

COPCA Program Results Table

Author, Year, Country, Design, PEDro score, Rating	Sample Size	Intervention	Outcomes and significance: (+) significant (-) not significant
<p>Hielkema et al., 2011</p> <p>Netherlands</p> <p>RCT</p> <p>6/10</p> <p>High quality</p>	<p>N = 46 high-risk infants</p> <p>Age at enrollment: corrected age of 3 months</p> <p>CP diagnosis: 10/46 = 22%</p> <p>CP Type: Unilateral = 2/10 (20%) Bilateral: 8/10 (80%)</p> <p>GMFCS (Gross Motor Function Classification System):</p> <p>Level I: 1/10 (10%) Level II: 5/10 (50%) Level III: 3/10 (30%) Level IV: 0/10 (0%) Level V: 1/10 (10%)</p>	<p>Coping and Caring for Infants with Special Needs (COPCA)</p> <p>(n=21)</p> <p>vs.</p> <p>Traditional infant physiotherapy (TIP)</p> <p>(n=25)</p> <p><u>Intervention details:</u></p> <p><i>COPCA:</i></p> <ul style="list-style-type: none"> • Twice per week in the home • Duration: 3 months • Aim to promote family function and motor & cognitive development • It's a family-relationship oriented program based on: <ul style="list-style-type: none"> - Family educational component - A motor component based on neuronal group selection theory (child learns by means of trial and error to adapt the various motor strategies to the specifics of the situation) <p><i>TIP:</i></p> <ul style="list-style-type: none"> • Frequency and location dependent on paediatrician's advice • Mostly based on the principles of neurodevelopmental treatment 	<p>During intervention (at age of 3 months, 4 months, 5 months):</p> <p><i>Motor development:</i></p> <p>(-) Infant Motor Profile (IMP)</p> <p>Immediately after intervention (at 6 months corrected age):</p> <p><i>Motor development:</i></p> <p>(-) IMP</p> <p>1 year after intervention (at 18 months corrected age):</p> <p><i>Motor development:</i></p> <p>(-) IMP</p>

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<p>Hielkema et al., 2020A</p> <p>&</p> <p>Hielkema et al., 2020B</p> <p>The Netherlands</p> <p>RCT</p> <p>7/10</p> <p>High quality</p>	<p>N = 43 infants at very high risk for CP</p> <p>Age at enrollment: before the corrected age of 9 months</p> <p>CP diagnosis: 54% (22/41) were diagnosed with CP at 21 months corrected age.</p> <p>CP Type: Bilateral: 17/22 (77.2%) Unilateral: 5/22 (22.7%)</p> <p>GMFCS: Level I: 3/22 (13.6%) Level II: 7/22 (31.8%) Level III: 5/22 (22.7%) Level IV: 3/22 (13.6%) Level V: 4/22 (18.1%)</p>	<p>COPing with and CARing for Infants with special needs (COPCA) program</p> <p>(n=23)</p> <p>vs.</p> <p>Typical infant physiotherapy</p> <p>(n=20)</p> <p><u>Intervention details:</u></p> <p>30-60 min/session, 1 session/week for 1 year.</p> <p>COPCA:</p> <ul style="list-style-type: none"> • provided face-to-face, at home, by trained physiotherapists • a family-centered program with 2 components: <ol style="list-style-type: none"> 1. A family educational component (stresses family autonomy + coaches families to cope with their situation and encourages decision-making) 2. A neurodevelopmental component (addressing neurodevelopment based on the Neuronal Group Selection Theory, aiming to increase the size of the motor repertoire and enhance variability in an 	<p><u>Hielkema et al 2020A</u></p> <p>During treatment (3 months):</p> <p><i>Motor development:</i></p> <p>(-) IMP: total score (-) IMP: variation (-) IMP: adaptability (-) IMP: symmetry (-) IMP: fluency (-) IMP: performance</p> <p><i>Development:</i></p> <p>(-) Bayley Scales of Infant development (BSID) - Mental Developmental Index (MDI) (-) BSID – Psychomotor Developmental Index (PDI)</p> <p><i>Gross motor function:</i></p> <p>(-) Gross Motor Function Measure (GMFM) – 66 (-) GMFM – 88 (-) GMFM – adapted</p> <p>(-) Alberta Infant Motor Scale (AIMS)</p> <p>At mid-treatment (6 months):</p> <p><i>Motor development:</i></p> <p>(-) IMP: total score (-) IMP: variation (-) IMP: adaptability (-) IMP: symmetry (-) IMP: fluency (-) IMP: performance</p>

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		<p style="text-align: center;">active learning process with trial and error experiences)</p> <ul style="list-style-type: none"> • COPCA uses “hands-off” strategy to stimulate infants to develop their own strategies/self-produced motor behaviours <p><i>Typical infant physiotherapy:</i></p> <ul style="list-style-type: none"> • Provided face-to-face, at home or in outpatient setting, by trained physiotherapists. • Typical physiotherapy nowadays has a more functional approach and more involvement of the family. 	<p><i>Development:</i></p> <p>(-) BSID - MDI (-) BSID – PDI</p> <p><i>Gross motor function:</i></p> <p>(-) GMFM – 66 (-) GMFM – 88 (-) GMFM – adapted</p> <p>(-) AIMS</p> <p>At post-treatment (12 months):</p> <p><i>Motor development:</i></p> <p>(-) IMP: total score (-) IMP: variation (-) IMP: adaptability (-) IMP: symmetry (-) IMP: fluency (-) IMP: performance</p> <p><i>Development:</i></p> <p>(-) BSID - MDI (-) BSID – PDI</p> <p><i>Gross motor function:</i></p> <p>(-) GMFM – 66 (-) GMFM – 88 (-) GMFM – adapted</p> <p>(-) AIMS</p>

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			<p>At follow up (21 months):</p> <p><i>Motor development:</i></p> <ul style="list-style-type: none"> (-) IMP: total score (-) IMP: variation (-) IMP: adaptability (-) IMP: symmetry (-) IMP: fluency (-) IMP: performance <p><i>Development:</i></p> <ul style="list-style-type: none"> (-) BSID - MDI (-) BSID - PDI <p><i>Gross motor function:</i></p> <ul style="list-style-type: none"> (-) GMFM - 66 (-) GMFM - 88 (-) GMFM - adapted (-) AIMS <p><i>Behaviour:</i></p> <ul style="list-style-type: none"> (-) Child Behavioural Checklist (CBCL) – total score (-) CBCL – internalizing (-) CBCL – externalizing <p><u>Hielkema et al., 2020B</u></p> <p>At mid-treatment (6 months, T2):</p> <p><i>Functional skills:</i></p> <ul style="list-style-type: none"> (-) Pediatric Evaluation of Disability Index

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			<p>(PEDI): Self-care (-) PEDI: Mobility (-) PEDI: Social functioning</p> <p><i>Adaptive behaviors</i></p> <p>(-) Vineland Adaptive Behaviour Scale (VABS)</p> <p><i>Empowerment,:</i></p> <p>(-) Family Empowerment Scale (FES): total (-) FES: Family system (-) FES: Service system</p> <p><i>Quality of life:</i></p> <p>(-) Quality of Life – Centraal Bureau voor de Statistiek List (QOL-CBS)</p> <p>At post-treatment (12 months, T3):</p> <p><i>Functional skills:</i></p> <p>(-) PEDI: Self-care (-) PEDI: Mobility (-) PEDI: Social functioning</p> <p><i>Adaptive behaviors:</i></p> <p>(-) VABS</p> <p><i>Quality of life:</i></p> <p>(-) Infant and Toddler Quality of Life Questionnaire (ITQOL) - child concepts: Overall health (-) ITQOL child concepts: Physical abilities</p>

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			<p>(-) ITQOL child concepts: Growth and development</p> <p>(-) ITQOL child concepts: Bodily pain/discomfort temperament and moods (>1 year)</p> <p>(-) ITQOL child concepts: Getting along with others (> 1 year)</p> <p>(-) ITQOL child concepts: General health perceptions</p> <p>(-) ITQOL child concepts: Change in health (>1 year)</p> <p><i>Empowerment</i></p> <p>(-) FES</p> <p><i>Stress</i></p> <p>(-) Nijmeegse Ouderlijke Stress Index - shortened version (NOSI-K)</p> <p><i>Coping:</i></p> <p>(-) The Utrechtse Coping List (UCL): Total</p> <p>(-) UCL: Palliative coping</p> <p>(-) UCL: Avoiding</p> <p>(-) UCL: Social support seeking</p> <p>(-) UCL: Depressive coping</p> <p>(-) UCL: Expression of negative emotion</p> <p>(-) UCL: Comforting ideas</p> <p><i>Quality of life:</i></p> <p>(-) ITQOL- parents concepts: Impact emotional</p> <p>(-) ITQOL parent concepts: Impact time</p> <p>(-) ITQOL parent concepts: Family cohesion</p> <p>(-) QOL-CBS</p>

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<p>Dirks et al., 2016</p> <p>Netherlands</p> <p>RCT</p> <p>6/10</p> <p>High quality</p>	<p>N = 46 Infants with high risk of developmental disability (such as CP)</p> <p>Age at enrollment: 3-6 months corrected age</p> <p>CP diagnosis: N/A</p> <p>CP Type: N/A</p> <p>GMFCS Level: N/A</p>	<p>Coping and Caring for Infants with Special Needs (COPCA) (n=21)</p> <p>vs.</p> <p>Traditional Infant Physiotherapy (n=25)</p> <p><u>Intervention details:</u></p> <p>Interventions were provided between 3-6 months of age (corrected)</p> <p><i>COPCA</i></p> <ul style="list-style-type: none"> • 2x/week for 1 hour • Conducted in home environment with COPCA coach • Goals: <ul style="list-style-type: none"> - Coaching of family members to facilitate autonomy of participants in daily activities within community - Encourages functional mobility/positioning with acceptance of atypical motor strategies • Coaching occurs during daily activities so that the COPCA coach can observe and provide feedback to caregivers • Coaching given during bathing activities to specifically address goals of study <p><i>Traditional Infant Physiotherapy (TIP):</i></p> <ul style="list-style-type: none"> • Majority of sessions carried out in home environment • TIP sessions varied from 2-28 times and the 	<p>Post-treatment (6 months):</p> <p><i>Positioning during bathing:</i></p> <p>(+) Sitting</p> <p>(Infants who received COPCA were placed in sitting position for bath significantly more than infants who received TIP (similarly significantly more TIP infants were in supine for bathing compared to COPCA)</p> <p>Follow-up (18 months):</p> <p><i>Positioning during bathing:</i></p> <p>(-) Sitting</p>

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		<p>duration from 12-50 minutes</p> <ul style="list-style-type: none"> • Guidance and instruction was provided to optimize infant development by facilitating functional sensory-motor experiences • Parents were taught strategies to implement treatment goals during daily activities • For bathing activities parents were to use general principles of TIP, e.g., how to handle infants' posture to reduce hyperextension during bathing 	