**Article Full Title**

Short-term results of intensive physiotherapy in clubfoot deformity treated with the Ponseti method

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**Paper Abstract**

Purpose: We aimed to determine the efficacy of the physical therapy program as an adjunct to the Ponseti technique in the treatment of idiopathic clubfoot. This study was carried out with the presumption of a difference in results between the study group who were included in the physiotherapy program and the control group who performed home exercises. Patients and method: Forty affected feet of 29 patients were included in the study. The average ages of the control and study groups were 15.00 ± 21.33 and 20.30 ± 15.78 months, respectively. Passive range of motion of dorsiflexion, plantar flexion, inversion, eversion, rear foot varus angle and forefoot adduction angle were measured and the Dimeglio classification system was utilized in order to determine the severity of clubfoot deformity. Reassessments were carried out for the study group at the end of 1 month's therapy and for the control group during the first month follow-up. Results: Comparison of pre- and post-treatment assessment results revealed a difference in terms of recovery, concerning all parameters except passive inversion values in the study group and for all parameters in the control group (P &lt; 0.05). For study and control group comparisons, since deformity severity was higher in the study group an effect size analysis was carried out. The effect size analysis showed that the change in range of motion of dorsiflexion and Dimeglio and decrease of rear foot varus angle was higher in the study group. Conclusion: The results of this study imply that an intensive physiotherapy program may enhance the effectiveness of the Ponseti protocol.

**NIH Risk of Bias Tool**

Quality Assessment of Controlled Intervention Studies

**Was the study described as randomized, a randomized trial, a randomized clinical trial, or an RCT**

No

**Was the method of randomization adequate (i.e., use of randomly generated assignment)?**

Cannot Determine, Not Reported, or Not Applicable

**Was the treatment allocation concealed (so that assignments could not be predicted)?**

No

**Were study participants and providers blinded to treatment group assignment?**

No

**Were the people assessing the outcomes blinded to the participants' group assignments?**

Cannot Determine, Not Reported, or Not Applicable

**Were the groups similar at baseline on important characteristics that could affect outcomes (e.g., demographics, risk factors, co-morbid conditions)?**

No

**Was the overall drop-out rate from the study at endpoint 20% or lower of the number allocated to treatment?**

Cannot Determine, Not Reported, or Not Applicable

**Was the differential drop-out rate (between treatment groups) at endpoint 15 percentage points or lower?**

Cannot Determine, Not Reported, or Not Applicable

**Was there high adherence to the intervention protocols for each treatment group?**

Yes

**Were other interventions avoided or similar in the groups (e.g., similar background treatments)?**

No

**Were outcomes assessed using valid and reliable measures, implemented consistently across all study participants?**

Yes

**Did the authors report that the sample size was sufficiently large to be able to detect a difference in the main outcome between groups with at least 80% power?**

Cannot Determine, Not Reported, or Not Applicable

**Were outcomes reported or subgroups analyzed prespecified (i.e., identified before analyses were conducted)?**

Cannot Determine, Not Reported, or Not Applicable

**Were all randomized participants analyzed in the group to which they were originally assigned, i.e., did they use an intention-to-treat analysis?**

Yes

**Key Finding #1**

The study group patients had a larger effect size for increase in dorsiflexion range of motion, decreased varus values of the rearfoot angle, and decreased Dimeglio scores compared to the control group.

**Key Finding #2**

The effect size was slightly larger in the control group for increased range of motion in plantar flexion, eversion, and forefoot adduction values.

**Key Finding #3**

In both groups, large effect sizes were found for increase in eversion range of motion, and medium effect sizes were found for adduction and plantarflexion range of motion.

**Key Finding #4**

**Please provide your summary of the paper**

This study looked at the difference between intense physiotherapy and routine home exercises for the treatment of clubfoot. The subjects were allocated into two groups so that 20 feet were present in each. The patients that were local and able to remain close to the city as well as those with more severe clubfoot were given preference for the intervention group. The average ages for the intervention group were (20.30 ± 15.78 months) and for the control group (15 ± 21.33 months). Goniometry was used to measure passive range of motion for dorsiflexion, plantarflexion, inversion, eversion, rear foot varus angle, and forefoot adduction angle. Dimeglio classification scores were used to determine severity. The study group received intensive physiotherapy for 1 month with visits occurring 5 days/week. The intensive physiotherapy included: moist heat application, light stretching at posterior and medial parts of the foot, mobilization techniques at the tibiotalar, subtalar, and midtarsal joints, and high voltage galvanic stimulation to the peroneal muscle group. The control group performed home exercises that included light stretching to be applied three times daily with 20 repetitions for one month. Pre and post treatment comparisons were performed and effect size analysis was calculated.

**Please provide your clinical interpretation of this paper. Include how this study may impact clinical practice and how the results can be implemented.**

This paper had many limitations and biases that prevent it from being applicable to larger groups and more research needs to be done before changing clubfoot protocols. The two groups were not randomized, and the intervention group was selected based on living close to the clinic and having worse Dimeglio scores (more severe clubfoot). While the study did correct for effect sizes, the groups were small, not blinded, and not homogenous. Additionally, the physiotherapy given to the study group contained so many aspects that it is hard to determine which intervention led to changes. Thus, this study opens the door for more research into intense physiotherapy for the treatment of clubfoot, but the study cannot be generalized to larger populations and the significance of results is questionable.