

# **Estudios científicos en los que se compara la aplicación del método canguro frente a la práctica tradicional basada en incubadora.**

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## **Resumen:**

El grupo de Sloan y colaboradores[1] de EEUU llevó a cabo un estudio clínico controlado y aleatorio con seguimiento del efecto del método canguro (KM) durante 6 meses, respecto de un grupo de control que usaba el método tradicional en incubadora (IM) con recién nacidos de bajo peso, por debajo de los 2000 gr, una vez fueron estabilizados. Este estudio reveló unos índices menores de enfermedad grave (desordenes respiratorios, apnea, aspiración, neumonía, septicemia e infecciones generales) entre los recién nacidos (KM) (5%) que en el grupo de control (18%). El tamaño de la muestra necesario para la realización del estudio ascendió a 350 individuos por grupo, es decir, 700 recién nacidos, de los que, no obstante, únicamente se acabó inscribiendo a un total de 603 recién nacidos. De hecho, el proceso de inscripción en el estudio se interrumpió en cuanto la diferencia en las tasas de enfermedades graves se volvió evidente.

Cattaneo y colaboradores[2], del Instituto para la infancia en Italia, llevaron a cabo otro estudio clínico controlado y aleatorio en el que se realizaba seguimiento del efecto del método canguro (KM) durante un año, respecto de un grupo de control que usaba el método tradicional en incubadora (IM). Emplearon recién nacidos de bajo peso (entre 1000-1999gr). Ambos grupos presentaron la misma tasa de mortalidad y de enfermedad severa grave, aunque los casos de hipotermia fueron menos frecuentes en el grupo KM. En el grupo KM se observó una mayor tasa de lactancia materna exclusiva, mayor ganancia de peso y alta médica más temprana que el grupo de control y además las madres expresaron mayor satisfacción.

Sin embargo en bebés de bajo peso antes de ser estabilizados, el método canguro si parece tener un importante efecto en la tasa de mortalidad. Así, otro estudio en el que se intentó poner de manifiesto la eficacia del método canguro en 62 recién nacidos de bajo peso (1000-2000 gr) antes de ser estabilizados, respecto a 61 bebés que recibieron cuidado convencional en incubadora, puso de manifiesto una menor tasa de mortalidad entre los bebés que recibieron cuidado tipo canguro (22.5%) frente a los de cuidado convencional (38%) en las primeras 12h de vida[3]. Asimismo, una reciente revisión de Cochrane[4] parece demostrar una menor tasa de morbilidad entre recién nacidos que reciben cuidados tipo canguro, si bien, no hubo diferencias significativas en cuanto a mortalidad, aunque reconocen que se requiere una mayor investigación. Los principales beneficios encontrados fueron una menor tasa de infección nosocomial, menor tasa de enfermedad severa, menor tasa de enfermedades del tracto respiratorio, mayor tasa de lactancia materna exclusiva y satisfacción materna. Además los bebés bajo cuidado tipo canguro ganaron peso más rápido.

Charpak y colaboradores[5] encontraron en un estudio realizado en Bogotá, con seguimiento a los 3, 6, 9 y 12 meses, que la tasa de riesgo de mortalidad era menor en bebés con cuidado tipo canguro, aunque la diferencia no era significativa respecto al

grupo de control. Si se encontraron diferencias en cuanto a crecimiento, mayor entre los bebés de cuidado tipo canguro, si bien el desarrollo era similar en ambos grupos. En bebés de peso < 1500g al nacer, aquellos recibieron cuidado canguro necesitaron menos tiempo de estancia en hospital para su recuperación.

Un estudio en Canadá[6] con 70 niños, tuvo como objeto evaluar el efecto de sacar a un bebé de la incubadora para recibir un cuidado tipo canguro. Se encontró que los bebés presentaban una tasa inferior de variación en la saturación de oxígeno y mejores parámetros fisiológicos, al tiempo que las madres referían una mayor satisfacción. Los autores de dicho estudio indican que el método canguro es una práctica segura y recomiendan su uso en el cuidado de recién nacidos.

La doctora estadounidense Ludington-Hoe y su grupo realizaron asimismo diversos estudios:

- El primero para evaluar los beneficios del método canguro en la fatiga post-nacimiento en prematuros de 34-36 semanas con apgar de 6 o más[7]. El método canguro se aplicó nada más nacer, en el propio paritorio durante 6 h. Los resultados mostraron una rápida estabilización en temperatura corporal, saturación de oxígeno, frecuencia cardíaca y respiratoria, así como una disminución del ruido respiratorio asociado a la fatiga, por lo que fueron dados de alta en 48h, demostrando la idoneidad del entorno proporcionado por el cuidado tipo canguro para el bienestar y desarrollo de dichos bebés. Los autores hacen especial énfasis en el beneficio que supone aplicar el cuidado tipo canguro desde el primer instante tras el nacimiento, en el propio paritorio.

- El segundo es un estudio clínico aleatorio controlado para evaluar los efectos del método canguro en el sistema cardiorrespiratorio y la regulación de la temperatura corporal en bebés prematuros sanos, comparado con el cuidado tradicional[8]. Los bebés que recibieron cuidado tipo canguro mostraron valores cardiorrespiratorios y de temperatura corporal, dentro de los límites normales. Además no se observó ningún episodio de apnea, braquicardia o respiración periódica. La respiración se encontraba más normalizada y regulada en los bebés que recibían cuidado tipo canguro, con respecto a los que recibían atención tradicional en unidades de cuidados intensivos estandar.

- Un tercer estudio[9] evaluó únicamente el beneficio del método canguro en la regulación de la temperatura corporal con respecto a los bebés cuidados en incubadora, midiendo en ambos grupos la temperatura de los pies y el abdomen. Se encontró que la temperatura de los pies de los recién nacidos era superior en el cuidado tipo canguro y en tan solo 5 min alcanzaban la temperatura óptima sobre el pecho materno.

En base a dichos estudios y a su experiencia aplicando el método canguro en unidades de cuidados intensivos, recomiendan el uso de este método para el cuidado del recién nacido[10].

## Referencias

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3. Worku, B. and A. Kassie. (2005) Kangaroo mother care: a randomized controlled trial on effectiveness of early kangaroo mother care for the low birthweight infants in Addis Ababa, Ethiopia. *J Trop Pediatr*. **51**(2), 93-7.
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9. Ludington-Hoe, S., N. Nguyen, J. Swinth, and R. Satyshur. (2000) Kangaroo care compared to incubators in maintaining body warmth in preterm infants. *Biol Res Nurs*. **2**(1), 60-73.
10. Ludington-Hoe, S.M., C. Thompson, J. Swinth, A.J. Hadeed, and G.C. Anderson. (1994) Kangaroo care: Research results, practice implications and guidelines. *Neonatal Network*. **13**(1), 19-26.

### **Detalle de los diferentes estudios:**

**-Sloan NL, Camacho LW, Rojas EP, Stern C. (autores de NY, aunque el estudio se hace en Ecuador)**

Lancet. 1994 Sep 17;344(8925):782-5.

**Kangaroo mother method: randomised controlled trial of an alternative method of care for stabilised low-birthweight infants. Maternidad Isidro Ayora Study Team.**

Population Council, New York, NY 10017.

Because resources for care of low-birthweight (LBW) infants in developing countries are scarce, the Kangaroo mother method (KMM) was developed. The infant is kept upright in skin-to-skin contact with the mother's breast. Previous studies reported several benefits with the KMM but interpretation of their findings is limited by small size and design weaknesses. We have done a longitudinal, randomised, controlled trial at the Isidro Ayora Maternity Hospital in Quito, Ecuador. Infants with LBW (< 2000 g) who satisfied out-of-risk criteria of tolerance of food and weight stabilisation were randomly assigned to KMM and control (standard incubator care) groups (n = 128 and 147, respectively). During 6 months of follow-up the KMM group had a significantly lower rate than the control group of serious illness (lower-respiratory-tract disorders, apnoea, aspiration, pneumonia, septicaemia, general infections; 7 [5%] vs 27 [18%], p < 0.002), although differences between the groups in less severe morbidity were not significant. There was no significant difference in growth or in the proportion of women breastfeeding, perhaps because the proportion breastfeeding was high in both groups owing to strong promotion. Mortality was the same in both groups; most deaths occurred during the stabilisation period before randomisation. KMM mothers made more unscheduled clinic visits than control mothers but their infants had fewer re-admissions and so the cost of care was lower with the KMM.

Since the eligibility criteria excluded nearly 50% of LBW infants from the study, the KMM is not universally applicable to these infants. The benefits might be greater in populations where breastfeeding is not so common.

- Cattaneo A, Davanzo R, Worku B, Surjono A, Echeverria M, Bedri A, Haksari E, Osorno L, Gudetta B, Setyowireni D, Quintero S, Tamburlini G. (Autores pertenecientes al instituto para la infancia en Italia, aunque el estudio se realiza en Etiopia, Indonesia y Mexico)

Acta Paediatr. 1998 Sep;87(9):976-85.

### **Kangaroo mother care for low birthweight infants: a randomized controlled trial in different settings.**

Bureau for International Health, Istituto per l'Infanzia, Trieste, Italy.

A randomized controlled trial was carried out for 1 year in three tertiary and teaching hospitals, in Addis Ababa (Ethiopia), Yogyakarta (Indonesia) and Merida (Mexico), to study the effectiveness, feasibility, acceptability and cost of kangaroo mother care (KMC) when compared to conventional methods of care (CMC).

About 29% of 649 low birthweight infants (LBWI; 1000-1999 g) died before eligibility. Of the survivors, 38% were excluded for various reasons, 149 were randomly assigned to KMC (almost exclusive skin-to-skin care after stabilization), and 136 to CMC (warm room or incubator care). There were three deaths in each group and no difference in the incidence of severe disease.

Hypothermia was significantly less common in KMC infants in Merida (13.5 vs 31.5 episodes/100 infants/d) and overall (10.8 vs 14.6). Exclusive breastfeeding at discharge was more common in KMC infants in Merida (80% vs 16%) and overall (88% vs 70%). KMC infants had a higher mean daily weight gain (21.3 g vs 17.7 g) and were discharged earlier (13.4 vs 16.3 d after enrolment). KMC was considered feasible and presented advantages over CMC in terms of maintenance of equipment.

Mothers expressed a clear preference for KMC and health workers found it safe and convenient. KMC was cheaper than CMC in terms of salaries (US\$ 11,788 vs US\$ 29,888) and other running costs (US\$ 7501 vs US\$ 9876). This study confirms that hospital KMC for stabilized LBWI 1000-1999 g is at least as effective and safe as CMC, and shows that it is feasible in different settings, acceptable to mothers of different cultures, and less expensive. Where exclusive breastfeeding is uncommon among LBWI, KMC may bring about an increase in its prevalence and duration, with consequent benefits for health and growth. For hospitals in low-income countries KMC may represent an appropriate use of scarce resources.

- Worku B, Kassie A. (autores de la facultad de medicina de Etiopia. Estudio realizado en Etiopia)

J Trop Pediatr. 2005 Apr;51(2):93-7.

### **Kangaroo mother care: a randomized controlled trial on effectiveness of early kangaroo mother care for the low birthweight infants in Addis Ababa, Ethiopia.**

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A randomized controlled trial was conducted over a 1-year period (November 2001-November 2002) in Addis Ababa to study the effectiveness of early Kangaroo mother care before stabilization of low birthweight infants as compared with the conventional method of care. There were 259 babies weighing less than 2000 g during the study period and a total of 123 (47.5 per cent) low birthweight infants were included in to the study. Sixty-two infants were enrolled as Kangaroo Mother Care (KMC) and the remaining 61 were Conventional Method of Care (CMC) cases. The demographic and socioeconomic characteristics for both groups were comparable. The mean age at the time of enrollment was 10 and 9.8 h for KMC and CMC, respectively ( $p>0.05$  with 95 per cent confidence interval). The mean birthweight was 1514.8 g (range 1000-1900 g) for KMC and 1471.8 g (range 930-1900 g) for CMC ( $p>0.05$  with 95 per cent CI) and the mean gestational age was 32.42 and 31.59 weeks for KMC and CMC cases, respectively. Fifty-eight per cent of KMC and 52 per cent of CMC cases were on i.v. fluid. Twenty-one of 62 (34 per cent) of KMC and 23/61 (37 per cent) of CMC babies were on oxygen through nasopharyngeal catheter. The mean age at exit from the study was 4.6 days for KMC and 5.4 days for CMC. Ninety-one per cent and 88 per cent of babies in KMC and CMC were discharged from the study in the first 7 days of life, respectively. The study showed that 14/62 (22.5 per cent) of KMC vs. 24/63 (38 per cent) CMC babies died during the study ( $p<0.05$  and CI of 95 per cent.) The majority of deaths occurred during the first 12 h of life. Survival for the preterm low birthweight infants was remarkably better for the early kangaroo mother care group than the babies in the conventional method of care in the first 12 h and there after. More than 95 per cent of mothers reported that they were happy to care for their low birthweight babies using the early Kangaroo mother method. It was recommended to study the feasibility and effectiveness of Kangaroo mother care at the community level.

- Conde-Agudelo A, Diaz-Rossello JL, Belizan JM. (autores de Uruguay). Es una revision de Cochrane de los estudios que hay hasta el 2003.

Cochrane Database Syst Rev. 2003;(2):CD002771.

### **Kangaroo mother care to reduce morbidity and mortality in low birthweight infants.**

Latin American Center for Perinatology and Human Development, Pan American Health

Organization, World Health Organization, Hospital de Clinicas, piso 16, Casilla de Correo 627, Montevideo, Uruguay. condeagu@uniweb.net.co

**BACKGROUND:** Kangaroo mother care (KMC), defined as skin-to-skin contact between a mother and her newborn, frequent and exclusive or nearly exclusive breastfeeding, and early discharge from hospital, has been proposed as an alternative to conventional neonatal care for low birthweight (LBW) infants. **OBJECTIVES:** To determine whether there is evidence to support the use of KMC in LBW infants as an

alternative to conventional care after the initial period of stabilization with conventional care. **SEARCH STRATEGY:** We used the standard search strategy of the Neonatal Review Group of the Cochrane Collaboration. MEDLINE, EMBASE, LILACS, POPLINE and CINAHL databases (to December 2002), and the Cochrane Controlled Trials Register (The Cochrane Library), were searched using the key words terms "kangaroo mother care" or "kangaroo care" or "kangaroo mother method" or "skin-to-skin contact" and "infants" or "low birthweight infants". **SELECTION CRITERIA:** Randomized trials comparing KMC and conventional neonatal care in LBW infants. **DATA COLLECTION AND ANALYSIS:** Trial quality was assessed and data were extracted independently by two reviewers. Statistical analysis was conducted using the standard Cochrane Collaboration methods. **MAIN RESULTS:** Three studies, involving 1362 infants, were included. All the trials were conducted in developing countries. The studies were of moderate to poor methodological quality. The most common shortcomings were in the areas of blinding procedures for those who collected the outcomes measures, handling of drop outs, and completeness of follow-up. The great majority of results consist of results of a single trial. KMC was associated with the following reduced risks: nosocomial infection at 41 weeks' corrected gestational age (relative risk 0.49, 95% confidence interval 0.25 to 0.93), severe illness (relative risk 0.30, 95% confidence interval 0.14 to 0.67), lower respiratory tract disease at 6 months follow-up (relative risk 0.37, 95% confidence interval 0.15 to 0.89), not exclusively breastfeeding at discharge (relative risk 0.41, 95% confidence interval 0.25 to 0.68), and maternal dissatisfaction with method of care (relative risk 0.41, 95% confidence interval 0.22 to 0.75). KMC infants had gained more weight per day by discharge (weighted mean difference 3.6 g/day, 95% confidence interval 0.8 to 6.4). Scores on mother's sense of competence according to infant stay in hospital and admission to NICU were better in KMC than in control group (weighted mean differences 0.31 [95% confidence interval 0.13 to 0.50] and 0.28 [95% confidence interval 0.11 to 0.46], respectively). Scores on mother's perception of social support according to infant stay in NICU were worse in KMC group than in control group (weighted mean difference -0.18 (95% confidence interval -0.35 to -0.01). Psychomotor development at 12 months' corrected age was similar in the two groups. There was no evidence of a difference in infant mortality. However, serious concerns about the methodological quality of the included trials weaken credibility in these findings. **REVIEWER'S CONCLUSIONS:** Although KMC appears to reduce severe infant morbidity without any serious deleterious effect reported, there is still insufficient evidence to recommend its routine use in LBW infants. Well designed randomized controlled trials of this intervention are needed.

**- Charpak N, Ruiz-Pelaez JG, Figueroa de C Z, Charpak Y. (autores de Colombia, estudio realizado en Colombia)**

Pediatrics. 2001 Nov;108(5):1072-9.

**A randomized, controlled trial of kangaroo mother care: results of follow-up at 1 year of corrected age.**

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**OBJECTIVE:** To assess the effectiveness and safety of Kangaroo Mother Care (KMC)

for infants of low birth weight. **METHODS:** An open, randomized, controlled trial of a Colombian social security referral hospital was conducted. A total of 1084 consecutive infants who were born at  $\leq 2000$  g were followed, and 746 newborns were randomized when eligible for minimal care, with 382 to KMC and 364 to "traditional" care. Information on vital status was available for 693 infants (93%) at 12 months of corrected age. KMC consisted of skin-to-skin contact on the mother's chest 24 hours/day, nearly exclusive breastfeeding, and early discharge, with close ambulatory monitoring. Control infants remained in incubators until the usual discharge criteria were met. Both groups were followed at term and at 3, 6, 9, and 12 months of corrected age. The main outcomes measured were morbidity, mortality, growth, development, breastfeeding, hospital stay, and sequelae. **RESULTS:** Baseline variables were evenly distributed, except for weight at recruitment (KMC: 1678 g; control participants: 1713 g). The risk for death was lower among infants who were given KMC, although the difference was not significant (KMC: 11 [3.1%] of 339; control participants: 19 [5.5%] of 324; relative risk: 0.57; 95% confidence interval: 0.17-1.18). The growth index of head circumference was statistically significantly greater in the group given KMC, but the developmental indices of the 2 groups were similar. Infants who weighed  $\leq 1500$  g at birth and were given KMC spent less time in the hospital than those who were given standard care. The number of infections was similar in the 2 groups, but the severity was less among infants who received KMC. More of these infants were breastfed until 3 months of corrected age. **CONCLUSION:** These results support earlier findings of the beneficial effects of KMC on mortality and growth. Use of this technique would humanize the practice of neonatology, promote breastfeeding, and shorten the neonatal hospital stay without compromising survival, growth, or development.

- **Legault M, Goulet C (autores canadienses, estudio hecho en Canada, aunque solo con 70 niños)**

J Obstet Gynecol Neonatal Nurs. 1995 Jul-Aug;24(6):501-6.

**Comparison of kangaroo and traditional methods of removing preterm infants from incubators.**

Sainte-Justine Hospital, Montréal, Québec, Canada.

**OBJECTIVE:** To compare the kangaroo and traditional methods of removing an infant from an incubator in terms of four physiologic parameters, mother's satisfaction, and mother's preference. **DESIGN:** Time-series design (quasi-experimental), with infant-mother dyads subjected to both methods. **SETTING:** Intermediate neonatal care unit in a tertiary hospital in Canada. **PARTICIPANTS:** A convenience sample of 71 infant-mother dyads. **INTERVENTION AND MEASURES:** The intervention was use of the kangaroo or traditional method of maintaining body temperature of preterm infants. The dependent variables were physiologic parameters (skin temperature, heart rate, respiratory rate, and oxygen saturation) measured five times with each method. Mother's satisfaction was measured at the end of each testing period and mother's preference at the end of the experiment. **RESULTS:** The kangaroo method produced

less variation in oxygen saturation and longer duration of testing, and it was preferred by most of the mothers. CONCLUSIONS: The kangaroo method is safe for the preterm infant and allows for early contact between parents and infants.

- **Ludington-Hoe SM, Anderson GC, Simpson S, Hollingsead A, Argote LA, Rey H. (autores estadounidenses, estudio hecho en Colombia)**

J Obstet Gynecol Neonatal Nurs. 1999 Jan-Feb;28(1):94-103.

**Birth-related fatigue in 34-36-week preterm neonates: rapid recovery with very early kangaroo (skin-to-skin) care.**

School of Nursing at the University of Maryland in Baltimore, 21201-1545, USA.

OBJECTIVE: To test preterm neonates' physiologic and behavioral responses when placed skin-to-skin on their mother's chests, called kangaroo care (KC), for the first 6 hours after birth, instead of having the neonates go to an intensive care unit. DESIGN: Convenience sampling was used in this descriptive study to enroll neonates who were given continuous KC beginning soon after birth in the delivery room and continuing for 6 hours. Heart rate, respiratory rate, oxygen saturation, abdominal temperature, and behavioral state were recorded each minute. SETTING: Data were collected in the delivery room and in a private labor room in tropical Cali, Colombia. PARTICIPANTS: Six 34-36-week preterm neonates with 5-minute APGAR scores of 6 or more were enrolled. Two neonates had grunting respirations before KC was begun. RESULTS: Temperature rose rapidly to thermoneutral range. With few exceptions, heart rate, respiratory rate, and oxygen saturation remained within normal limits; grunting respirations in two neonates disappeared with warmed humidified oxygen and continuous KC. Sleep predominated, and neonates were discharged home by 48 hours being fully breastfed, suggesting that KC was an environment conducive to recovery from fatigue. CONCLUSIONS: These data suggest that KC beginning in the delivery room can be given safely and perhaps with benefit to 34-36-week gestation neonates who appear healthy at birth. Kangaroo care was conducive to recovery from birth-related fatigue.

- **Ludington-Hoe SM, Anderson GC, Swinth JY, Thompson C, Hadeed AJ (mismos autores de antes)**

Neonatal Netw. 2004 May-Jun;23(3):39-48.Links

**Randomized controlled trial of kangaroo care: cardiorespiratory and thermal effects on healthy preterm infants.**

Case Western Reserve University, USA.



**PURPOSE:** To determine the safety and effects on healthy preterm infants of three continuous hours of kangaroo care (KC) compared to standard NICU care by measuring cardiorespiratory and thermal responses. **DESIGN:** Randomized controlled trial-pretest-test-posttest control group design. **SAMPLE:** Twenty-four healthy preterm infants (33-35 weeks gestation at birth) nearing discharge. Eleven of the infants received KC; 13 received standard NICU care. **MAIN OUTCOME VARIABLES:** Heart rate, respiratory rate, oxygen saturation, and abdominal skin temperature were manually recorded every minute. Apnea, bradycardia, periodic breathing, and regular breathing were captured continuously on a pneumocardiogram printout. Three consecutive interfeeding intervals (three hours each) on one day constituted the pretest, test, and posttest periods. **RESULTS:** Mean cardiorespiratory and temperature outcomes remained within clinically acceptable ranges during KC. Apnea, bradycardia, and periodic breathing were absent during KC. Regular breathing increased for infants receiving KC compared to infants receiving standard NICU care.

- **Ludington-Hoe SM, Nguyen N, Swinth JY, Satyshur RD. (mismos autores de antes)**

Biol Res Nurs. 2000 Jul;2(1):60-73. [Click here to read Links](#)

**Kangaroo care compared to incubators in maintaining body warmth in preterm infants.**

University of Maryland, School of Nursing, Baltimore, MD, USA.

Many preterm infants cared for in incubators do not experience Kangaroo Care (KC), skin-to-skin contact with their mothers, due to fear of body heat loss when being held outside the incubator. A randomized clinical trial of 16 KC and 13 control infants using a pretest-test-posttest design of three consecutive interfeeding intervals of 2.5 to 3.0 h duration each was conducted over 1 day. Infant abdominal and toe temperatures were measured in and out of the incubator; maternal breast temperature was measured during KC. Repeated measures ANOVA showed no change in abdominal temperature across all periods and between groups. Toe temperatures were significantly higher during KC than incubator periods, and maternal breast temperature met each infant's neutral thermal zone requirements within 5 min of onset of KC. Preterm infants similar to those studied here will maintain body warmth with up to 3 h of KC.

- **Ludington-Hoe SM, Thompson C, Swinth J, Hadeed AJ, Anderson GC. (mismos autores de antes)**

Neonatal Netw. 1994 Feb;13(1):19-27. [Links](#)

**Kangaroo care: research results, and practice implications and guidelines.**

Results of two studies of the effects of 2 to 3 hours of kangaroo care (KC), one a randomized trial of 25 premature infants in open-air cribs and the other a pilot of 6 premature infants who were at least 24 hours postextubation, who were cared for in incubators are reviewed. Both studies incorporated a pretest/posttest control group design. Heart rate and abdominal skin temperature rose for KC infants during KC. Heat loss did not occur during KC, and infants slept more during KC. Kangaroo care had a comforting effect on infants and their mothers. Apnea and periodic breathing episodes dropped during KC for incubator infants. Suggestions and guidelines for selection of infants and practice based on these studies are presented.