

**Table 1: Skin-to-skin effects in term infants and citations\***

| <b>EFFECT</b>   | <b>CITATION(S)</b>  |
|---|---|
| Better heart rate   | Nolan & Lawrence, 2009  |
| Sooner heart rate stability   | Christensson et al., 1992; Mazurek et al., 1999; Takahashi et al., 2011   |
| Better cardio-respiratory stability   | Bouloumie, 2008; Sontheimer et al., 2004  |
| Better respiratory rate   | Nolan & Lawrence, 2009  |
| Increased breath volume   | Erlandsson et al., 2008   |
| Better gaseous exchange   | Erlandsson et al., 2008   |
| Early cessation of respiratory distress (Case study only, no group comparisons)             | Trotter, 2005   |
| Better blood glucose level thru-out first 90 mins post-birth                                | Christensson et al., 1992, 1996; Mazurek et al., 1999   |
| Decreased metabolic stress  | Christensson et al., 1996; Chantry, 2005  |
| Better body temperature and temperature earlier in neutral thermal zone (Huang et al. 2006) | Bystrova et al., 2003; Carfoot et al., 2005; Christensson et al., 1992, 1996; Chwo & Huang, 2002; Durand et al., 1997; Franssen et al., 2005; Gardner, 1979; Huang et al., 2006; Marin et al., 2010; Mazurek et al., 1999; Moore et al., 2009 |
| Prevents hypothermia  | Bergstrom et al., 2005; Byaruhanga et al., 2005   |
| Better temperature stability from 15 mins-4 hours post-birth                                | Britten, 1980; Curry, 1979, 1982; Fardig, 1980; Gomez-Papi, et al., 1998; Johanson et al., 1992; Villalon & Alvarez, 1992, 1993   |
| Faster rewarming after bath   | Bergstrom et al., 2005; Byaruhanga et al., 2005; Medves & O'Brien, 2004   |
| Decreased # of infections, early post-birth, at 6 months and at 12 months                   | Kitajima, 2003; Sosa et al., 1976   |
| Decreased cortisol level-if >60 mins of Birth S2S   | Takahashi, et al., 2011   |
| Decreased infant stress   | Morgan et al., 2011; Takahashi et al., 2011   |
| Decreased birth weight loss (33% have no loss)  | Bouloumie, 2008; Odent, 1989  |
| Faster recovery of birth weight loss  | Bystrova et al., 2007   |
| Decreased crying episodes and duration  | Anderson et al., 1995; Anisfeld & Lipper, 1998; Christensson et al., 1992, 1995, 1996; Chwo & Huang, 2002; De Chateau & Wiberg, 1997a; Erlandsson et al., 2007, 2008; Mazurek et al., 1999; Michelsson et al., 1996; Widstrom, 2011           |
| Increased smiling @ 3 months  | De Chateau & Wiberg, 1977a  |
| Decreased pain perception   | Abdel-Razak et al., 2009; Belleini et al., 2002; Chermont et al., 2009; Gray et al., 2000, 2002; Kashaninia et al., 2008; Long, 2010;   |

|  |  |
|--|--|
|  | Moore et al., 2007; Okan et al., 2010; Sajeidi et al., 2007; Tsao et al., 2007, 2008; Vivancos et al., 2010  |
| Activates infant speech motor areas                          | Gentilucci & Dalla Volta, 2008   |
| Stimulates imitation of maternal sounds                      | Lepage & Theoret, 2007   |
| Better interactions with mother                              | Moore, et al., 2007  |
| Accelerated development in first year of life                | Bystrova, 2009; Bystrova et al., 2003; De Chateau & Wiberg, 1984; Wiberg et al., 1989  |
| Crawl to breast  | Righard & Alade, 1990; Widstrom et al., 1987   |
| Better preparation of the breast for breastfeeding by infant | Carfoot et al., 2003; Erlandsson et al., 2007; Mathiesen, et al., 2001; Mizuno et al., 2004; Ransjo-Arvidson et al., 2001  |
| Better latch   | Meyer & Anderson, 1999; Gouchon et al., 2010   |
| Better sucking technique                                     | Righard & Alade, 1990  |
| Better breastfeeding <b>effectiveness</b>                    | Moore & Anderson, 2007   |
| Increased likelihood of breastfeeding <b>success</b>         | Kroeger & Smith, 2004; Simkiss, 1999   |
| Increased <b>initiation</b> of breastfeeding                 | Anderson et al., 2003; Gomez-Papi, et al., 1998; Lindenberg et al., 1990; Mathiesen et al., 2001; Mikiel-Kostyra & Mazur, 1998; Mizuno et al., 2004; Ransjo-Arvidson et al., 2001; Walters et al., 2007  |
| Increased breastfeeding <b>duration</b>                      | Anderson et al., 2003; De Chateau & Wiberg, 1977a; Mikiel-Kostyra & Mazur, 2000; Mikiel-Kostyra et al., 2001, 2002; Mizuno et al., 2004; Moore et al., 2007; Shiau, 1997; Sosa et al., 1976; Taylor et al., 1985; Wimmer-Puchinger & Nagel, 1982 |
| Increased breastfeeding <b>exclusivity</b>                   | Bramson et al., 2010; Carfoot et al., 2004, 2005; Marin et al., 2010; Mikiel-Kostyra et al., 2001, 2002, 2005; Thomson et al., 1979; Vaidya et al., 2005   |

\*compared to swaddled holding, swaddled in cot, under radiant warmer or in incubator or warming unit unless otherwise noted.

All citations are available free on KC Bib at [www.kangaroocareusa.org](http://www.kangaroocareusa.org)

©2011 Ludington-Hoe and United States Institute for Kangaroo Care ([www.kangaroocareusa.org](http://www.kangaroocareusa.org))

**Table 2: Skin-to-skin effects in mothers of full term infants**

| <b>EFFECT</b>   | <b>CITATION(S)</b>   |
|---|--|
| Increased infant contact and attachment behaviors               | Anisfeld & Lipper, 1983; Carlson et al., 1978, 1979, 1980; De Chateau & Wiberg, 1977a; Klaus et al., 1972; Kontos, 1978; McClellan & Cabianca, 1980; Odent, 1989; Schaller et al., 1979; Widstrom et al., 1990 |
| More affectionate behaviors during breastfeeding                | Hales et al., 1975, 1976, 1977   |
| Increase time spent with infant throughout postpartum           | Carlson et al., 1978, 1980; Hwang, 1981; Schaller et al., 1979; Widstrom et al., 1990  |
| Intense desire to gaze at, touch, hold S2S                      | Finigan & Davies, 2004   |
| Increased maternal-infant attachment                            | McClellan & Cabianca, 1980   |
| Better maternal-infant interaction over 1 <sup>st</sup> year    | Bystrova et al., 2009; De Chateau & Wiberg, 1977a, 1984; Takahashi et al., 2011  |
| Distracts mothers from episiotomy repair or cesarean sensations | Byaruhanga et al., 2008; Hung & Berg, 2011; Walters et al., 2007   |
| Decreases lochia amount   | Dordevic et al., 2008 (a randomized controlled trial of 216 mothers)   |
| Decreases anemia on Postpartum Day 3                            | Dordevic et al., 2008 (a randomized controlled trial of 216 mothers)   |
| Fewer cases of poor involution                                  | Dordevic et al., 2008 (a randomized controlled trial of 216 mothers)   |
| Earlier placental expulsion                                     | Marin et al., 2010 (a randomized controlled trial of 137 mothers)  |
| Decreased serum gastrin (better metabolic adaptation)           | Widstrom et al., 1990  |
| Decreased cortisol & ACTH                                       | Handlin et al., 2009   |
| Decreased anxiety   | Nolan & Lawrence, 2009; Shiau, 1997  |
| Increased satisfaction and happiness with care                  | Carfoot et al., 2005; Gouchon et al., 2010; Thomson et al., 1979   |
| Better appearance for post-partum follow-up                     | Anisfeld & Lipper, 1983  |
| Recognize that S2S helps breastfeeding                          | Byaruhanga et al., 2008; Tofteland et al., 2006  |
| Decreased engorgement   | Shiau, 1997  |
| Increased success of BF   | Anderson et al., 2004; Burkhammer et al., 2004   |

All citations are available free on the KC Bib at [www.kangarocareusa.org](http://www.kangarocareusa.org)

©2011 Ludington-Hoe and United States Institute for Kangaroo Care