

Whether it is all of them were two of them but these are things in the structure that may be causing pain and may not be causing pain and by definition or payment emanating is worsen with prolonged sitting and also simple. And pain that gets worse with transition and generally not as bad. And [ Inaudible ] pain also transitional and there's a ton of overview and overlap and doesn't not just prolong sitting here in transition going together we can try different agendas but you can and I don't worry so much about this and our fellas and on the flipside it is different. It's a little more specific that you are trying to figure out if someone has pain going down the legs it's referred to in trigger points in the lower back or [ Inaudible ] muscles in it, cause pain in range of motion bending forward or back causing reading pain and glutes of the versus [ Inaudible ] owing [ Inaudible ] myelopathy compression spinal cord looking at any specific peripheral nerves. We see a lot of patients referred in the clinic for epidurals when we go to examine they have literal [ Inaudible ] involvement. The handout lateral size numbing in burning. It's important and we have an older publishing in the VA, not all but a few older and vascular turn one thing that gets worse with walking and better when they stop. And it's something always to consider. Smith is a nice way to differentiate vascular versus neurogenic. More investigation if you think it might be a path.

Gate is important. We went to look at safety of course balance and I think it can help you identify some of those potential mild topics. If someone has a weird gate, that should start to make hairs on the back of your neck stand up a little bit. I know not getting down to the nitty-gritty or they have more aware on the bottom of the lateral side of their heel or shoe, but if someone has stoppage gate or some balance or leave quite a bit, you want to assess that and want to know while they may present to you, you want to ask them if they use that or if they false or for furniture surf around their living quarters. You want to look at these things. Endorses is not taught one and we do have folks who can have [ Inaudible ] scoliosis or traumatic scoliosis and it's good to note because it may adopt your [ Inaudible ] to accommodate for that and it doesn't mean we need to correct or generator or part of the problem but it might impact your planning. Again the [ Inaudible ] transition because it may clue us into structures or interfere from and from a palpation standpoint, [ Inaudible ] in the soft tissues both. And try to see if you're reproducing any discomfort and tender points versus trigger points and credit pain lots of people have tender points all over the place and the trigger points as well not as quite as common but by definition taught by a local or referred pain and reduced range of motion those are the things you said see the trigger points if you have pain lower back and the person they say how and doesn't refer anywhere, and no real twitch or jump sign is a trigger point and not a bad thing. Trigger points due to lack of movement or being sedentary. Trigger points are there and when they have them they produce the typical pain and is it a relevant thing? They are not really relevant. Trigger points are part of the human condition. You want to ask all the time is this relevant? In the main relevance of trigger points is if you plan trigger points than reduces the patient's pain and find one and in the gluteus medius and push and it goes down the leg and push on it and push on it and it gets software and pain gets better. That is

very much [ Inaudible ] in treatment should target that and whether you choose a point or not it should be targeting that as your [ Inaudible ].

Here are some referral patterns for common trigger points. And things that are of value to help in the differential for her can be and allowed to have more than one thing in you can have [ Inaudible ] pain on top of mediated pain but if we push on something and that replicates the pain, I will ask what percentage of your typical pain am I replicating? If it is something that I feel 10% of the time, I will not waste my time nothing around with that. If we push on it and say oh my gosh, that is 90% of my pain and that helps direct my treatment and again with the chronic pain population it might be a part of it on some days and not on others. One thing I neglected to say is biology is important and we don't want to have the expense of time focusing on these because [ Inaudible ] is probably talking about if we can quiet down the noise, peripheral input, that gives us space and breathing room and opportunity. And that's what we do all the time with this is buying opportunity.

After palpation, testing is important, and you look at strength and sensation and reflexes and pathologic reflexes. This is where you try to reassure and this one sensation is somewhat subjective and these are assuming people give you good effort and that objective findings to either there or not and with strength it's important to make sure the people give action effort and coach them and give them everything you got for five seconds so you get the maximal amount. And aware of learning a pain but keep them moving and you correlate the gate with other things when you look at strength.

Strength testing is by definition how you rate testing and people will do pluses and minuses which in the PP world we are data points and inner reliability is possible but we love the 3+ and we don't expect that from the physician colleagues but if you see it, no it is the term with us.

If you work with a team make sure they use the same system as if they are we they are weaker so I will give them a three and there are definitions of that no it is full range of motion and again against gravity. Any extension they set they straighten their knee all the way and if they cannot straighten their knee all the way, they are not a three. They are at least a two and you have work to figure out. That means it is horizontal. That means you put them on their side.

Lower extremities are what we ritually test because it is the relevant muscles. This is a screening list. Hip flexion, knee, ankle, greater extensions and ankle. If all them are normal likely something significant as much as nerve [ Inaudible ] is pretty low.

This is pretty amount of time and gives that information that we encourage that to be a consistent target.

The sensory, reflexes, strength and upper trend went into minutes from when we train primary care. Two minutes is all it takes and if you spend time, you can do it and it is typical to do with shoes on what shoes have

to come off. Ankle plantarflexion, nothing going on push on the gas pedal and if patients are complaining of numbness or tingling or weakness in the legs that I have them stand up and do toe raises so we will show it on video a little bit but they were either pressed her hands against the wall or leave their homes on mine so I can catch them and have one leg up and go up and down on the other two on the ground. Five or 10 times. Five is nice and 10 is reasonable with the literature. And if it doesn't correlate with their complaints, a longer I am on my feet, the more problematic it becomes. And push it and see when does performance degrade?

Sensory testing, this is dermatology you want to test. L2 and L3 and L4. L5 goes to interior shin to the top of the foot and S1 is lateral calf, you see over here in the side of the foot. So correlate findings with the motor testing and have the areas that you test consistently and realize this is [ Inaudible ] and deviate slightly from the sun all built a little differently but generally these are where things mapped out to in the human body. Reflex testing is a scoring system that is agreed-upon. Four-point scale. Two being normal in three being brisk. And for being hyperactive and clonus. Check reflex in the news and extremities and then [ Inaudible].

Pleased by the way, if there are questions related, type in the chat box and we can about -- backup in the slides. Lower reflexes in the patellar reflex and Achilles reflex and mostly testing [ Inaudible] and if you correlate what norms will cover the same things for motor or sensory and reflexes. It helps you tease out something that is abnormal or an isolated finding. Pathology reflexes are important. Both in the upper lower extremities. These are things to differentiate, is there concern for upper motor neuron. And involvement or insult and these are patients who have a spinal cord injury or brain injury and may be abnormal especially in the dramatic brain injury that is dramatic. In the absence, they generally are not present. Some people have jumpy reflexes. Clueless that Reppert ankle or suppression and typically either playing on the back or upward in doing [ Inaudible ] and if the foot beats back at you once or twice and is it sustained, then you've seen over years they've had it in now they haven't been you need more work out. So, these are things you want to good and comfortable that you can do to make sure there's nothing concerning, or I need to do more work out.

When we do trainings, these are points where they feel the least comfortable and what good is save space and train create the save space to say I don't know how to do [ Inaudible ] so I don't do it and take the time and practice and practice with colleagues, it's important you can do these as well.

A lot of times depending on the specialty, the last time you were trained on these things was years and years ago and the fellow two years ago on the program who had been practicing for seven years and in the spine clinic and he acted like the first day of practice, I've not been doing a very good job of this for the last seven years. And we went through the practice. You get out of habits and do comfort with certain maneuvers and if I had to do anything that was general medicine and we stick to certain areas but when you see the primary care and patience

it's good to be comfortable with these because you get [ Inaudible ] depending how much credit is out there.

Provocative testing, these are things where you again look for structural differentiation. Can I provoke a structure and get the response? For lower back ones that we look at related to neural dynamics include straight leg raise, seeded slump test and more variations of things that you can mess with and learn but more your PT calling domain. Sabre is one of those that can tell us about hip and low back and the cluster of joints, and we went to look at the joint. They are neighbors and if you have problems in one area that you want to check out the neighbors and see if that is the root of it.

Again were trying to move away from Nero [ Inaudible ] and how does the system move to the spot intentionally because it is not a static structure but we look at how the spinal cord needs to move and slide and light if you have bending forward and if you reach resulting, we can look at the straight leg raise which will demonstrate and show pictures and test and nerve [ Inaudible ] dynamic structure test again what we all learn in our training program, is that straight leg raise is a test for a big disk or lesion. Now while these measurements and these data are looking for that, you can have problems with this maneuver and pick up on things that aren't necessarily related to a lesion in the spine impacting the nerve. It can be to the dynamics of this is about however when we think of this past and its peer term here, if we lift the leg and they have symptoms below 30°, then we're thinking something else is going on and probably not just a lesion impacting the nerve. At 3270, the resort to take up the slack in the sciatic or root and so we can think if we have symptoms that they replicate to their complaint and might there be something proximal that is impacting the ability of those routes to move or is this a sensitivity. We don't know quite yet but that correlates with imaging finding. Then that may be part of the problem. Again, if we left the leg up further than 70°, that changes the tension again and if they have pain there then we might think of other searchers as opposed to the nerve roots.

The test, it's another good one and especially people complaining of problems with sitting than I like to do this one and so we have them falter back and get into the post public tilt. I think about verbal cueing would be set like a second potatoes or give me your best bad posture. And dropping the chin down, we don't need to for someone to have been to the sermon that too had into their sternum -- head into their sternum. They will recognize that but if they start to have a limitation in the extension and you have to extend their head and now tickly they extend their neck the rest of the way than the hamstrings do not attach to the back of the skull. Again, we look at what structures are implicated. A muscle issue or nerve issue. And you want to get hip extensions then work on flexing the knee. This is the more classic position.

Evaluation of the side joints, a lot of us learn flexion [ Inaudible ] rotation as a [ Inaudible ] screen but as Becky mentioned the hip and the pie is not really specific to the SI joint and once you put tension on low back there's a lot of structure that is being affected. If you

evaluate to do it correctly and the most sort of textbook way is to use clustering or multiple test and look at the same structure and multiple them and positive, you are likely to have that structure cause pain.

This is flexion, A.B. reduction and external rotation. And that is written in books. Ms. only enough what it is is you flex the hip and externally rotate with the foot coming in and abduction it out. And if someone has had surgery, be gentle and thoughtful and more recent and don't do this. Otherwise put strain and see where does it cause pain? No pain in the lower back or glutes, probably unlikely to be SI joint and maybe negative but less likely if all pain is in the front and growing creating down, then maybe it is a hip problem. A dual screen. Not a specific [Inaudible] at all. SI joint, we will talk about them here but you can find this article so it is an article from 2005 and a couple in 2000 an article from 2005 and a couple in 2007 also where he walks through these test and I thrust, gaze lens and compression and sacral thrust. The user's hands are on the inside of the ASI and pushing their hands outward and trying to distract the interior part of the [Inaudible]. This is where your hand is under the sacrum and putting downward pressure through the site and versus downward. This way with your hand on the sacrum. Envisioning almost shearing, the posterior on the sacrum. This is similar position to the last one, he often have users will have patient grab their knee and pull it up through their chest and putting pressure on the lateral that is on the end of the table in the edge of the table is right there and patience and shoulders are on the edge but the hip and pelvis are on the edge. Then you put downward pressure and testing side of shearing rotation. Your testing the left side. This is compression which is downward pressure on the alien. In the sacred thrust, pressure down on the sacrum. Those are the five tests to each side. What they show is three out of six positive test of a 94% sensitivity and 78% specificity in the high likely ratio, maybe 13 or something. I ratio and eight or nine that it happens if you take out [Inaudible] and just do the other test. And you will have [Inaudible].

Fun fact, [Inaudible] is on twitter so if you are on twitter and want to follow him he is lots of opinions and things to share but I think it is very fun. Hip pain differential. Two things to look at. Intra-articular, the joint itself or the labor itself or in pigment joint in the labor versus extra particular. Is the issue referring in there and bursitis and in around and one note for bursitis, many years ago, as he get older no further way, [Inaudible] is become less and less an entity that people think is a big deal as opposed to pain in [Inaudible] was more related to the tenants of attach to that lateral help. The gluteus medius or Glenville [Inaudible] and bursitis is less common and less common. Especially in the absence of trauma. You fall on the lateral hip, then you get kicked, and you have audio or that sits on that. But in the absence of those things, even if you have that structure and we think it is the versa, why is versus becoming inflamed. It does not yet inflame by itself so might that be structures that it is cushioned.

The lateral hip plane inside pain can also have [Inaudible] that people have had surgeries and [Inaudible] going into that growing that can mimic what joint pain would be but nerve pain again going back to the pain history it's more burning and stabbing and less so much sharp alone

and have [ Inaudible ] or weird sensations when people touch the skin of that area. Think about your belts or tool bolts or body armor. Or body morphology when you think of that one also.

This is a nice image looking at the likelihood where the pain is and what it probably is. Reading to the [ Inaudible ] towards the groin and upper menial by is likely to be hip joint and one of those [ Inaudible ] and posteriorly recover that and deep external rotators [ Inaudible ] is here attaching posterior to the greater [ Inaudible ] and can cause pain in the region. In testing and training the external rotation system and it can be helpful for [ Inaudible]. In any structure or muscles can cause pain as well. And you have to figure out why. If we haven't figured out the why they are having pain, then a weird gate to appear something else in the history of the things they're moving differently to compensate. It's important to evaluate that.

Temple patient. We will skip this for efficiency sake. All the bony structures, censuses [ Inaudible] and all the surrounding muscles in the region.

When you are in one look at anatomy books that [ Inaudible] sections because you find interesting stuff for people say tender over the versa and now my new there are lots of versa around that. But it seems to sometimes be not where that is located.

Range of motion is important to test. [ Inaudible ] that you can do all of this but good to test side to side and see can you do range of motion if it causes pain or able to do what amounts is relatively regular range of motion. It's not hard to do. With as a test you are in spine position and can do a lot of these maneuvers easily and quickly and not that complex.

I recommend you test the asymptomatic side first because once again that is the ace line or normal for them. And you go for the jugular right away and it can freak them out. It puts a pattern in their head of this is what it is like to move this without pain or fear. Then that uses you into going after the [ Inaudible].

And if you asked the patient, is it above or below [ Inaudible] and tender or not tender and finding areas that don't hurt and hone in on what is more uncomfortable and work your way from there.

For a particular test and there's a number of things and probably the easiest thing to do from a screening standpoint is peters and that is flexion and internal rotation. Flexing up and bringing the cross and internally rotating so this position you turn their ankle outward or their whole hip outward and that is a high since Tivoli test. And that is intra-articular, and it doesn't mean it goes up, but the sensitivity is pretty high. If you have nothing, then probably not the hip.

Log world, I don't do this as much. If someone has severe disease, maybe. People that have a hip fracture, I wouldn't necessarily go down the path.

I have a nice primer and I might roll the leg back and forth and look at how this is moving, great that's fine.

And Thomas test is testing the hip flexor. And people spend all day sitting including for these four hours and develop hip flexors and those things can be issues and the test is pretty easy. People on the edge of the bed, I have a put on the floor or on something that is stable. Have them bring their opposite leg up towards their chest and you should be able to keep your hip static and flat. The hip flexor which is the right side and assume based on this weird image is if the right side comes up when they bring their leg up right? Or is okay.

Utilize test, testing for tight ruckus from Ross. And basically it looks a lot like the femoral [ Inaudible ] because are not lifting the entire knee up, you are basically bringing the heel towards the buttocks in prone or face down position and [ Inaudible ] when you bring a foot down it is part of the pelvis bow upward.

You see this quite a bit. Usually just don't do a good job stretching.

Over us test, we put this in here for completeness. It is a difficult test to do according to the textbook. And I don't know that it tells you a lot. The alluvial and gets a favorite for folks and you see them foam rolling and sorry if this is a sacred cow for some of you, but the band is itself does not stretch and move. The TSL, the squeaky muscle at the top, that is something that we can potentially impact and change and over test is something to look for it but I find palpation and gate and more functional movement to be a more successful test of this. What you look for is you're trying to drop the knee towards the table without letting the pelvis move forward or backward in without putting it full into flexion and you look at the mobility of that system. Again, probably not the IT band itself. Probably not changing the length or flexibility of that part of the structure ever. The Trendelenburg test. Have them stand on the right leg and what should happen is's should kick in and stabilize the pelvis of the right-side loot Mead or outer glutes should engage to help hold your pelvis level. If someone does this and immediately dropped down on the left side, we look at a right sided deficit in the ability. It could be inhibited by pain. We see folks with lower lumbar involvement with a cannot do that because that tightening or stiffening of the tissues to hold the published level is provocative and it hurt. That could be joint related and [ Inaudible] if you have a crabby glute [ Inaudible] that does not what you hold the group study. And also, if you see this and have not done your neurologic testing, evidently go back and do that. >> The examination, we will talk about some testing here. When you palpate these structures, you want to look at. Quad muscle and tibia. And medial joint line, easiest to couple take the joint line with the reflection or a new reflection to putting in your move in pitting [ Inaudible] for the things you want to palpate.

There is that flexion position where you do the joint line and it's obvious to you. The range of motion. Compare [ Inaudible] if they don't have bilateral knee pain [ Inaudible ] in that range of motion and there are multiple test for meniscus. The data on that one, it is not great. Especially test is where you support the patient how the patient

along the wall and they do a little bit of knee flexion and actually twist side-to-side and enough putting internal external rotation with the knee bent and putting strain here on this meniscus. One of the better tests that you can do. It's a functional McMurray where you can move in a more mechanical normal way as opposed to having knee cranked around.

Have a patient to the working putting pressure and athletes [ Inaudible] meniscus and putting pressure down to the front and through the tibia and putting downward pressure with internal and external rotation.

[ Inaudible] restraint is what you're looking at here when you test the medial collateral lateral collateral ligaments. With this test in this particular picture the patient has about 30° in 20 or [ Inaudible] don't want the knee extended. He will go to do movement and it not impeccable so the knee flexion and putting pressure in the examiners holding the foot steady and putting pressure through their, through the heel of their palm that way in straining the lateral collateral ligament. This when they do the opposite. Putting strain through the medial need testing the lateral collateral ligament.

Anterior drawer. Where the flat foot on the table and they will sit on the foot or put their weight on so the front is not sliding forward and try to translate the tibia forward in the tibia should not move forward in the ACL is held in the position where it should not allow you to move it forward. It does then there could be a defect.

And compare side to side because people have more slop in their knees than others. This is the Lachman's test we push upward and holding the arm in position. This is a tough test to do unless you are skinny or have giant Michael Jordan hands. Putting the left hand around the by.

This is hard in the acute so if you have fields on medicine if you get a lot of fluid and before the swelling is taken place or you get it afterwards, the ability to appreciate or get movement will be pretty long.

Posterior cruciate ligament, instead of pulling this way you push that way. Testing of the PCL not the ACL. Less common. If you have someone thinking if you think PD on the dashboard injury, more vehicle accident where they talk about bending the knee into the dashboard, that is a common way to tear the PCL. Otherwise other trauma-based things that is pretty uncommon to be a normal cut and pivot injury that we think of with ACL. Again, you want to note as you do this, overreaction guarding localization, facial expressions or give way weakness. Again, that's not something that you should say someone will be lingering or someone is faking it. Trying to convey distress. They're trying to make sure that you get the picture. And in a small subset of humans, it is something that someone is putting on for some other reason again I encourage you and challenge you to go into this believing your patient. And thinking of these signs as more of them trying to communicate to you how important this is to them or how distressing it is, and it also tells you a lot about their fear. We talked about this in pretty good depth. So we were going to go to live video and do demonstration but I think it would be helpful to get a sense from the group, are there any questions before



we go to demonstration and what things do you want us to demo? In the interest of time because we don't want to demo every single thing. If you want to type in things or any questions related to the exam and we will eventually have an arm as well. Then what specific areas do you want us to demo?

Think about the low back down in the next phase we will do neck and lower extremity.

While you are typing, if you cannot see our video. Here we go.

I will expand the chat.

A couple ways to think about doing this and depending on how your patient is uncomfortable, I like to prefer to get next to me patient partly as that I can see and feel what they are doing. I will show you the other way you can do it but I like to be able to also [ Inaudible ] I'm gonna set my arm right up on the spine between the shoulder blades in the what I want you to do is turn one posture. And if they don't drop your head down then I can gently drop your chin to your head and I will leave my finger sitting there. That way I can tell when I start to extend if there trying to come out of this or do some [ Inaudible ] extension. Now the best way to do this is to have the patient try and [ Inaudible ] himself. And I can feel now even if they try and come out, because my arm is here, I can feel [ Inaudible ]. So, bringing your toes up to your face, is there a problem with that? Is the limitation? You can have them now I will have you pick up your head and what you want to do is you just want [ Inaudible ] extension and don't want them [ Inaudible ] and so I can feel what is going on and we have somebody who is [ Inaudible ] and a great way to do this and you listening alike to do is relax your chin down to your chest and combine your foot behind the ankle and I will gently turn on not quite sure what is going on but [ Inaudible ] and you can feel the tension that it limits [ Inaudible ] and there you go. And some patients have difficulty with this. Then I can bring it down and drama down here go ahead and extend your head. And unless you get in with more information and you as a primary care provider are doing this you want to note that where the table is and what your pain in what makes it better and what makes it worse? According to the textbook you should get better when they have done 21 however not all patients read the text and I look for any change in again so if it gets worse when they extend their work doesn't mean they are freaking because you are changing the nerve system when you do that. And there is a change happening and still the structure [ Inaudible ] with that sort of thing and you can also do this and do it this way as part of [ Inaudible ] doing the manual [ Inaudible ] and that is another acceptable [ Inaudible ]. [ Indiscernible - speaker too far away from the mic ]

Again [ Inaudible ] you are approaching and get out of the resequencing. When to do it is to have low back first efficiency wise and have them hang on to the leg. Now drop back. Then see what happens. Again, allow for what clothing they are wearing. This will skew the situation so have them in their shorts is the best. Now as I watch and rollback anyone to have something towards ahead and if you see this like come off, that

may be assigned that they have things going on so you can come down and push and that holds and goes back and that can still be related to [Inaudible] issue. You can have them lay down first then pull the leg up. That is harder especially [Inaudible]. One motion and if you do it that way you can have them that we don't do this on this type of table but closer to the edge and have people as close to the edge of the table as you can and grab the leg. Because then you can see what's going on. Hip exam. Hip exam, white on your back.

And this is where again I will do [Inaudible] so I am not in the way of the camera but I might start us soon as it can help people relax and touch people so I like to drive here and I like to relax and now I might [Inaudible] and again this is more related to my trust and finding them to be okay with me. From here I can move into a straight line. With the straight leg raise you want to keep the knee extended. So, doing this with your straight leg raise is not getting it done because they will buy everything, they will bend the knee see want to hold the leg here and come up. And watch what is happening. And if you want to make it more [Inaudible] and if they say out then we are saying it's okay and asked where and down the leg and in the back. What happens if I do this? Then the [Inaudible] then we think the Achilles [Inaudible] and what structure can be implicated here.

That is something you want to think about related to the [Inaudible] and mobility of that nervous system and here we can roll into [Inaudible]. We move into hip flexion and does it feel tight? Internal and next to rotation and then we come into [Inaudible] and to do that and look at her face and watch and see what is happening and come back and say is that better or worse and come into [Inaudible] in here stabilize the opposite and push down. And make sure you push on the knee joint not above or below.

Those are standard hip stuff. And anything else popping up? I don't know how many may or may not be partnered up and [Inaudible] or are you just sitting in your office on the computer? And as we talk and [Inaudible] flow into a gather stuff but always a better neuro-tension.

Nitpicking in structural [Inaudible] and localize when you do this is but you have them move from here and also say that I'm going to keep your leg up but what happens when you [Inaudible] and does that change. The moving in position impacts [Inaudible] so for that this is a good time to take a break and I think we had it on the agenda for after the [Inaudible] but probably or useful to take it now to cover history [Inaudible] and lower back and leg and go into the neck after a short break.

Is that okay to do that right now?

Let's do 15 minutes.

The timer will be on the screen.

We are back. One of the things we talk about in our teaching is if you have a problem where you evaluate above and below the joint and if you

have enough problem there isn't too much of a joint above the joint below is your shoulder. Make sure you are always evaluating the shoulder. This pretty much the same as a lower back but the [ Inaudible ] or peripheral joint and myelopathy in [ Inaudible ] and we will have issues with carpal tunnel and [ Inaudible ] in those themselves can cause referred pain and reading pain in or if you move differently because of those that can affect shoulder and arms cause pain. Again -

Forward head posture gets people excited and be careful about that. With how much it matters and I don't think it should be a focus of the treatment trying to correct someone's forward head posture unless they tell you, the longer I sit like this, the more pain I have. Then let's not sit like that. We always get too wrapped up in posture and we like to say the best position is your neck position and there's a little fallacy when we talk about ergonomics. We are designed to move in the problem is one position for too long is probably not great. Scapular motions, there is great papers on [ Inaudible] and however again we want to pay attention to what is important versus what is just normal variation and not relevant. It's very difficult to assess scapular positions and movements and if you do not take off their shirts. I would encourage you like when we write on people about taking off shoes, get their shirts off. Have them do that with weight. If you have a couple 3 pound weights that you can keep in your room to look at when we load it and how it moves, look at it loaded and unloaded then and add a wall push-up. If you look at winning which is the medial scapular board coming off of the trunk, and especially unilateral, maybe something the neurologic exam and have asymmetry and have one shoulder be higher than the other and don't worry about that unless it is really with other relevant findings. Focus on [ Inaudible] bony structures that you identify and palpate and again just like [ Inaudible] was talking about, we push on it and building report and laying hands on people. And returning to localize it by push here in pay more above or below this and not even necessarily in a seated position and replicating the brain.

Shoulders, there's a bony mark to poke at. Some are sensitive. Compressing or poking on [ Inaudible ] curricular joint, looking for is there a step in that higher-end did they have a prior shoulder separation and that's not uncommon even finding kids who played football or in wrestling to have had something happen. Then myofascial, there are some trigger points that can make radiculopathy and they can say wow when you push on the muscle, it does replicate my pain in my hand or the tingling or numbness or water running down my arm. It can mimic nervy things.

Strength, the key milestones you want to look at in the muscle that that will cover the majority of the [ Inaudible ] hitting every [ Inaudible ] reflection extension figure reflection and vigor reduction and getting comfortable and screening all those. They are enrolled and not concerned about significant root involvement. Reflexes, correlating reflexes and if you go back and having weakness in elbow extension and risk -- wrist extension and [ Inaudible] reflective as well and visit more [Inaudible] or something else? Pathologic reflexes, this is [Inaudible] for the extremity and we will demonstrate here on video as we get to the end but you're looking to see this or something just of [ Inaudible ] and the

brainstem and spinal cord involvement in if you find it, is or anything else that correlates and isolated finding and reflexes are normal and no other gate maladies. Some people occasionally have asymmetric and often less important but a sign of someone having [Inaudible] reflexes. And that will happen. 10% of folks might have a positive trend when and if more common in women than in men in this is one when we demonstrate when people feel uncomfortable about performing much like [ Inaudible ] so if you have patients that come to the clinic and previous patients with better to severe stroke, you should try and practice it and if you have folks almost in the class that we teach almost one person that has it, practice on them and recognize you can't fatigue out the response to interview practice over and over, it won't respond.

Sensory testing, C5 up here and lateral shoulder and C6 going out to the thumb and C7 covering the middle finger and see eight lateral or [Inaudible] position and into the pinky finger and small finger and medial forum approximately T1 and those are the new fruits in the [Inaudible] level and that's what you want to screen when you are testing. One thing to talk about sensation, I didn't mention in the other one, typically when I see patients I'm not always doing 21 so if someone has no pain that's going on the arm or no pain going down the leg, I do like touch. Testing. The moment someone starts to complain of anything down the arm or down the leg than I do pinprick. More sensitive and specific and I often have patients almost often but always have patients close their eyes and test with the pin and I have a safety pin and sometimes lipid 20 and do the [ Inaudible ] site even when I'm doing sharp to see if I am reliable. You want to make sure you get in the habit of testing, but I do only light touch with my fingers for patients that have no particular stuff at all.

You want to look at a range of motion. Again, for those of you, I don't think you're breaking out the chrome or something to measure this in detail. A nice way to do it is to look at dropping their chin down and looking at how many of the fingers between the chin and sternum extension. Look at four had parallel to the ceiling would be normal. Side bending, do they compensate and rotate to try and side bending and when they are doing that range, if the sideband to the right, is the pain on the right or on the left? The same with rotation. I have never met an adult with 80° of [ Inaudible] rotation and maybe a 20-year-old would have that. Benchmarks you need 60° of drilling to check your blind spot when you are driving. Looking at those types of things. Do they have trouble checking the blind spot and chances are then they don't have degrees of rotation?

Like in the lovers we have upper [ Inaudible] tension or narrow dynamic testing that we can do that we do different maneuvers to in theory try and buy us specific structures. You can have a more media structure in two ways in both above and below the shoulder and below when you look at arm elevation. And the way I make a decision on which way I will test is where they tell you they had problems and if they have problems reaching overhead this is something that I definitely will test. If they have problems doing things reaching out in front or while sitting at their desk, then I will test below the shoulder. Then radial nerve and the ulnar bias. When we walk through the medial nerve this is the after above

shoulder bias and you have the patient [ Inaudible ] and make sure their head is either supported or at the end of place where they can move and before you start messing with their arm, you should tell them when you look at cervical positioning, when I am done with this Tessa when you to tip your head away and it looks like this because Alessi want to do is get your hands went up and not do what you are asking them to do. Practice that first. There are active versions that we can demonstrate when we do the left and I like to do first as a growth screen. This one is more involved. It's an order of operation. Scapula depression, when you to be careful with this and it is more blocking than depression. If you yanked down on anyone's shoulder complex, you will love that system approximately and that can give you false positive and so it is more about blocking the shoulder in the neutral position and not letting it elevate. Then move into shoulder external rotation and move into extension of rotating and then you want to extend the elbow and wrist and hands and fingers get you in that sequence and have them to the head toward or away.

Please don't do this to your patients. Sperling's letter a is a lateral flexion and load a bit. Think about loading the [ Inaudible] or closing the neural frame. Do not crank on folks. If you do this and hurts on the left side, it's probably less about the [ Inaudible] or the neural structure on the right side. But if you do that and it gives them the buzzing down their arm, and we might be onto something. For B you add rotation and closing down the space as well and please be very careful and respectful and do not crank on someone. That can be painful. The test is described like images, what [ Inaudible] and rotate then click downward progressions. For my practice I don't put any [ Inaudible] compressions. I have them turn as much as they are comfortable. And I have no test I have them hold that position. And see if sustained compression or closing down the neural frame and it is enough because you do a lot of additional closing of the frame. The downward pressure is low and the more likely you are to make them uncomfortable, that is high. It's not fun to be in for anyone. Don't put a lot of downward pressure but the actual description of the test is to put downward pressure.

There is nice data on clustering of your test when you're looking for cervical ideologically. Sperling test A, distraction, you essentially getting your hands on the heel or the palm of your hand bilaterally and pulling up. And if they sit, cup and district there and decrease cervical location is the lateral side of the side of the pain. If for our positive then you have a huge likelihood ratio that [ Inaudible ] and if any three are positive, there's a moderate [ Inaudible ] that they have [ Inaudible ] outplay shoulder pain, again -- that they have outplay.

For shoulder pain, joint related stuff with the shoulder there's more joint related things than when we talk about hip where it was the joint and the later, we have rotator cuff and a lot more issues with instability. Obviously the joint itself and the bicep [ Inaudible] and the bicep around the joint entry for looking at [ Inaudible ]. Where do you have pain? Drill down a little bit the likelihood that it is one of these and if the pain is anterior especially arm and facing you with palm up, the bicep tendon is on the differential and if it is posterior

and if it is lateral [ Inaudible ] and if it is more internal if you feel like it is deep in the shoulder or achy deep, labor or instability or things you think of first. Again, because you think of these wrists doesn't mean it's not these but what is higher on the list as you work through the exam. This will help inform not to do every exam every single time, but people do. I don't know if it is necessary. Here are things that you look at some of the deltoid muscle [ Inaudible] on the back of your folder blade. And eventually the interior deltoid and bicep muscle and this is things that you can get and you cannot [ Inaudible ] muscle unless you get to the point right after you get [ Inaudible ] otherwise you cannot get it. Shoulder range of motion. These are normal for normal people. Coaching and abduction internal rotation and reaching behind and people will talk -- text and have people reach behind her back and put one arm up on their unaffected side and how far can they get their thumb up towards the top of their mid back. Mark that and how far can they get the affected side is it restricted external rotation? Here's the rotator cuff, [ Inaudible] they are both doing external rotations and some scalp is extra rotation. There are multiple ways to test. External rotation and strength test is [ Inaudible ] elbows tucked into the side of how patients hold static and push them inward and you don't want [ Inaudible ] to avoid them checking out but hold the elbow in tight and trying to rotate their arms that they can hold and have not a lot of issues. Empty canned is another test. This isn't the greatest pitcher because it looks like the arms are coming out that it needs to be forward 20 to 30° forward and isolated [ Inaudible] in that position.

This is again the hand behind the back as long as people can tolerate. Having them lather back of the hand on their back and left that back of the hand and pushing against their in testing side-to-side and hours it was a lot [ Inaudible]. We talked about and be -- empty can. This is the external rotator leg sign. Probably then better some of the other things a sensitivity and you move the patient's arm into the two positions. And also, a be ducted about 30° away from the body and externally rotated in that position. And tell them to hold it and you will go and if they cannot keep their arm a be ducted and collapses by their side and then you concern 21 and if the holder arm out there but the arm plops inward and able to keep their level and their side then [ Inaudible ] impacted. So, the ability to function remain an exhortation and remain in abduction. [ Inaudible] being positive 6200° and should be below so the Pinker that we label with rotator cuff and [ Inaudible ]. Hawkins test, you can see patients [ Inaudible ] 90° elbow bent and abduction to about 90 and if you put a little bit of downward internal rotation, does that cause pain in the shoulder and this is a rotator cuff or sub Romeo [ Inaudible ] and demonstrate by this in person if you would like.

If you do that to anyone, it can cause pain. Go in slowly and be gentle and is that your pain? And does it replicate their pain experience? A lot of times with these different tests, next one coming out across a reduction in question is usually where does it hurt and a lot of patience [ Inaudible ] and posterior deltoid and it's not actually causing the deep pain. Put pressure on the elbow to close down [Inaudible] joint and it's an easy test to do.

Instability test is prehension. And in a position where the shoulder is on the table and you have them in abduction at 90° and externally rotate the hand past neutral. And do they almost feel that they are going to jump up the table and basically it [ Inaudible] and if that happened then his positive apprehension. It hurts or concerning, and the next step is the second half of this is relocation where you put downward pressure here with the heel of your hand. If you turn support with determined do the same maneuver and if they are no longer impressive than you think instability in the shoulder and the labrum capsule, they are less concerned.

Young healthy people cannot do a lot of damage. There's liberal test author and specificity intensity and this is called bicep load test to. A lot like the test in apprehension. And you are further abductor it into 120° and then externally rotate. Then they pull their arm in. Straining that tendon and the bicep attaches in conflict with the interior room so if they have a slap tear, they read produce symptoms and depending on where you look so severe specificity in 90s or sensitive in the 90s and specificity in the 70s. This is a speed test. And it's all of it cash elevation from the arm and you put downward pressure and asking it to reproduce pain in that bicep group. That is everything for the neck and shoulder literally the same slide. Now another chance to go into demo mode so we will ask people if they have questions or things you want us to demo. This would be the time.

Let's move this stuff. Does anyone want us to download anything specifically?

I will show you the active test for the upper neuro- dynamic. Go ahead and start with Hoffman and type in ideas or things you like us to demo, we will do that.

When you do Hoffman you want to make sure that you have your patient seated in a forward position or upright. You want to be able to see what is happening here. Take and extend their middle finger, the upper part. And when you are looking for a positive [ Inaudible], inner finger and. Again [ Inaudible] and if you look on YouTube [ Inaudible] people are doing. And just like what we do [ Inaudible] you have to take up the slack for non-velocity.

What she is trying to demonstrate is [ Inaudible] with my wrist. And as soon as you do this first, everything from the rest hello is no longer engage [ Inaudible] one area and turned him inside of the Paul. That is a much more effective way to do it and I learned that my [ Inaudible] efficiency was during the test and [ Inaudible]. Normally I stand in front of my patient to be there near. [ Inaudible] the phone and take a up to 90 and bend your wrist. Now tip your head away and your head towards. And shoulder elevation with this because a lot of people do that but again someone who is scared and freaked out, it's a nice way to do something [ Inaudible]. If you don't notice any weird movement or compensation, it might not be relevant. To do the lower, do the lower version can have them come down. Internally rotate the shoulder that is radio. Easiest way which is just a trick of your mental flexibility. It's a nice [ Inaudible ] and again went into that first and recognizing

shoulder mechanics [ Inaudible ] and with the pattern, and it is a little tricky to show you the [ Inaudible ] test because [ Inaudible ] is in the way. And again [ Inaudible] and I put my hand here. I'm not really pressing the shoulder and that is probably initially how they had it. Pull down and that's unnecessary you don't need to do that, but I find soft tissue [ Inaudible] elevated and I will take up the slack and plant my hands. [ Inaudible] are important because you use your [Inaudible] to help you with positioning this. I will take up [Inaudible] and we will rotate arm and again affecting any shoulder stuff that may or may not be happening and take my hand and put it in here. So that [ Inaudible] and then turn [ Inaudible] and extend along and see what happens. And you want to turn your head on occasion, and you want to be able to turn one and [ Inaudible] extend [ Inaudible] and see what happens. Then you can have [ Inaudible] forward or away in order to look at [ Inaudible]. Be gentle with these. They are more sensitive in the lower part. Don't camp out somewhere while you're waiting to have a conversation. Other questions or anything else you want us to demo?

Now we will move forward. Someone mentioned words that Harmon words that heal is a great article with the same title. I like it so we will keep with the concept. What do words that harm look like? It can be as simple as metaphors, wear-and-tear. Use that for years but now we know from the evidence that folks with skeletal pain move but if you tell them they have wear-and-tear, do you think they want to move more? They envisioned bald tires if you keep rolling, they will blow out. Medical jargon. One of the examples within the articles about words that Harmon Hill is something called a little maker. Do you think that gives people very much hope for their recovery or life? Using medical jargons, towards the people don't understand that seem innocuous to us are provocative for other folks. When we use that type of language it is that you and -- you end up imposing your will because you are holding all the cards. And taking away the agency in making decisions related to their health care and rehabilitation. You induce fear and add ambiguity and confusion into the discussion. Words that heal are much more adaptive and being okay with silence which is difficult. Folks with pain have been delayed processing and giving them a beat to actually process and have a chance to come up with a question before we feel that fill in our words and then we talked about non-verbal cues. What happens is leave space for questions and honor or give people their agency as someone who has control over what happens in their life. Tips and tricks. Proactive strategies in managing expectations are important and moving something that does not feel good, it hurts. And we can teach people about when it safe and not safe and also the concept of her does not equal harm. Just because something hurts it doesn't mean you are eroding it or moving it away and I think that medical providers, we need to shift a belief as well. Instead we also don't want to say no pain no gain. Rub some dirt on it you are fine and really when we practice pain we get good. We do want to mention on that. The time and place for that kind of thing in postop where there is food space for that but not in Tremont but also we don't want to say, listen to your body and if it hurts don't do that. To the alarm system or that hurt happens we too early. Recognize and teach them how do we edge into that without going too far? Images and language that validate without being fearful. Those tissues are tired and sore and



deconditioned and crabby. It's irritated. As opposed to ripped, torn, degenerative severe [ Inaudible] and those are words that don't sound hopeful and conjure up frightening images in patients mines especially those that don't have the background knowledge. Here is a big kicker. Make a path intervention contingent on filling active introductions we could do this injection in your shoulder if it failed TP or if PT doesn't do it so what you have done is you planted the idea in their head that in order to get this carrots that will make you feel better, I need to fail this other thing that is hard work and will require time and effort on my part. My encouragement to you, if you feel the injection is a helpful tool, you can do it. Do that in order PT. I will hold them down while you poke them. I think that can help I pair. We talk about multimodal treatment and leveraging all the options that we have is opposed to doing one off item. The important recognition is there is very to things that are fixed with a needle in so as much as I like putting needles and the reality is my goal is to make the noise a little better and [ Inaudible ] injection reduces pain or hip injection allows the person to engage in therapy then that will make them do well in the long run and make them more comfortable and less fearful. That's the goal and where the combination is a reasonable thing to do and linking the two not making either that the two combined is the right way to move forward. I think that is our last slide.

Questions? Questions, comments, concerns or complaints? That's how I and my sessions with my patients. Then we talk about what you are going to do when you leave here.

If you can turn on the camera while we have the chat box that would be great. We didn't put we don't know how people would be interested in having them, but we can have those shared.

How do you have the discussion about limiting the work into their pain?

Great question. It goes to the imaging discussion that based on your history and exam if there's not a concern for anything big or worry some, useful [ Inaudible] is small. In fact it creates more problems and healthcare annoying that the practitioner is important and explaining why your neural exam is normal and not having any symptoms, the MRI will not change anything now and moving forward on the stump but there are cases where it's patients are happy till imaging occurs but within reason. Plenty of evidence-based guidelines that patients have gone through customary care and not making [ Inaudible ] but reasonable and do for clinical systems improvement and ICSI and if you don't know what that is it's worth typing [ Inaudible ] low back pain guidelines and the have this math -- massive algorithm that's well-designed and thoughtful and explain why you do what you doing what you do it. And in general, we don't have particular pain and do not have anything that is sinister based on history and exam. And it's not warranted and down the line if they are not getting better you can turn one necessary thing. [Inaudible] data is really helpful for folks and it starts to normalize. And I find even if they do end up going into or forward with imaging, and with that information it's hopeful to give context. If we find it is difficult, what are you going to do differently.

Asking the question of what you expect us to find? And if so, what are you going to do differently and what will it change? If we find given everything that we discussed here in your history and everything I have done on the exam, if you have an image today, it will change absolutely nothing that I do right now.

It's important to explain, if you have low back pain or neck pain, surgery results in any change relative if you have that and in the year it is pretty high and likely it will be different. If I have surgery and she doesn't, and we end up in the same place. And I'm no better for it in the long run and it's hard to explain to patients that surgery [Inaudible] unless there is instability or something sinister and it doesn't result in a better outcome. You want to explain that. If they don't feel it will change where they go then you are doing your job explaining it but it's not never easy. You don't want to, and it will go well. And you have to have your tools and approaches and try to reassure. The early history and early exam reassuring people regularly is super important. I will ask people to explain weight loss in patients say I wish and explaining weight loss is awesome. And similarly [Inaudible] that is good that you don't have that but keep reassuring constantly, it's important.

The sooner you build the trust and win them over if you will, it really is what it comes down to is much easier time that you have with that depression. That is for when you walk in the room.

Other questions?

In the slides, there other studies that are listed. You can also the image reports. That's a nice one to have also the one that we talk about whether to image? There is so much on this right now about normalizing these changes and if you put into Google, he will find great infographics that have and other imposters you can buy for your clinic. All sorts of stuff and there is a lot of stuff out there right now and this is a huge discussion in the rehab world and chronic pain world about normalizing and not over medical lysing.

Anything else? Thank you everyone. We appreciate your patience with us this is a new one for us and we've done this for a couple years and for this presentation but never virtually. It was [Inaudible] for us but I hope everything was useful. Feel free, I think our emails are around somewhere. I can type them in here.

Someone is typing a question, go ahead. Feel free if you want to email. We work next to each other all the time so if you have any questions or things that come up or after the fact that you come back and practice in how things that you need help. Thank you so much.

Thank you, Sara.

Thank you to our support. The whole team. We could not do that without them helping us.

Thank you all. [ Event Concluded ]