**Peanut Ball Use by Women in Labor:**
*A Review of the Literature*

**Clinical Question:** “For women in active labor, what is the quantity, quality, and consistency of the evidence for the use of birth balls/peanut balls on outcomes such as length of 1st/2nd stages of labor, cesarean section rates, and support to aid laboring women’s coping ability.”

**Conclusions:** Research to date for peanut ball use in labor is limited and starting to emerge in the literature. There are only 4 studies in this review, with the evidence reflecting inconsistent results for the impact of peanut ball use on outcomes such as length of labor and cesarean section rates (Table 1). The overall quality of the evidence was judged as moderate, yet studies reflect a need for common outcome variables. The evidence did not provide comprehensive benefits related to peanut ball use, possibly due to the highly variable and multifactorial nature of labor (See Note on Variables, Page 4). However, the evidence was strongly consistent for the positive perceptions of peanut ball use and maternal comfort by laboring women (Table 2), as well as the lack of negative effect to mother and/or newborn.

In conclusion, peanut ball use is a low-risk, low-cost nursing intervention that is promising for desired labor outcomes and perceived positively by laboring women. In fact, one study found that potential patients declined to participate, because they wanted the peanut ball available, even after explanations that its efficacy had not been formally evaluated. It is clear that laboring women are seeking comfort, support, and aid during this life-changing event and perceive that the peanut ball can help (Table 2).

**Key Evidence from Individual Studies:**
- Although not statistically significant, one study demonstrated positive trends for 1st and 2nd stage time reduction. Another revealed a reduction of 1st stage labor, but not of 2nd stage for primiparous patients.
- Evidence supported the peanut ball as a promising tool in reducing first stage of labor of electively induced primiparous patients with epidural analgesia.
- One study demonstrated reduction of childbirth complications and risks associated with primary cesarean surgery, which has potential implications for successful outcomes of subsequent pregnancies.
- Results did not demonstrate benefits of peanut ball use for multiparous patients.
- One study found no statistically significant differences in fetal occiput posterior presentation.
- Passive descent was correlated with an overall reduction in primary cesarean section rates.
- Although return on investment was not identified monetarily, a cost benefit ratio was correlated for the cost of labor complications, peanut ball price, and education of labor nurses.

**Nursing Implications:** The literature identified a lack of education amongst nurses regarding the benefits of position changes. Although nurses may positively voice support of this device, they may also perceive peanut ball use adds to their workload. Labor nurses must understand the physiologic intricacies of positioning in birth and labor outcomes. A deep understanding of the importance of positioning during labor will perpetuate needed change in the knowledge, perception, and practice standards of labor nurses. As the primary drivers of peanut ball use, nurses can better equip women by facilitating education of this device throughout the spectrum of care, from childbirth classes to the delivery room.

**Recommendations:** The following recommendations are offered for clinicians to consider when evaluating peanut ball use to assist labor progression for women giving birth:
- Incorporate peanut ball use to optimize the labor and birth experience, provide maternal comfort, aid in the labor process, and support vaginal birth.
- Provide staff/patient education on potential benefits of peanut ball use throughout the care continuum.
- Conduct cost/benefit analyses for peanut ball use, which should include the fiscal impact of labor complications, nurse/physician education, and the cost of the device itself.
- Future testing of this device via large sample randomized control trials is warranted.
- Incorporate pending research study results into existing evidence as it becomes available.

Christine Lee, MPH, BSN, RN; Cecelia L. Crawford, DNP, RN; April 2018 ©Kaiser Permanente SCAL, Patient Care Services, Regional Nursing Research Program
Peanut Ball Use by Women in Labor:  
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### Study Findings for Use of Peanut Ball by Laboring Women

<table>
<thead>
<tr>
<th><strong>1st Stage Length</strong> (Including Cervical Dilation)</th>
<th><strong>2nd Stage Length</strong> (Including Descent)</th>
<th><strong>C-Section Rates</strong></th>
<th><strong>Other Outcomes</strong></th>
</tr>
</thead>
</table>
| Among women having elective induction with epidural analgesia, Peanut Ball reduced 1st stage labor duration for primiparous patients significantly more than multiparous patients, p=0.018³ | *Significantly longer 2nd stage of labor in Peanut Ball group (75.63 minutes) vs. control group (57.84 minutes)²* | *Percentage of change for cesarean section rates ranged from 8.2% to 3.19% ² decrease* | **Fetal Presentation**  
No statistically significant differences in occiput posterior presentation (28% vs. 9%; p = 0.09)¹ |
| Use of peanut ball vs. no use of peanut ball demonstrated shorter 1st stage labor of 29 min. (p=0.53)⁴ | *Peanut Ball vs. no use of Peanut Ball demonstrated shorter 2nd stage labor by 11 min (p <0.01)⁴* | *Significantly lower risk of cesarean surgery with Peanut Ball use (OR=0.41; p = 0.4),⁴ when compared with no Peanut Ball use* | **Pushing Duration**  
Peanut Ball use did not alter length of pushing time for either primiparous or multiparous patients, p=0.05 ³  
**Examined and Not Statistically Significant**  
- No statistically significant differences in rates of cervical dilation (0.98 cm/hr vs. 0.79 cm/h; p = 0.27)¹  
- More women who used PB experienced arrest of dilation (did not reach statistical significance [30% vs. 73%; p = 0.05])¹  
- Amongst subgroup with labor arrest, fewer patients using PB experienced arrest of dilation (did not reach statistical significance [30% vs. 73%; p = 0.05])¹  
| **Examined and Not Statistically Significant**  
- No statistically significant differences in active labor (315 min. vs. 387 min.; p = 0.14)¹  
- No significant different in reduction of length of 1st stage labor for multiparous women, p=0.057 with Peanut Ball³  
- No statistically significant differences in rates of cervical dilation (0.98 cm/hr vs. 0.79 cm/h; p = 0.27)¹  
- More women who used PB reached full cervical dilation but not statistically significant ¹  
- Amongst subgroup with labor arrest, fewer patients using PB experienced arrest of dilation (did not reach statistical significance [30% vs. 73%; p = 0.05])¹  
| **Examined and Not Statistically Significant**  
- Peanut Ball group had 2nd stage arrest of descent (70% vs. 27%) but did not reach statistical significance (p = 0.05)¹  

**Table 2.**  
**Perceptions of Peanut Ball Use by Patients and Staff**

<table>
<thead>
<tr>
<th><strong>Perceptions of Peanut Ball Use (Patients)</strong></th>
<th><strong>Perceptions of Peanut Ball Use (Staff)</strong></th>
</tr>
</thead>
</table>
| 64% of women using peanut ball stated it helped facilitate labor progress²  
36% of women using peanut ball stated it provided comfort²  
71% of women would recommend use of the peanut ball² | Positive comments regarding shorter labors and decreased amount of time pushing during 2nd stage of labor²  
May perceive peanut ball use adds to workload² |

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References


Evidence Search Strategies: In March 2018, a review of the literature was conducted on the following clinical question: “For women in active labor, what is the quantity, quality, and consistency of the evidence for the use of birth balls/peanut balls on outcomes such as length of 1st/2nd stages of labor, cesarean section rates, and support to aid laboring women’s coping ability.” The quantity, quality, and consistency of the evidence was examined in an electronic database search from 2008-2018 and/or Open Years search which included PubMed, CINAHNL, Cochrane Library, OneSearch, ClinicalKey, Google Scholar, and TRIP (Translating Research into Practice) databases. The search terms “peanut ball,” “birth ball,” “laboring women,” and “birth,” were utilized in a variety of combinations (Database Search Methodology, Pages 6-7).

The search strategy resulted in 94 relevant hits, in which 23 duplicates were eliminated. Of the 71 remaining articles, 67 articles were excluded after careful examination due to the following: did not answer the clinical question, were outside of the acute environment, and/or focused on labor components outside of the use of peanut balls.

Research for peanut ball use is lacking, with only 4 studies meeting inclusion criteria (Table of Evidence, Pages 8-15). The evidence consists of 2 randomized controlled trials\(^3\),\(^4\) and 2 non-experimental studies.\(^1\),\(^2\) The articles were ranked using the Academy of Evidence-Based Practice Evidence Leveling System (Page 5) and the Johns Hopkins Nursing Evidence-Based Practice tool (Page 5). The strength of the evidence was determined via the Johns Hopkins Evidence Appraisal tool (page 5). The evidence ranged from low to high, with a final evidence grade of moderate.

Study limitations included small sample size\(^1\),\(^3\) and inclusion of a single study site.\(^1\),\(^4\) Reviewers noted that a “failure to progress” diagnosis did not lead to statistical power for one study.\(^1\) The intricacies and multifactorial nature of labor management posed challenges in managing a controlled birthing environment.

Note on Variables: Multiple variables were not controlled, such as nurse workload ratio,\(^1\),\(^3\) healthcare provider practices,\(^1\),\(^4\) and institutional protocols.\(^1\) Key physiological factors integral to labor/birth duration could not be isolated due to non-homogenous groups (primiparous vs. multiparous)\(^2\) and undocumented maternal positions.\(^4\) Additionally, potential nurse perception bias\(^3\) and diverse educational approaches on peanut ball use were not captured.\(^2\) Future testing of this device via large sample randomized control trials is warranted.\(^1\),\(^4\) However, the information in this review provides the best available evidence to date for clinicians to consider when evaluating the use of the peanut ball to assist labor progression for birthing mothers.
### Peanut Ball Use by Women in Labor:  
* A Review of the Literature  

#### Academy of Evidence Based Practice© (EBP)  
Evidence Leveling System (ELS)  

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<th>LEVEL</th>
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<th>RELEVANT ARTICLES</th>
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<td>A</td>
<td>Meta-analysis of multiple large sample or small sample* randomized controlled studies, or meta-synthesis of qualitative studies with results that consistently support a specific action, intervention, or treatment</td>
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<td>#1: Nonrandomized nonexperimental retrospective data analysis and Prospective study</td>
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<td>#2: Single site, nonblinded randomized control trial</td>
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<td>B</td>
<td>Well-designed controlled studies, both randomized and nonrandomized, prospective or retrospective studies, and integrative reviews with results that consistently support a specific action, intervention, or treatment</td>
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<td>D</td>
<td>Peer-reviewed professional organizational standards, with clinical studies to support recommendations</td>
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<td>E</td>
<td>Theory-based evidence from expert opinion or multiple case reports, case studies, consensus of experts, and literature reviews</td>
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* A large sample has adequate power to detect the observed effect with confidence (as seen in significant Confidence Intervals). A small sample may lack confidence in the power of the desired effect (Polit & Beck, 2008)  

Designed by Emma M. Cuenca and Cecelia L. Crawford, Academy of EBP; ©Kaiser Permanente SCAL Regional Nursing Research Program, May 2011  

Adapted from AACN Evidence Leveling System (2009) and Canadian Medical Association & Centre for Evidence-Based Medicine,  

**High Quality: #3**  
(Consistent, generalizable results; sufficient sample size for the study design; adequate control; definitive conclusions; consistent recommendations based on comprehensive literature review that includes thorough reference to scientific evidence OR expertise is clearly evident; draws definitive conclusions; provides scientific rationale; thought leader in the field)  

**Moderate Quality: #1, #4**  
(Reasonably consistent results; sufficient sample size for the study design; some control, and fairly definitive conclusions; reasonably consistent recommendations based on fairly comprehensive literature review that includes some reference to scientific evidence OR expertise appears to be credible; draws fairly definitive conclusions; provides logical argument for opinions)  

**Low Quality: #2**  
(Little evidence with inconsistent results; insufficient sample size for the study design; conclusions cannot be drawn OR expertise is not discernable or is dubious; conclusions cannot be drawn.  

**Final Summary of the Body of Evidence = Moderate Quality**
**Date(s):** 3/15-23/2018

**Literature search topic/clinical question:** For women in active labor, what is the quantity, quality, and consistency of the evidence for the use of birth balls/peanut balls on outcomes such as length of 1st/2nd stages of labor, C-section rates, and support to aid laboring women’s coping ability?

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**Total Articles Included in Literature Review: Database (4) + Contextual Links (0) = 4**

#Controlled vocabulary (subject terms, MESH terms, tagged terms specific to database)

*Use the first database as the main comparison for subsequent database searches and identifying duplicate articles*

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### Clinical Question

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<tr>
<th>Population and/or Patient(s)</th>
<th>Intervention/Interest Area</th>
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<th>Outcome</th>
<th>Time Period (If Applicable; Optional)</th>
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<tr>
<td>P: Laboring women (Epidural anesthesia versus non-epidural)</td>
<td>I: Birth ball; peanut ball</td>
<td>C: Current practice; no use of birth ball/peanut ball</td>
<td>O: Length of 1&lt;sup&gt;st&lt;/sup&gt; + 2&lt;sup&gt;nd&lt;/sup&gt; stage of labor; C-section rates; labor support and coping of laboring women; any information on costs</td>
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**Final Clinical Question:** For women in active labor, what is the quantity, quality, and consistency of the evidence for the use of birth balls/peanut balls on outcomes such as length of 1<sup>st</sup> and 2<sup>nd</sup> stages of labor, C-section rates, and support to aid laboring women’s coping ability?

### Searchable Question

**Key Search Terms:** “peanut ball”; AND/OR “birth ball”; AND/OR birth AND/OR laboring women

**Inclusion Criteria:** laboring women in active labor; acute care; epidural anesthesia; no use of epidural anesthesia; labor stages; C-section rates; labor support for laboring women; coping ability; women; adolescents; costs

**Exclusion Criteria:** Round balls; stand-alone birthing centers; nonacute care settings

**Limitors** (Open year or year ranges, age ranges, and language, etc.): 2008 to 2018; English language; Human; Female

**Databases:** PubMed; CINAHL; Cochrane Library; One Search; ClinicalKey; Translating Research into Practice (TRIP); Google Scholar
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