

Q&A: Third Annual SRS Research Grant Outcome Symposium  
March 4, 2023

- 1. Thanks for research! How do you think it is possible to take external distraction into account during growth?**

It's very well known that external mechanical forces affect growth plate and growth rate in long bones, the goal was to study this in spine which was not done before

- 2. Great study Dr. Salari. What do you expect the effect of variation in intensity of distraction and amount of distraction would be in addition to timing? Was there a sweet spot of these factors.**

I think that amount and intensity of distraction is important. With current data can not come up with a conclusion, we have discussed this in our group to possibly have multiple groups with different amount of distractions and compare the groups

- 3. Pooria: This study was in straight spine. Any plan to do it in scoliotic spine? Any advantage?**

We have discussed in our group to create a mice model for scoliosis by possibly unilateral growth arrest at the level of endplate and then study the effect of distraction on contralateral side.

- 4. Also I want to ask, is it important to take into account loosing of amortisation function of disk during its distraction, because it is fixed?**

Very good question! I think as suggested by the data that plays a role here.

- 5. Interesting study, compliments! How do you differentiate between cause and effect of the deformity? Would be interesting to include patients with scoliosis of known etiology such as congenital.**

I hope that I answered this in the talk. I think this is an excellent idea, and the foundation of the grant application I am currently writing.

- 6. Congrats Dr. Tucker on this very interesting work. Do you feel that the MRI results of the Multifidus on the concave side is a result of the muscle being stretched by the scoliotic curve? Do you have any plans to study this specific muscle with EMG needle electrodes to evaluate contractile potentials?**

In relation to the muscle volume work, we will know much more when we start to do full muscle shape analysis. It may be part of the reason. Now that we have identified these differences in deep muscles, it is one of the next logical steps to insert fine-wire electrodes to record activation. I hope to include this in the next grant application. Thank you for your interest.

- 7. Fat infiltration and loss of muscle mass and replacement by fat cells happens within paraspinal muscles. Have you encountered that in your adult population and if so how do you rectify for that**

So far, we are focused on AIS, so all participants are between 11-18 years. I agree that this is also a change that we see with ageing / sarcopenia, but (luckily) this isn't something that we need to factor into this study given the focus on adolescents. Hope this answers your question.

- 8. Previous research has shown difference between fast twitch/slow twitch muscle fiber distribution between the concave vs. convex multifidus m. Do you agree that your findings help to support some of these earlier findings?**

Hi Alex, yes - this is also a really important part of the puzzle, and I am aware of the previous work. We have just identified a way to assess fibre types with MRI also, and will start to collect this data in the same population very soon. We did not want to do biopsies at the outset of this study - trying to keep the study as non invasive as possible. But a really important factor that contributes to muscle force generation. Thank you for your interest and question. Kylie

- 9. Yes, it is wise to use less x-rays. But how can you assess progression without measuring Cobb angle by X-ray?..**

We follow every 6 months with an x ray

- 10. Great Study Dr. Baldwin!! Very excited to see the results from your prospective study. Did you consider using proximal humerus growth plate staging ? Might be helpful to add proximal humerus growth plate staging data if they are being captured in PA scoliosis XR**

We may look at proximal humerus and risser at a later date. It's a great point, we tried using that for NMS and found it to be a bit less reliable than sanders