What can be learned from reporting no-treatment effect of distribution of upper limb training

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Though the study by Sakzewski et al.1 might initially seem uninteresting due to the lack of treatment effect, I claim that it advances our knowledge of hand training in children with unilateral cerebral palsy (CP) in several important respects. The excitement about the possibility of improving hand function by training is probably over. Several studies over the last decade have already demonstrated that it is possible to improve hand function by training and that intensive training is better than usual care.2,3 The remaining questions may not be as exciting but are still crucial for everyday clinical practice.

This study addresses a question identified as a knowledge gap.4 The aim was to investigate whether results differed depending on the distribution of therapy over time: using the same dosage (i.e. 45h) of training, they explored whether longer sessions of therapy over a short training period were more effective than shorter and less frequent sessions spread over a longer training period. One group received hybrid constraint-induced movement therapy (CIMT) for 10 days, whereas the other received individualized occupational therapy distributed over 12 weeks. Since there was no major difference in results between the groups, it is crucial to be able to say that the treatment distribution seems not to be important for the short-term results.

However, the follow-up results are very interesting. Forty-five hours is a low dosage based on dosages used by previous CIMT studies. When using this low dosage in a hybrid CIMT model, the effect was not sustained at follow-up. This finding differs from those of previously reported studies, most of which explored long sessions of therapy over a short training period, reporting long-lasting effects. Interestingly, the low-dosage training produced long-lasting results in the distributed model. This finding supports the understanding that it takes time to change habits, which the children must do after improving their ability to use the hand within the therapy sessions. When practicing hand function intensively for a short period, the children obviously learn something, but this must be ‘overlearned’ (by higher-dosage training) to affect their everyday lives or must be performed in a distributed model that gives time to practice in daily life between training sessions. The distributed model has previously been used successfully,5 but the results of different types of distribution have not previously been directly compared.

This paper also supports the finding that the dosage of training is more important than the type of training. Again, there are minor differences between the hybrid CIMT and occupational therapy interventions, as earlier reported between programme of CIMT, bimanual training, and Hand-Arm Bimanual Intensive Therapy (HABIT). The important issue is that all of these training programmes include skill training important for everyday activities. The children have to learn how to use the hand in various activities. However, customized therapy sessions or usual care are not to be compared to the occupational therapy programme used in the current study, as emphasized by the authors.

Most importantly, clinically meaningful differences are reported here. This is what every clinician is asking for and is the only thing that matters to families. A difference of about one raw score or a few seconds at a group level is completely insignificant to clinicians and, I would say, to researchers as well. Only 33% to 38% of the present children achieved clinically meaningful improvements of Assisting Hand Assessment (AHA) after 12 weeks of training, versus previously reported changes in about 50% of children. This highlights the importance of a higher training dosage. For long-term effects, the distributed model offered clear advantages, 44% of children retaining their ability at the 26-week follow-up compared with only 17% of children in the low-dosage hybrid CIMT model. It should be noted that long-lasting change is probably the only thing that matters to children with unilateral CP and their families.

REFERENCES