



LONG TERM INFLUENCE OF KANGAROO CARE ON MOTOR PERFORMANCE IN CHILDREN

Cabral-Filho JE, Pedruzzi CM, Payão LMC, Filho AR, Santos AS, Galvão L, Diniz KT, Miranda, RM
IMIP – Instituto de Medicina Integral Prof. Fernando Figueira, Recife, Brazil.

BACKGROUND

Some evidence indicates that the Kangaroo Care Method (KCM) improves the performance in neurobehavioral and electromyographic activities of preterm newborns. It is generally agreed that cognitive and language development are dependent on the emergence of motor skills(1,2).

OBJECTIVE

The present work aimed at investigating specific issues in these areas by testing the hypothesis that KCM improves cognition, language, and global motor responses in preterm newborns over the long run.

METHOD

Design: observational/cross-sectional

Participants: This research was carried out at the Instituto de Medicina Integral Prof. Fernando Figueira, Recife, Brazil. Three groups (n=30 each) of newborns currently aged 24 to 30 months were thus assigned: Group 1 - Preterm newborns in KCM; Group 2 - preterm newborns not in KCM; Group 3 – full-term newborns not included in KCM. Group 1 was maintained in Kangaroo Position (KP) during 8-12 hours per day, until discharge. The family was stimulated to continue this action after discharge. The Bayley III scale was used to measure data scores for the following types of variables: cognition (balanced and composite); receptive and expressive language (balanced and composite); fine and gross motor skills (balanced and composite). Social and demographic data were also analyzed. **Statistical Analysis:** One-way ANOVA was used for the analyses.

RESULTS

In gestational age, birth weight and hospital time significant differences were observed among the three groups (Table 1). The Bayley results (Table 2) showed that group 1 (preterm Kangaroo) had a higher score than group 2 (preterm not Kangaroo) regarding fine motor skills (p=0.05); fine motor + gross motor skills (p=0.031); composite motor (p=0.028). Gross motor skills, cognition, and language scores did not show statistical difference among groups 1, 2, and 3.

Table 1: Preterm children and maternal biological/social variables

	KPT*		NKPT*		T*		P
	Mean	SD*	Mean	SD*	Mean	SD*	
Gestational age (weeks)	29,0	0,0	35,2	1,2	38,4	0,9	<0,001
Birth weight (g)	1445,0	0,0	2565,3	592,5	3264,7	514,4	<0,001
Hospital internment time (days)	31,0	27,0	5,0	6,1	2,5	8,5	<0,001
Current Maternal age (years)	27,3	8,95	26,9	9,0	28,8	6,1	0,639
Maternal schooling	10,1	4,08	9,2	3,2	10,5	4,3	0,441
Family income	457,8	322,1	296,3	204,8	502,7	562,1	0,106

* KPT = kangaroo preterm; PTNC = not kangaroo preterm; T = term; SD = standard deviation;

**p: One-way ANOVA;

Table 2: Motor, cognitive and communication scores in the Bayley Scale III

	KPT*		NKPT*		T*		p**
	Mean	SD*	Mean	SD*	Mean	SD*	
Fine Motor	9,8	2,3	8,7	1,2	9,1	1,5	0,053
Gross Motor	4,7	2,1	4,3	0,7	4,3	0,8	0,345
Fine Motor+ Gross Motor	14,6	3,1	13,0	1,6	13,4	2,2	0,031
Composite Motor	84,0	9,4	79,2	4,8	80,1	6,5	0,028
Cognitive	61,6	9,4	64,8	5,7	63,9	8,4	0,290
Receptive communication	27,0	20,0	31,0	24,0	30,0	32,5	0,122
Expressive communication	27,1	6,7	30,9	6,9	30,9	7,0	0,059

* KPT = kangaroo preterm; PTNC = not kangaroo preterm; T = term; SD = standard deviation;

**p: One-way ANOVA;

DISCUSSION

These results are consistent with other studies even if other tools, such as the Denver II and Alberta Infant Motor scales, and neurological scales are employed (3,4). The best performance was seen for children's fine motor skills, which could be associated to the Kangaroo Method.

Preterm newborns suffer interventions, which focus on survival. Yet, the Kangaroo Method, along with environmental factors, family care during the first months of life, and admittance to educational institutions early in life might foster a more favorable overall development even when compared to that seen in children born full term. So these cares can influence and help this better motor performance. Gestational age, birth weight and hospital time could play a role in the behavioral tasks, but family and social exposition no.

CONCLUSIONS

Kangaroo care could lead to better motor performance for these children in the long run; however, the influence of social factors cannot be ruled out from these findings..

REFERENCES

- Corsi C, Santos MM, Marques LA, Rocha NA. [Impact of extrinsic factors on fine motor performance of children attending day care]. Rev Paul Pediatr. 2016 Mar 31. pii: S0103-0582(16)00019-8. doi: 10.1016/j.rpped.2016.01.005.
- Cahill-Rowley K, Rose J. Temporal-spatial gait parameters and neurodevelopment in very-low-birth-weight preterm toddlers at 18-22 months. Gait Posture. 2016 Mar;45:83-9. doi: 10.1016/j.gaitpost.2016.01.002. Epub 2016 Feb 1.
- Lefebvre F, Gagnon MM, Luu TM, Lupien G, Dorval V. In extremely preterm infants, do the Movement Assessment of Infants and the Alberta Infant Motor Scale predict 18-month outcomes using the Bayley-III? Early Hum Dev. 2016 Mar;94:13-7. doi: 10.1016/j.earlhumdev.2016.01.012. Epub 2016 Feb 10
- Shahin Dezhdar, Faezeh Jahanpour, Saeedeh Firouz Bakht, and Afshin Ostovar. The Effects of Kangaroo Mother Care and Swaddling on Venipuncture Pain in Premature Neonates: A Randomized Clinical Trial. Iran Red Crescent Med J. 2016 Apr; 18(4): e29649. Published online 2016 Feb 2. doi: 10.5812/ircmj.29649