



**Response to the letter to the editor concerning:
“Change in shoulder external rotation strength and
motion after lower trapezius transfer to the infraspinatus
in children with obstetric brachial plexus palsy”**

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Author Comments:	Dear Editor, Our letter is a reponse to the letter to the editor by Dr. F Özden concerning our article "Change in shoulder external rotation strength and motion after lower trapezius transfer to the infraspinatus in children with obstetric brachial plexus palsy" (Garcon et al., Int Orthop. 2021 Dec;45(12):3163-3170. doi: 10.1007/s00264-021-05247-3) We made a point by point reponse to Dr. F Özden.

Response to letter to the editor concerning: " Change in shoulder external rotation strength and motion after lower trapezius transfer to the infraspinatus in children with obstetric brachial plexus palsy".

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Response to letter to the editor concerning: " Change in shoulder external rotation strength and motion after lower trapezius transfer to the infraspinatus in children with obstetric brachial plexus palsy".

We appreciate Dr. F Özden's [1] comments regarding our article titled "Change in shoulder external rotation strength and motion after lower trapezius transfer to the infraspinatus in children with obstetric brachial plexus palsy" [2].

We totally agree with Dr. F Özden that using an isokinetic dynamometer with a young child can be challenging. We have just published on this subject [3]. We assessed shoulder rotator muscles strength in young healthy and OBPP children. We showed that isometric muscle strength measurements could be performed with acceptable reliability by using an isokinetic dynamometer, even in children three to five years old. This required a simplified testing and some adaptations to the installation protocol. That is why we used the device only in isometric mode rather than in isokinetic mode. As Dr. F Özden said, we could have used a manual dynamometer. However, we used the isokinetic dynamometer as it is the gold standard for muscle strength testing [4]. We are currently developing a more elaborate protocol for testing in older children. But for the study that is the subject of this letter to the editor, we used the simplified protocol for all patients in order to standardize our results.

We also realize that our work has some shortcomings. The transfer of the lower trapezius to the infraspinatus is a technique that we have been using recently. Our study presents the preliminary results of the first five patients operated on for the sequelae of a pathology that is quite rare. This is why the age of the patients is heterogeneous in our work. Indeed, our study had a small number of participants, with little follow-up, but it highlighted the relevance of muscle strength testing before and after muscle transfer, while it is not widely used to date. We are continuing our studies on this topic in order to have some larger series with a longer follow-up.

As stated by Dr. F Özden, the "Mallet Grading System" isn't the best way to evaluate the upper limb function in obstetric brachial plexus palsy (OBPP). Even if the "ABC Loops Test" score seems interesting, we used the Mallet score as it is the most widely used score to make our study comparable to other similar works.

It is true that we should have given more details about the ROM measurement protocol. Concerning passive external rotation assessment, we used a clinical goniometer and the sitting position. Goniometer shows excellent reliability [5]. Sitting position gives some little less reliable results than prone or supine position, but still acceptable is less stressful for young patients. We measured external rotation with the arm at the side. The goniometer was positioned with the fulcrum placed at the olecranon, the stable arm horizontal, and the moving arm along the forearm with the processus styloideus ulnae as a reference point.

We are very grateful to Dr. F Özden for his attention to the study and his important and meaningful questions.

Author contribution All authors analyzed and/or interpreted data. All authors collaborated in the drafting and critical revision of the manuscript. All authors approved the final version of the manuscript and vouch for the accuracy of the analysis and the fidelity of the study to the protocol.

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Competing interests None

References

1. Özden F (2022) Letter to the editor: Change in shoulder external rotation strength and motion after lower trapezius transfer to the infraspinatus in children with obstetric brachial plexus palsy. *Int Orthop* 46:409–410. <https://doi.org/10.1007/s00264-021-05258-0>
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