

Joint Hypermobility in Chiropractic Practice: Part 2: Manipulation safety and evidence-based rehabilitation

Cite: Jagadeesh A, Mohanty P, Ghosh T. Assessment of ergonomic risk factors in the occurrence of work-related musculoskeletal discomfort & pain among cashew workers. Asia-Pac Chiropr J. 2026;7-2. <https://www.apcj.site/JagadeeshErgonomicRiskFactors.pdf>

Manus prompt:

Provide a 2 paragraph summary of this paper by Jagadeesh and colleagues using professional clinical language including key statistical findings and provide 3 multi-choice quiz questions and 3 true/false question with answers

Manus response:

Jagadeesh and colleagues conducted a quantitative cross-sectional study to characterise postural ergonomic risk and pain among 40 cashew-processing workers—20 men and 20 women, aged 35–55 years, in Kasaragod district, Kerala. Participants engaged in either shelling or peeling were recruited by convenience sampling and assessed using the Rapid Entire Body Assessment (REBA) and Visual Analogue Scale (VAS). Mean REBA scores were similar for shelling and peeling workers (7.10 ± 2.36 and 7.15 ± 3.31 , respectively), corresponding to the upper boundary of the medium-risk category; mean VAS pain scores were likewise similar (4.55 ± 1.87 and 4.50 ± 2.01 , respectively), consistent with moderate pain. In the task-stratified analysis, 60% of shelling workers and 40% of peeling workers were classified as medium ergonomic risk, while very high risk was more frequent in peeling than shelling (25% versus 15%). Moderate pain was the most common pain category in both groups, affecting 50% of shelling workers and 55% of peeling workers; no participant was classified as pain-free.¹

Pain intensity was significantly and positively associated with ergonomic risk in both sexes. Among men, the relationship between REBA and VAS scores was strong ($r = 0.725$, $df = 18$, $p = 0.0001$); among women, it was moderate ($r = 0.538$, $df = 18$, $p = 0.014$). Moderate pain was reported by 60% of men and 45% of women, while women showed a wider distribution across mild, moderate, and severe pain categories. These findings support targeted occupational interventions, including workstation redesign, postural training, scheduled rest breaks, task rotation, joint-protection education, and energy-conservation strategies. Clinical interpretation should remain cautious because the study's cross-sectional design cannot establish causality, and its small convenience sample limits generalisability; psychosocial and organisational determinants were also not assessed. In addition, the article contains a minor internal inconsistency: the task-stratified REBA table records one peeling worker at negligible risk, whereas the sex-stratified table reports no participants at negligible risk.¹

Quiz:

1. Which instruments were used to assess ergonomic risk and pain intensity?

- A. RULA and Numeric Rating Scale
- B. REBA and Visual Analogue Scale
- C. Oswestry Disability Index and DASH
- D. Nordic Musculoskeletal Questionnaire and Borg Scale

Answer: B. REBA and Visual Analogue Scale. The Rapid Entire Body Assessment (REBA) evaluated posture-related ergonomic risk, while the Visual Analogue Scale (VAS) measured subjective pain intensity.

2. Which task group had the greater proportion of workers classified as being at very high ergonomic risk?

- A. Shelling workers
- B. Peeling workers
- C. Both groups had equal proportions
- D. The study did not report this outcome

Answer: B. Peeling workers. Very high REBA risk was reported among 25% of peeling workers, compared with 15% of shelling workers.

3. Which statement best describes the association between REBA and VAS scores among male workers?

- A. Strong, positive, and statistically significant
- B. Moderate, negative, and statistically significant
- C. Weak, positive, and not statistically significant
- D. No association

Answer: A. Strong, positive, and statistically significant. The correlation was $r = 0.725$, $p = 0.0001$, indicating that greater ergonomic risk was associated with higher pain intensity among male workers.

1. Moderate pain was the most frequently reported VAS category among both shelling and peeling workers.

Answer: True. Moderate pain was reported by 50% of shelling workers and 55% of peeling workers.

2. The reported correlations demonstrate that ergonomic exposure caused the workers' pain.

Answer: False. The cross-sectional study identified an association between ergonomic risk and pain, but its design cannot establish causality.

3. The association between REBA and VAS scores was statistically significant among both male and female workers.

Answer: True. The association was significant among men ($r = 0.725$, $p = 0.0001$) and women ($r = 0.538$, $p = 0.014$).

