00:15:45.300 --> 00:15:49.577 The hip flexor is L2L3 femoral nerve,

NOTE Confidence: 0.93227726

00:15:49.580 --> 00:15:52.090 the hip adductor towards the

NOTE Confidence: 0.93227726

00:15:52.090 --> 00:15:54.750 midline is L3L4 obturated nerve.

NOTE Confidence: 0.93227726

00:15:54.750 --> 00:15:58.724 The hip abductor is L4L5 and that's the

NOTE Confidence: 0.93227726

00:15:58.724 --> 00:16:01.586 superior gluteal and the hip extensor

NOTE Confidence: 0.93227726

00:16:01.586 --> 00:16:05.010 is L5 S one and the inferior gluteal.

NOTE Confidence: 0.93227726

00:16:05.010 --> 00:16:07.432 Now we looked at the knee extensor

NOTE Confidence: 0.93227726

00:16:07.432 --> 00:16:09.730 which is the quadriceps which

NOTE Confidence: 0.93227726

00:16:09.730 --> 00:16:12.074 is the femoral nerve and L3L4.

NOTE Confidence: 0.93227726

00:16:12.074 --> 00:16:13.898 We didn't look at hip flexors

NOTE Confidence: 0.93227726

00:16:13.898 --> 00:16:15.290 because it's multiple muscles,

NOTE Confidence: 0.93227726

00:16:15.290 --> 00:16:17.930 multiple nerves and not very helpful.

NOTE Confidence: 0.93227726

00:16:17.930 --> 00:16:18.998 And then finally,

NOTE Confidence: 0.93227726

00:16:18.998 --> 00:16:21.134 they're very important ankle and foot

NOTE Confidence: 0.93227726

00:16:21.134 --> 00:16:23.045 muscles because of their concomitant

NOTE Confidence: 0.93227726

00:16:23.045 --> 00:16:25.283 innervation with the same nerve roots

NOTE Confidence: 0.93227726

00:16:25.345 --> 00:16:27.100 that innervate the hip muscles.

NOTE Confidence: 0.93227726

00:16:27.100 --> 00:16:31.317 So the ankle dorsiflexor is L4L5,

NOTE Confidence: 0.93227726

00:16:31.317 --> 00:16:34.299 deep perineal nerve, great Toeic sensors,

NOTE Confidence: 0.93227726

00:16:34.300 --> 00:16:38.536 L5 deep perineal nerve, ankle inverter,

NOTE Confidence: 0.93227726

00:16:38.540 --> 00:16:40.940 L5S1 superficial perineal nerve,

NOTE Confidence: 0.93227726

00:16:40.940 --> 00:16:44.580 and the ankle plantar flexor S1S2

NOTE Confidence: 0.93227726

00:16:44.580 --> 00:16:47.140 is the tibial nerve.

NOTE Confidence: 0.93227726

00:16:47.140 --> 00:16:48.436 Now let's look at,

NOTE Confidence: 0.93227726

00:16:48.436 --> 00:16:50.422 if we can some results of the

NOTE Confidence: 0.93227726

00:16:50.422 --> 00:16:52.240 manual muscle exam to see if that's

NOTE Confidence: 0.93227726

00:16:52.240 --> 00:16:54.144 that they can give us a clue on

NOTE Confidence: 0.93227726

00:16:54.144 --> 00:16:55.810 what's going on with the patient.

NOTE Confidence: 0.93227726

00:16:55.810 --> 00:16:57.861 So here's a patient that has weakness

NOTE Confidence: 0.93227726

00:16:57.861 --> 00:17:00.269 of all the muscle groups on one side

NOTE Confidence: 0.93227726

00:17:00.269 --> 00:17:02.216 arm and leg and that's consistent

NOTE Confidence: 0.93227726

00:17:02.216 --> 00:17:04.730 with a central nervous system lesion,

NOTE Confidence: 0.93227726

00:17:04.730 --> 00:17:06.728 a stroke or a brain tumor.

NOTE Confidence: 0.93227726

00:17:06.730 --> 00:17:08.890 This next patient has a weakness

NOTE Confidence: 0.93227726

00:17:08.890 --> 00:17:11.370 at one level all the way down,

NOTE Confidence: 0.93227726

00:17:11.370 --> 00:17:13.274 so from the hip muscles all the way

NOTE Confidence: 0.93227726

00:17:13.274 --> 00:17:15.416 down to the ankle muscles is weakness

NOTE Confidence: 0.93227726

00:17:15.416 --> 00:17:17.750 and that's consistent with a cord lesion,

NOTE Confidence: 0.93227726

00:17:17.750 --> 00:17:19.175 spinal cord injuries,

NOTE Confidence: 0.93227726

00:17:19.175 --> 00:17:21.550 A spinal cord tumor etcetera.

NOTE Confidence: 0.93227726

00:17:21.550 --> 00:17:25.323 This next patient has weak more weakness

NOTE Confidence: 0.93227726

00:17:25.323 --> 00:17:28.035 of symmetric proximal muscle weakness

NOTE Confidence: 0.93227726

00:17:28.035 --> 00:17:32.067 of both the upper and lower muscle groups.

NOTE Confidence: 0.93227726

00:17:32.070 --> 00:17:35.454 So the muscles get stronger as you get

NOTE Confidence: 0.93227726

00:17:35.454 --> 00:17:38.508 more distal and that's consistent with

NOTE Confidence: 0.93227726

00:17:38.508 --> 00:17:41.210 a myopathy or so-called polymyositis,

NOTE Confidence: 0.93227726

00:17:41.210 --> 00:17:44.110 the amount of myositis syndrome.

NOTE Confidence: 0.93227726

00:17:44.110 --> 00:17:46.972 This next group has very isolated

NOTE Confidence: 0.93227726

00:17:46.972 --> 00:17:49.913 weakness of the elbow extensor in

NOTE Confidence: 0.93227726

00:17:49.913 --> 00:17:52.727 the finger abductor and what is

NOTE Confidence: 0.93227726

00:17:52.727 --> 00:17:55.645 similar to those two muscle groups

NOTE Confidence: 0.93227726

00:17:55.645 --> 00:17:58.332 is the root innovation of C7C8T1.

NOTE Confidence: 0.93227726

00:17:58.332 --> 00:18:00.586 So if you see a patient with

NOTE Confidence: 0.93227726

00:18:00.586 --> 00:18:02.492 isolated weakness of elbow extension

NOTE Confidence: 0.93227726

00:18:02.492 --> 00:18:03.686 and finger abduction,

NOTE Confidence: 0.93227726

00:18:03.690 --> 00:18:06.130 think neck disease as the

NOTE Confidence: 0.93227726

00:18:06.130 --> 00:18:08.082 cause of that weakness.

NOTE Confidence: 0.93227726

00:18:08.090 --> 00:18:11.128 So the next patient is isolated weakness

NOTE Confidence: 0.93227726

00:18:11.130 --> 00:18:13.195 of the finger abductors bilaterally

NOTE Confidence: 0.93227726

00:18:13.195 --> 00:18:15.890 and this is classic for diabetic

NOTE Confidence: 0.93227726

00:18:15.890 --> 00:18:19.770 neuropathy and ulnar neuropathy.

NOTE Confidence: 0.93227726

00:18:19.770 --> 00:18:22.976 This next patient has isolated weakness of

NOTE Confidence: 0.93227726

00:18:22.976 --> 00:18:26.765 the hip flexor and the extensor on one side.

NOTE Confidence: 0.93227726

00:18:26.770 --> 00:18:29.497 So what is common to those two muscle groups

NOTE Confidence: 0.93227726

00:18:29.497 --> 00:18:32.327 is their innovation by the femoral nerve.

NOTE Confidence: 0.93227726

00:18:32.330 --> 00:18:34.280 So this is very typical

NOTE Confidence: 0.93227726

00:18:34.280 --> 00:18:35.450 for diabetic amyotrophy,

NOTE Confidence: 0.93227726

00:18:35.450 --> 00:18:38.288 A femoral neuropathy.

NOTE Confidence: 0.93227726

00:18:38.290 --> 00:18:40.593 And the final patient is a patient

NOTE Confidence: 0.93227726

00:18:40.593 --> 00:18:43.152 who has a weakness of both their

NOTE Confidence: 0.93227726

00:18:43.152 --> 00:18:45.952 hip and ankle and foot muscles.

NOTE Confidence: 0.93227726

00:18:45.952 --> 00:18:48.440 So the L4L5 and L5S1 innovative

NOTE Confidence: 0.93227726

00:18:48.440 --> 00:18:49.900 muscles of the hip,

NOTE Confidence: 0.93227726

00:18:49.900 --> 00:18:51.840 the abductor and the extensor

NOTE Confidence: 0.93227726

00:18:51.840 --> 00:18:53.900 and the L4L5 and L5 innovative

NOTE Confidence: 0.93227726

00:18:53.900 --> 00:18:55.820 muscles of the ankle and foot,

NOTE Confidence: 0.9262352

00:18:55.820 --> 00:18:58.172 the ankle and Dorsiflex of the great

NOTE Confidence: 0.9262352

00:18:58.172 --> 00:19:00.380 toe Dorsiflexor and the ankle inverter.

NOTE Confidence: 0.9262352

00:19:00.380 --> 00:19:02.780 So when you see that pattern of weakness,

NOTE Confidence: 0.9262352

00:19:02.780 --> 00:19:05.640 that's very consistent with back

NOTE Confidence: 0.9262352

00:19:05.640 --> 00:19:08.500 disease or lumbar disc disease.

NOTE Confidence: 0.9262352

00:19:08.500 --> 00:19:11.048 So I've demonstrated you today a very

NOTE Confidence: 0.9262352

00:19:11.048 --> 00:19:13.757 simple exam that takes very little time.

NOTE Confidence: 0.9262352

00:19:13.760 --> 00:19:15.160 You sit the patient down.

NOTE Confidence: 0.9262352

00:19:15.160 --> 00:19:16.760 You check their shoulder abductors,

NOTE Confidence: 0.9262352

00:19:16.760 --> 00:19:18.812 elbow flexors, elbow extensors,

NOTE Confidence: 0.9262352

00:19:18.812 --> 00:19:20.704 wrist extensor, finger abductor,

NOTE Confidence: 0.9262352

00:19:20.704 --> 00:19:22.000 and thumb opponents.

NOTE Confidence: 0.9262352

00:19:22.000 --> 00:19:23.480 You lie them down.

NOTE Confidence: 0.9262352

00:19:23.480 --> 00:19:25.434 You check the flexors, abductors,

NOTE Confidence: 0.9262352

00:19:25.434 --> 00:19:28.278 adductors, and extensives of the hips,

NOTE Confidence: 0.9262352

00:19:28.280 --> 00:19:30.560 the extensives of the knee and the ankle,

NOTE Confidence: 0.9262352

00:19:30.560 --> 00:19:32.300 and great toe dorsiflexes,

NOTE Confidence: 0.9262352

00:19:32.300 --> 00:19:34.040 inverters and plantar flexors.

NOTE Confidence: 0.9262352

00:19:34.040 --> 00:19:35.480 That's all you need to do.

NOTE Confidence: 0.9262352

00:19:35.480 --> 00:19:37.174 But what you do need to know

NOTE Confidence: 0.9262352

00:19:37.174 --> 00:19:38.959 is a bit of the anatomy,

NOTE Confidence: 0.9262352

00:19:38.960 --> 00:19:41.660 the nerve roots and peripheral nerves

NOTE Confidence: 0.9262352

00:19:41.660 --> 00:19:43.460 that innervate those structures

NOTE Confidence: 0.9262352

00:19:43.532 --> 00:19:45.932 so you can look at the pattern of

NOTE Confidence: 0.9262352

00:19:45.932 --> 00:19:48.359 weakness and that can lead you to your

NOTE Confidence: 0.9262352

00:19:48.359 --> 00:19:50.860 next step in trying to evaluate the

NOTE Confidence: 0.9262352

00:19:50.860 --> 00:19:53.060 cause of this patient's dysfunction.

NOTE Confidence: 0.9262352

00:19:53.060 --> 00:19:55.292 So you do need to learn a little anatomy,

NOTE Confidence: 0.9262352

00:19:55.300 --> 00:19:57.388 have one around you that will give you

NOTE Confidence: 0.9262352

00:19:57.388 --> 00:19:59.598 the nerve roots and peripheral nerves of

NOTE Confidence: 0.9262352

00:19:59.598 --> 00:20:01.780 these muscle groups we looked at today.

NOTE Confidence: 0.9262352

00:20:01.780 --> 00:20:02.180 Thank you.