

INTEGRATIVE SHANTALA MASSAGE THERAPY FOR PRETERM NEONATES: A QUALITATIVE STUDY

TERAPIA DE MASSAGEM INTEGRATIVA SHANTALA PARA NEONATOS PREMATUROS: UM ESTUDO QUALITATIVO

TERAPIA DE MASAJE SHANTALA INTEGRADORA PARA NEONATOS PREMATUROS: UN ESTUDIO CUALITATIVO

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Abstract

This study provides a qualitative analysis of the literature on the effects of this massage, focusing on its benefits, methodologies, and clinical outcomes. By applying Bardin's content analysis and artificial intelligence, 29 relevant articles were selected from the evidence map of the Brazilian Academic Consortium for Integrative Health (CABSIN). Shantala massage was found to be effective in promoting weight gain, reducing hospitalization time, enhancing neurobehavioral development, reducing pain, and improving mother-infant bonding. The studies frequently highlighted specific techniques and the use of oils, emphasizing the significance of applying moderate pressure for optimal outcomes. The analysis also identified key trends, including the frequency of the intervention and the involvement of parents as therapists. The conclusion is that Shantala massage provides significant benefits for preterm infants, supporting their recovery and development when performed correctly by trained professionals.

Keywords: Shantala; complementary therapeutic methods; preterm infants; child development.

Resumo

Este estudo fornece uma análise qualitativa da literatura sobre os efeitos desta massagem, com foco em seus benefícios, metodologias e resultados clínicos. Aplicando a análise de conteúdo de Bardin e inteligência artificial, 29 artigos relevantes foram selecionados do mapa de evidências do Consórcio Acadêmico Brasileiro de Saúde Integrativa (CABSIN). A massagem Shantala foi considerada eficaz na promoção do ganho de peso, redução do tempo de hospitalização, melhoria do desenvolvimento neurocomportamental, redução da dor e melhoria do vínculo mãe-bebê. Os estudos frequentemente destacaram técnicas específicas e o uso de óleos, enfatizando a importância da aplicação de pressão moderada para resultados ideais. A análise também identificou tendências importantes, incluindo a frequência da intervenção e o envolvimento dos pais como terapeutas. A conclusão é que a massagem Shantala proporciona benefícios significativos para bebês prematuros, apoiando sua recuperação e desenvolvimento quando realizada corretamente por profissionais treinados.

Palavras-chave: Shantala; métodos terapêuticos complementares; recém-nascido prematuro; desenvolvimento infantil.

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Resumen

Este estudio proporciona un análisis cualitativo de la literatura sobre los efectos de este masaje, centrándose en sus beneficios, metodologías y resultados clínicos. Mediante la aplicación del análisis de contenido de Bardin y la inteligencia artificial, se seleccionaron 29 artículos relevantes del mapa de evidencia del Consorcio Académico Brasileño para la Salud Integral (CABSIN). Se encontró que el masaje Shantala es eficaz para promover el aumento de peso, reducir el tiempo de hospitalización, mejorar el desarrollo neuroconductual, reducir el dolor y mejorar el vínculo madre-bebé. Los estudios destacaron con frecuencia técnicas específicas y el uso de aceites, enfatizando la importancia de aplicar una presión moderada para obtener resultados óptimos. El análisis también identificó tendencias clave, incluida la frecuencia de la intervención y la participación de los padres como terapeutas. La conclusión es que el masaje Shantala proporciona beneficios significativos para los bebés prematuros, apoyando su recuperación y desarrollo cuando es realizado correctamente por profesionales capacitados.

Palabras clave: Shantala; métodos terapéuticos complementarios; recién nacido prematuro; desarrollo infantil.

1 Introduction

Integrative and Complementary Health Practices (IChP) include a wide array of therapies and medical approaches, incorporating both Traditional Medicine (TM) and Complementary and Alternative Medicine (CAM). Rooted in indigenous knowledge and various cultural traditions, these practices differ from a country's standard medical practices. They can be used alongside conventional medicine or on their own, aiming to promote health, prevent disease, and treat both physical and mental conditions (Glass; Lima; Nascimento, 2021).

In Brazil, Integrative and Complementary Practices were officially incorporated into the Unified Health System (SUS) in 2006 through the National Policy on Integrative and Complementary Practices (PNPIC), establishing them as a complementary and integrative treatment option. In 2018, Ordinance No. 702 expanded the availability of these practices within SUS, increasing the number of options from four to eighteen (Brazil, 2017). In line with the policy established by the Brazilian government, the need to develop and integrate these practices into the scientific field led a group of researchers to establish the Brazilian Academic Consortium of Integrative Health (CABSIN) (CABSIN, 2024).

CABSIN's mission is to advance scientific research in integrative and complementary health approaches by organizing and producing studies that enhance the visibility of scientific knowledge in this field. The consortium also encourages collaboration and exchange among researchers, universities, and research groups, both within Brazil and internationally. These efforts aim to support the safe and effective integration of Traditional, Complementary, and Integrative Medicines into the public health system, ensuring professional qualifications and the quality of services and products offered (CABSIN, 2024).

Within the scope of CABSIN, Shantala (or Shantalla) is recognized as one of the integrative and complementary health practices (IChP) established under Brazilian public

policy. It is featured in CABSIN's scientific evidence map through the dissemination of studies that evaluate its strength of recommendation and level of evidence for use in preterm infants.

Shantala Massage is considered a "soft-hard" technology, relying on structured knowledge rather than highly technological instruments. This practice involves gentle movements performed on the baby using vegetable oil, stimulating different points on the body to support organ function. Recognized as an Integrative and Complementary Practice under Ordinance No. 849 (Brazil, 2017), Shantala Massage is a form of therapy with numerous proven benefits. Studies have shown its effectiveness in enhancing child development, especially in preterm infants, improving muscle tone, circulation, feeding, sleep, relaxation, and strengthening the bond between the caregiver and the baby (Vickers *et al.*, 2004; Field; Diego; Hernandez, 2010; Queiroz *et al.*, 2024).

A study on pain demonstrated that Shantala massage is an effective technique for reducing neonatal pain scores, shortening procedure time, decreasing crying duration, and stabilizing vital signs (with less variation in heart rate and oxygen saturation) in newborns undergoing puncture who received the massage intervention. The results of this study suggest that massage significantly aids in pain relief by reducing the crying time of newborns during puncture procedures (Costa *et al.*, 2022).

This study aims to systematically analyze the existing literature on the effects of Shantala massage in pre-term infants, identifying and quantifying its primary benefits, applied methodologies, massage practitioners, observed clinical outcomes, and the underlying mechanisms behind its effects. The objective is to provide a comprehensive, evidence-based understanding of how this therapeutic massage can enhance clinical outcomes and support the development of preterm infants.

2 Method

This qualitative study utilized content analysis according to Bardin (2011) and ChatGPT Plus. A total of 29 articles on Shantala (therapeutic massage for preterm infants) were selected from the evidence map of integrative and complementary health practices (ICHP) provided by the Brazilian Academic Consortium of Integrative Health (CABSIN, 2024).

The content analysis of the articles and the creation of result tables were conducted using prompts for ChatGPT Plus. The process began with uploading the available PDF files extracted from CABSIN's evidence map on Shantala. Next, a command prompt was used to request the analysis of these articles and the generation of tables with the findings. The accuracy of the

results was then evaluated and refined until the final outcomes presented here were achieved. This study employed a qualitative method using secondary sources, with the content analysis following the stages proposed by Bardin (2011), adapted for the systematic analysis of scientific articles and incorporating artificial intelligence to perform the steps. The analysis process follows the steps listed below:

- **Article Selection:** Out of 38 available articles, 29 were included in the analysis, specifically focusing on therapeutic massage for preterm infants. The selection was based on their relevance to the topic, following the criteria established by CABSIN and aligned with the evidence map on Integrative and Complementary Health Practices.
- **Floating Reading:** An initial exploratory reading of the articles was performed to become familiar with the content and identify recurring themes. This step provided an overview of the topics discussed and helped pinpoint the recording units.
- **Definition of Recording Units:** The recording units consisted of key phrases and excerpts related to the benefits, methodologies, massage practitioners, clinical outcomes, and underlying mechanisms of therapeutic massage.
- **Development of Analysis Categories:** Based on the recording units, the primary categories and subcategories for analysis were established. The main categories identified included Benefits of Massage, Massage Methodology, Massage Practitioners, Clinical Outcomes, and Underlying Mechanisms.
- **Data Coding:** Each recording unit was coded according to the defined categories and subcategories. This process involved assigning specific codes to excerpts from the articles that corresponded to the identified themes.
- **Quantification:** The frequency of mentions for each category and subcategory was calculated, with results expressed in both absolute numbers and percentages relative to the total number of articles analyzed (N=29).
- **Table Construction:** Tables were created to organize the categories, subcategories, frequency of mentions, and representative excerpts, making it easier to visualize the data and interpret results.
- **Descriptive Statistical Analysis:** The frequencies of the categories and subcategories were analyzed statistically, offering an overview of the trends identified in the articles.

This methodology allowed for a comprehensive and systematic analysis of the articles, highlighting the key trends and primary areas of focus in research on Shantala therapeutic massage for preterm infants.

3 Results

A total of 29 articles on the use of Shantala Massage in neonates were included in the study. Table 1 presents the frequency of the main topics discussed in these articles.

Table 1: Frequency of the Main Topics Covered in the Included Articles

Main Topic	Number of Articles	Percentage
Benefits of Massage	16 (n=29)	55.17%
Massage Methodology	10 (n=29)	34.48%
Massage Practitioners	7 (n=29)	24.14%
Clinical Outcomes	11 (n=29)	37.93%
Underlying Mechanisms	3 (n=29)	10.34%

Source: made by the authors (2025).

The manuscripts were divided into subcategories to better delineate the scope of the studies focusing on the use of Shantala in the neonatal population.

Table 2: Frequency of Subcategories in Articles Addressing the Use of Shantala in the Neonatal Population

Main topic	Subcategory	Number of articles	Percentage
Benefits of massage	Weight Gain	7 (n=29)	24.14%
	Reduction in Hospital Stay Duration	2 (n=29)	6.90%
	Neurobehavioral Development	2 (n=29)	6.90%
	Anxiety Reduction	1 (n=29)	3.45%
	Development and Growth	2 (n=29)	6.90%
	Pain Reduction	2 (n=29)	6.90%
	Sleep-Wake Pattern	2 (n=29)	6.90%
	Stress Reduction	1 (n=29)	3.45%
	Cognitive Development	1 (n=29)	3.45%
	Improvement in Mother-Infant Bonding	1 (n=29)	3.45%
	Insulin and IGF-1	2 (n=29)	6.90%
Immune Function	1 (n=29)	3.45%	
Massage methodology	Techniques Used	4 (n=29)	13.79%
	Frequency and Duration	2 (n=29)	6.90%
	Complementary Interventions	1 (n=29)	3.45%
Massage practitioners	Use of Oils	2 (n=29)	6.90%
	Professional Therapists vs. Mothers	1 (n=29)	3.45%
	Parents as Therapists	2 (n=29)	6.90%
Clinical outcomes	Increased Vagal Activity	2 (n=29)	6.90%
	Improvement in Gastric Motility	2 (n=29)	6.90%
	Effects on EEG and EKG	1 (n=29)	3.45%
	Reduction of Nosocomial Infections	2 (n=29)	6.90%
	Improvement in Motor Development	2 (n=29)	6.90%
Underlying mechanisms	Vagal Activity and Gastric Motility	2 (n=29)	6.90%
	Growth Hormones	1 (n=29)	3.45%

Source: made by the authors (2025).

4 Discussion

The content analysis of the reviewed studies underscores the efficacy of massage in preterm newborns, consistent with findings from several studies (Beachy, 2003; Vickers *et al.*, 2004; Wang; He; Zhang, 2013; Alvarez *et al.*, 2017). Infant massage has shown significant benefits, including increased weight gain, enhanced mother-child interaction, and reduced stress levels (Beachy, 2003; Kulkarni; Kaushik; Gupta, 2010).

4.1 Physiological benefits

Beachy (2003) found that the massage promotes substantial weight gain in neonates, a finding further supported by Wang, He and Zhang (2013) whose meta-analysis identified a consistent increase in daily weight gain among infants receiving massage therapy. This effect is attributed to increased secretion of growth hormones and enhanced gastric motility, leading to more efficient nutrient absorption (Beachy, 2003; Kulkarni; Kaushik; Gupta, 2010). Also highlight that applying moderate pressure during massage is crucial for beneficial outcomes, such as increased vagal activity and gastric motility (Field; Diego; Hernandez, 2010). Furthermore, studies suggest that using oils, such as coconut or sesame oil, may provide additional positive effects (Sankaranarayanan *et al.*, 2005; Agarwal; Liu, 2015).

4.2 Neurological and behavioral development

Massage has also been shown to benefit the neurological development of preterm and/or low birth weight infants (Vickers *et al.*, 2004). Studies suggest it accelerates the maturation of the sympathetic nervous system and increases alertness and wakefulness (Beachy, 2003). These findings are further supported by Wang, He and Zhang (2013). who observed improved neurobehavioral assessment performance in neonates following regular massage. Additionally, that moderate massage enhances neuropsychological behavior and reduces stress (Field; Diego; Hernandez, 2010).

4.3 Clinical benefits

Pain reduction was observed in neonates who received Shantala massage (Batalha; Mota, 2013), positively impacting cognitive development and neurodevelopment (Alvarez *et al.*, 2017; Garg; Kabra; Balasubramanian, 2019) and reducing hospitalization time by 4.41 days (Wang; He; Zhang, 2013). Infants who received the therapy were more alert and spent less time

sleeping (Kulkarni; Kaushik; Gupta, 2010), with reduced stress levels indicated by lower cortisol levels and improved behavioral responses (Li; Zhong; Tang, 2016). Additionally, the therapy significantly improved motor skills, muscle tone (Field; Diego; Hernandez, 2010; Hoogen *et al.*, 2017), and bone mineralization in preterm infants (Aly *et al.*, 2004).

Shantala massage also led to increased levels of insulin and insulin-like growth factor 1 (IGF-1 (Field; Diego; Hernandez, 2010; Field; Diego; Hernandez-Reif, 2011), which are associated to better growth outcomes in preterm infants (Field; Diego; Hernandez-Reif, 2011). The therapy consistently increased vagal activity and gastric motility, contributing to greater weight gain (Diego *et al.*, 2007) and more efficient absorption of food and nutrients (Mathai; Fernandez; Mondkar, 2001; Kulkarni; Kaushik; Gupta, 2010).

4.4 Weight gain

Weight gain is evident in patients who received Shantala Massage during hospitalization (Mathai; Fernandez; Mondkar, 2001; Beachy, 2003; Diego *et al.*, 2007; Field; Diego; Hernandez, 2010; Kulkarni; Kaushik; Gupta, 2010; Wang; He; Zhang, 2013; Darmstadt *et al.*, 2014; Yunus *et al.*, 2015), with one study showing an increase in bone density in neonates who regularly received the massage (Yunus *et al.*, 2015). The range of weight gain varies across the studies, from a daily increase of 5.32 grams (Wang; He; Zhang, 2013) to 27 grams per day after two weeks of daily Shantala therapy (Beachy, 2003). It was reported that preterm infants who received the massage for 5 to 10 consecutive days experienced a 21% to 48% increase in weight gain and a reduced hospital stay by 3 to 6 days compared to the control group (Field; Diego; Hernandez, 2010). Additionally, a higher rate of weight gain was observed in infants who received massage with coconut oil compared to those who received mineral oil (Sankaranarayanan *et al.*, 2005).

4.5 Psychological and interactional benefits

Infant massage not only enhances the physical well-being of neonates but also strengthens the parent-child bond. According to Wang, He and Zhang (2013), the massage boosts parents' confidence in their parenting abilities and fosters better tactile communication between parents and babies. Beachy reports that parents experienced a greater sense of well-being and connection with their children after regularly practicing the massage (Beachy, 2003). Bennett, Underdown and Barlow (2013) suggest that massage can lower cortisol levels in

depressed mothers, improving mother-infant interactions. Cuomo *et al.* (2017) highlights the importance of touch and massage in fostering emotional bonds and reducing parental stress.

4.6 Parents as therapists

Research has shown that parents trained in Shantala Massage techniques can effectively administer the therapy, leading to a stronger bond with their child and reduced stress for both parents and infants (Abdallah; Badr; Hawwari, 2013). Studies indicate that when mothers are properly trained, their application of the therapy is as effective as when performed by healthcare professionals. (Mathai; Fernandez; Mondkar, 2001; Field; Diego; Hernandez, 2010; Field, 2019). Furthermore, massage therapy enhances the mother-infant bond, promoting better emotional and social development in preterm infants (Darmstadt *et al.*, 2014) and reducing parental anxiety about their child's hospitalization (Field; Hernandez-Reif, 2001).

4.7 Immune function

Shantala massage has been shown to increase the levels of "Natural Killer" cells in preterm infants, suggesting an enhancement in the child's immune function (Kulkarni; Kaushik; Gupta, 2010). This is further supported by a study by Mendes and Procianoy (2008), which found that infant massage reduced the incidence of late-onset sepsis in extremely preterm neonates. In a similar context, a randomized study concluded that the topical application of sunflower oil offers greater protection against nosocomial infections in low-birthweight newborns (Darmstadt *et al.*, 2008). Additionally, using oils such as coconut and safflower oil has been shown to increase average weight gain, as the transcutaneous absorption of the oil also raises triglyceride levels (Fallah *et al.*, 2013). However, the choice of oil should consider factors like availability, cost per patient, and safety; for example, patients in heated cribs or incubators may be at risk for local burns (Mathai; Fernandez; Mondkar, 2001).

4.8 Practical considerations

Infant massage in hospital settings requires proper training for healthcare professionals and parents, as well as a thorough understanding of neonatal stress signals (Beachy, 2003). It's important to wait a few minutes after feeding to prevent vomiting, and the therapist should warm their hands to maintain the baby's temperature (Alvarez *et al.*, 2017). The practice should be tailored to ensure safety and effectiveness and should be stopped immediately if any signs

of discomfort or disorganization are observed in the infant (Beachy, 2003). Vickers *et al.* (2004) stress the need for standardized protocols to maintain the consistency and safety of interventions. Furthermore, Li, Zhong and Tang (2016) underscore the importance of continuous training to ensure proper massage techniques and prevent potential complications.

4.9 Study limitations

Despite the identified benefits, it is important to recognize the limitations of the reviewed studies. Many of the studies have small sample sizes and show variability in massage protocols, which can affect the results (Moyer; Seefeldt; Mann, 2011). Additionally, more research is required to explore the precise mechanisms by which massage produces its positive effects on preterm neonates (Wang; He; Zhang, 2013). Also highlight the need for further research to fully understand the underlying mechanisms behind the benefits of massage (Field; Diego; Hernandez, 2010). Moyer, Seefeldt and Mann (2011) emphasize the importance of investigating additional causal mechanisms for the clinical benefits of massage beyond cortisol reduction.

5 Conclusion

Infant massage has proven to be an effective intervention for enhancing the physiological and psychological development of preterm neonates. The results of this content analysis suggest that incorporating massage into neonatal care routines can provide significant benefits when performed safely and correctly by skilled and trained professionals, as well as by parents. Future research should aim to standardize massage protocols and expand study samples to further strengthen the current evidence.

References

ABDALLAH, B.; BADR, L. K.; HAWWARI, M. The efficacy of massage on short and long term outcomes in preterm infants. **Infant behavior and development**, vol. 36, no. 4, pp. 662-669, 2013. DOI: <https://doi.org/10.1016/j.infbeh.2013.06.009>.

Available at:

<https://www.sciencedirect.com/science/article/abs/pii/S0163638313000775?via%3Dihub>.

Accessed on: Aug. 5, 2025.

AGARWAL, A.; LIU, Y. Remediation technologies for oil-contaminated sediments. **Marine Pollution Bulletin**, vol. 101, no. 2, pp. 483-490, 2015. DOI:

<https://doi.org/10.1016/j.marpolbul.2015.09.010>. Available at:

<https://pubmed.ncbi.nlm.nih.gov/26414316/>. Accessed on: Aug. 5, 2025.

ALVAREZ, M. J. *et al.* The effects of massage therapy in hospitalized preterm neonates: A systematic review. **International journal of nursing studies**, vol. 69, pp. 119-136, 2017. DOI: <https://doi.org/10.1016/j.ijnurstu.2017.02.009>. Available at: <https://pubmed.ncbi.nlm.nih.gov/28235686/>. Accessed on: Aug. 5, 2025.

ALY, H. *et al.* Physical activity combined with massage improves bone mineralization in premature infants: a randomized trial. **Journal of perinatology**, vol. 24, no. 5, pp. 305-309, 2004. DOI: <https://doi.org/10.1038/sj.jp.7211083>. Available at: <https://pubmed.ncbi.nlm.nih.gov/15071483/>. Accessed on: Aug. 5, 2025.

BARDIN, L. Análise de conteúdo 4. ed. **Lisboa: Edições**, vol. 70, no. 1977, pp. 99-120, 2011.

BATALHA, L. M. da C; MOTA, A. A. S. C. A massagem na criança com câncer: eficácia de um protocolo. **Jornal de Pediatria**, vol. 89, pp. 595-600, 2013. DOI: <https://doi.org/10.1016/j.jped.2013.03.022>. Available at: <https://www.scielo.br/j/jped/a/vfKS4kHYGTZJzTYnGHgG4NL/?format=pdf&lang=en>. Accessed on: Aug. 5, 2025.

BEACHY, J. Premature infant massage in the NICU. **Neonatal Network**, vol. 22, no. 3, pp. 39-45, 2003. DOI: <https://doi.org/10.1891/0730-0832.22.3.39>. Available at: <https://pubmed.ncbi.nlm.nih.gov/12795507/>. Accessed on: Aug. 5, 2025.

BENNETT, C.; UNDERDOWN, A.; BARLOW, J. Massage for promoting mental and physical health in typically developing infants under the age of six months. **Cochrane database of systematic reviews**, no. 4, 2013. DOI: 10.1002/14651858.CD005038.pub3. Available at: <https://doi.org/10.1002/14651858.CD005038.pub3>. Accessed on: Aug. 5, 2025.

BRAZIL. Ministério da Saúde. **Portaria n.º 849**, de 28 de março de 2017. Brasília: Ministério da Saúde, 2017. Available at: <https://www.coren-ba.gov.br/wp-content/uploads/2017/03/portaria-849-27-de-mar%C3%A7o-2017-Praticas-integrativas-e-complementares-2.pdf>. Accessed on: Aug. 5, 2025.

CABSIN. Consórcio Acadêmico Brasileiro de Saúde Integrativa. Mapa de Evidência - Efetividade Clínica da Shantala. **CABSIN**, [s. l.], [s. d.]. Available at: <https://cabsin.org.br/mapas-de-evidencias/>. Accessed on: Aug. 5, 2025.

COSTA, T. M. de S. *et al.* Massagem para alívio da dor em recém-nascidos submetidos a punção: revisão sistemática. **Revista Gaúcha de Enfermagem**, vol. 43, pp. e20220029, 2022. DOI: <https://doi.org/10.1590/1983-1447.2022.20220029.pt>. Available at: <https://www.scielo.br/j/rgenf/a/kwWdY8nVXpf9yzV36Cjq3mg/?format=pdf&lang=en>. Accessed on: Aug. 5, 2025.

CUOMO, B. M. *et al.* Effectiveness of sleep-based interventions for children with autism spectrum disorder: a meta-synthesis. **Pharmacotherapy: The Journal of Human Pharmacology and Drug Therapy**, vol. 37, no. 5, pp. 555-578, 2017. DOI: <https://doi.org/10.1002/phar.1920>.

DARMSTADT, G. L. *et al.* Effect of skin barrier therapy on neonatal mortality rates in preterm infants in Bangladesh: a randomized, controlled, clinical trial. **Pediatrics**, vol. 121, no. 3, pp. 522-529, 2008. DOI: <https://doi.org/10.1542/peds.2007-0213>.

DARMSTADT, G. L. *et al.* Mechanism for prevention of infection in preterm neonates by topical emollients: a randomized, controlled clinical trial. **The Pediatric infectious disease journal**, vol. 33, no. 11, pp. 1124-1127, 2014. DOI: <https://doi.org/10.1097/inf.0000000000000423>.

DIEGO, M. A. *et al.* Preterm infant massage elicits consistent increases in vagal activity and gastric motility that are associated with greater weight gain. **Acta Paediatrica**, vol. 96, no. 11, pp. 1588-1591, 2007. <https://doi.org/10.1111/j.1651-2227.2007.00476.x>

FALLAH, R. *et al.* Sunflower oil versus no oil moderate pressure massage leads to greater increases in weight in preterm neonates who are low birth weight. **Early human development**, vol. 89, no. 9, pp. 769-772, 2013. DOI: <https://doi.org/10.1016/j.earlhumdev.2013.06.002>.

FIELD, T. Pediatric massage therapy research: a narrative review. **Children**, vol. 6, no. 6, pp. 78, 2019. DOI: <https://doi.org/10.3390/children6060078>. Available at: <https://www.mdpi.com/2227-9067/6/6/78/pdf?version=1560244172>. Accessed on: Aug. 5, 2025.

FIELD, T.; DIEGO, M.; HERNANDEZ-REIF, M. Preterm infant massage therapy research: a review. **Infant behavior and development**, vol. 33, no. 2, pp. 115-124, 2010. DOI: <https://doi.org/10.1016/j.infbeh.2009.12.004>.

FIELD, T.; DIEGO, M.; HERNANDEZ-REIF, M. Potential underlying mechanisms for greater weight gain in massaged preterm infants. **Infant Behavior and Development**, vol. 34, no. 3, pp. 383-389, 2011. DOI: <https://doi.org/10.1016/j.infbeh.2010.12.001>.

FIELD, T.; HERNANDEZ-REIF, M. Sleep problems in infants decrease following massage therapy. **Early Child Development and Care**, vol. 168, no. 1, pp. 95-104, 2001. DOI: <https://doi.org/10.1080/0300443011680106>.

GARG, B. D.; KABRA, N. S.; BALASUBRAMANIAN, H. Role of massage therapy on reduction of neonatal hyperbilirubinemia in term and preterm neonates: a review of clinical trials. **The Journal of Maternal-Fetal & Neonatal Medicine**, vol. 32, no. 2, pp. 301-309, 2019. DOI: <https://doi.org/10.1080/14767058.2017.1376316>.

GLASS, L.; LIMA, N. W.; NASCIMENTO, M. M. Práticas integrativas e complementares no Sistema Único de Saúde do Brasil: disputas político-epistemológicas. **Saúde e Sociedade**, vol. 30, pp. e200260, 2021. DOI: <https://doi.org/10.1590/S0104-12902021200260>. Available at: <https://www.scielo.br/j/sausoc/a/VrpXFjHpkQnxkwfBMtnNLmr/?format=pdf&lang=pt>. Accessed on: Aug. 5, 2025.

KULKARNI, A. *et al.* Massage and touch therapy in neonates: the current evidence. **Indian pediatrics**, vol. 47, pp. 771-776, 2010. DOI: <https://doi.org/10.1007/s13312-010-0114-2>. Available at: <https://link.springer.com/article/10.1007/s13312-010-0114-2>. Accessed on: Aug. 5, 2025.

LI, X.; ZHONG, Q.; TANG, L. A meta-analysis of the efficacy and safety of using oil massage to promote infant growth. **Journal of pediatric nursing**, vol. 31, no. 5, pp. e313-e322, 2016. DOI: <https://doi.org/10.1016/j.pedn.2016.04.003>.

MATHAI, S. *et al.* Effects of tactile-kinesthetic stimulation in preterms-A controlled trial. **Indian pediatrics**, vol. 38, no. 10, pp. 1091-1098, 2001. Available at: <https://www.indianpediatrics.net/oct2001/oct-1091-1098.htm>. Accessed on: Aug. 5, 2025.

MENDES, E. W.; PROCIANOY, R. S. Massage therapy reduces hospital stay and occurrence of late-onset sepsis in very preterm neonates. **Journal of Perinatology**, vol. 28, no. 12, pp. 815-820, 2008. DOI: <https://doi.org/10.1038/jp.2008.108>.

MOYER, C. A.; SEEFELDT, L.; MANN, E. S. Does massage therapy reduce cortisol? A comprehensive quantitative review. **Journal of bodywork and movement therapies**, vol. 15, no. 1, pp. 3-14, 2011. DOI: <https://doi.org/10.1016/j.jbmt.2010.06.001>.

QUEIROZ, A. B. L. *et al.* Humanização do cuidado através do ensino de Shantala na graduação: relato de experiência. **Cuadernos de Educación y Desarrollo**, vol. 16, no. 2, pp. e3407-e3407, 2024. DOI: <https://doi.org/10.55905/cuadv16n2-061>. Available at: <https://ojs.cuadernoseducacion.com/ojs/index.php/ced/article/view/3407/2789>. Accessed on: Aug. 5, 2025.

SANKARANARAYANAN, K. *et al.* Oil massage in neonates: an open randomized controlled study of coconut versus mineral oil. **Indian pediatrics**, vol. 42, no. 9, pp. 877, 2005. Available at: <https://europepmc.org/article/med/16208048>. Accessed on: Aug. 5, 2025.

HOOGEN, A. V. D. *et al.* How to improve sleep in a neonatal intensive care unit: a systematic review. **Early human development**, vol. 113, pp. 78-86, 2017. DOI: <https://doi.org/10.1016/j.earlhumdev.2017.07.002>.

VICKERS, A. *et al.* Massage for promoting growth and development of preterm and/or low birth-weight infants. **Cochrane Database of Systematic Reviews**, no. 2, 2004. DOI: <https://doi.org/10.1002/14651858.CD000390.pub2>. Available at: <https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD000390.pub2/epdf/full>. Accessed on: Aug. 5, 2025.

WANG, L.; HE, J. L.; ZHANG, X. H. The efficacy of massage on preterm infants: a meta-analysis. **American journal of perinatology**, vol. 30, no. 09, pp. 731-738, 2013. DOI: <https://doi.org/10.1055/s-0032-1332801>.

YUNUS, F. *et al.* Sensory-based intervention for children with behavioral problems: A systematic review. **Journal of autism and developmental disorders**, vol. 45, pp. 3565-3579, 2015. DOI: <https://doi.org/10.1007/s10803-015-2503-9>.

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