ASSESSMENT OF SCAPULAR DYSKINESIA IN MANUAL WORKING FARMERS

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Abstract

Background: *Farming is a physically demanding occupation that places workers at high risk of musculoskeletal disorders due to repetitive motions, awkward postures, and heavy manual labor. Scapular dyskinesia, a biomechanical alteration of scapular motion, is often overlooked as a cause of shoulder pain and dysfunction.*

Aim: *To assess the prevalence of scapular dyskinesia in manual working farmers aged 25–35 years using the Scapular Slide Test (SST).*

Methods: *A cross-sectional study was conducted among 166 manual working farmers (87 females, 79 males) in Panvel, Navi Mumbai. Participants aged 25–35 years with ≥10 years of farming experience, working ≥6 days/week for ≥8 hours/day, were included. Scapular dyskinesia was assessed using the Scapular Slide Test at four shoulder abduction angles (45°, 90°, 120°, and 150°). A difference of >1.5 inches between scapular positions was considered positive. Data were analyzed using SPSS v20.0 with descriptive statistics.*

Results: *The mean age of participants was 29.05 ± 3.39 years. Right-hand dominance was seen in 98.8% of participants. Scapular dyskinesia was identified in 10.8% of farmers, while 89.2% demonstrated normal scapular motion. Gender-wise, 52.4% of participants were female and 47.6% were male.*

Conclusion: *The prevalence of scapular dyskinesia among manual working farmers was found to be 10.8%. Although the majority had normal scapular function, repetitive and strenuous farm work poses a risk for scapular dysfunction and musculoskeletal disorders. Early screening, ergonomic interventions, and strengthening programs are recommended to minimize the risk of shoulder injuries and improve functional efficiency in farmers.*

Keywords: Scapular dyskinesia, farmers, musculoskeletal disorders, scapular slide test, shoulder biomechanics.

INTRODUCTION

Agriculture contributes significantly to India's economy and provides employment to a large proportion of the population. However, it is also physically demanding and exposes farmers to a high risk of musculoskeletal disorders. Repetitive manual tasks such as planting, harvesting, and tilling require sustained upper limb effort, leading to potential shoulder dysfunctions. The glenohumeral joint, supported by dynamic and static stabilizers, coordinates with the scapula in a 2:1 rhythm to facilitate smooth motion. Disturbances in this rhythm may lead to scapular dyskinesia—an abnormal movement or positioning of the scapula relative to the thoracic cage. This condition can be classified into three types: inferomedial border prominence, medial border prominence, and superomedial border prominence, each associated with distinct muscular imbalances. The study emphasizes assessing scapular dyskinesia among manual working farmers to understand its prevalence and impact.

NEED OF STUDY

Farming is a physically strenuous occupation that predisposes workers to musculoskeletal disorders due to repetitive motion, heavy lifting, and awkward postures. Alterations in scapulohumeral rhythm may result from these factors, leading to shoulder dysfunctions that impact daily activities and productivity. Understanding the epidemiology of scapular dyskinesia among farmers can help in designing targeted preventive and rehabilitative measures.

AIM AND OBJECTIVES

Aim: To assess scapular dyskinesia in manual working farmers aged 25 to 35 years.

Objectives:
- To assess scapular dyskinesia in manual working farmers using the Scapular Slide Test (SST).
- To determine the prevalence of scapular dyskinesia based on age, gender, and dominance patterns.

MATERIALS AND METHODOLOGY

Study Design: Cross-sectional study
Duration: 18 months
Location: Panvel, Navi Mumbai
Sample Size: 166 farmers
Sampling Method: Convenience sampling

INCLUSION CRITERIA:

- Age 25–35 years
- ≥10 years of farming experience
- Both genders
- Minimum 6 working days/week, 8 hours/day

EXCLUSION CRITERIA:

- Neurological impairments (e.g., nerve injuries)
- History of upper limb fractures
- Hereditary musculoskeletal disorders
- Non-cooperative participants

PROCETURE:

After informed consent, participants underwent the Scapular Slide Test (SST). Measurements were taken bilaterally at four angles of abduction (45°, 90°, 120°, 150°). A difference >1.5 inches indicated scapular dyskinesia.

Outcome Measure: Scapular Slide Test
Statistical Analysis: Data were analyzed using SPSS v20.0 with mean, SD, frequency, and percentage.

RESULT

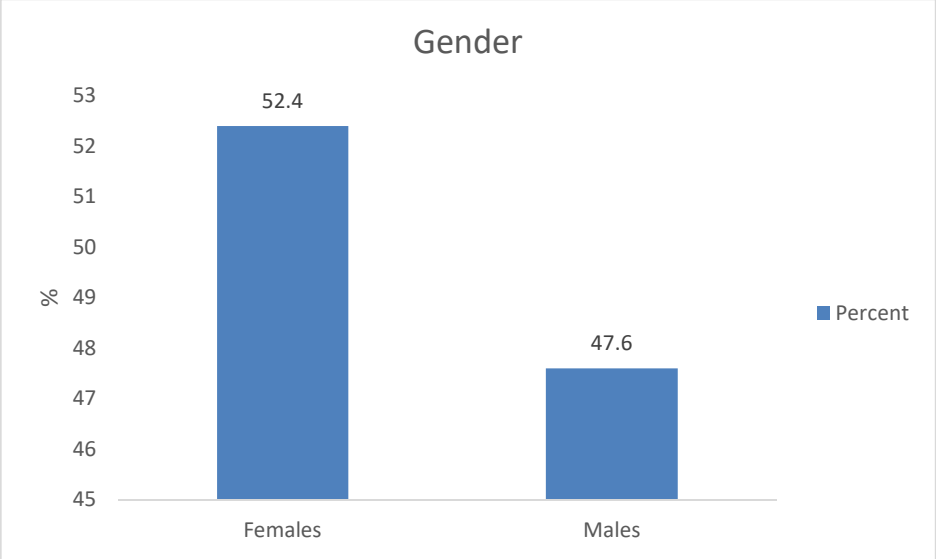
All statistical analysis is done by using SPSS 20.0 version.

Out of 166 farmers, 87 (52.4%) were female and 79 (47.6%) were male, with an average age of 29.05 years. Right-hand dominance was noted in 98.8% of participants. The Scapular Slide Test was positive in 10.8% of farmers, indicating scapular dyskinesia. The results suggest that repetitive upper-limb movements and prolonged postural strain may contribute to altered scapular kinematics.

Table 1: Gender wise distribution of manual working farmers

Gender	Frequency	Percent
Females	87	52.4
Males	79	47.6
Total	166	100

Graph 1: Bar diagram representing gender wise distribution of manual working farmers

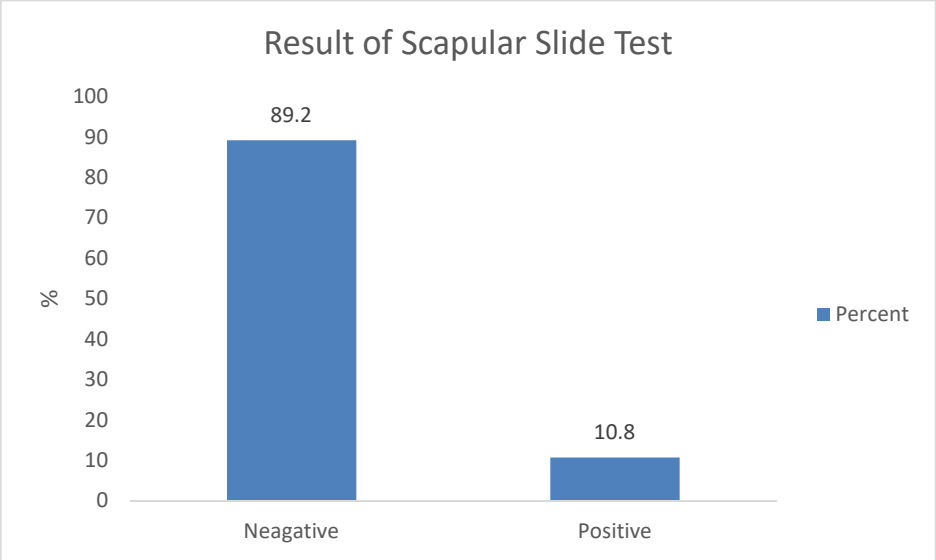


There were 87 (52.4%) of female farmers and 79 (47.6%) male farmers.

Table 2: Scapular Slide Test wise distribution of manual working farmer

Result of Scapular Slide Test	Frequency	Percent
Negative	148	89.2
Positive	18	10.8
Total	166	100

Graph 2: Bar diagram representing Scapular Slide Test wise distribution of manual working farmers

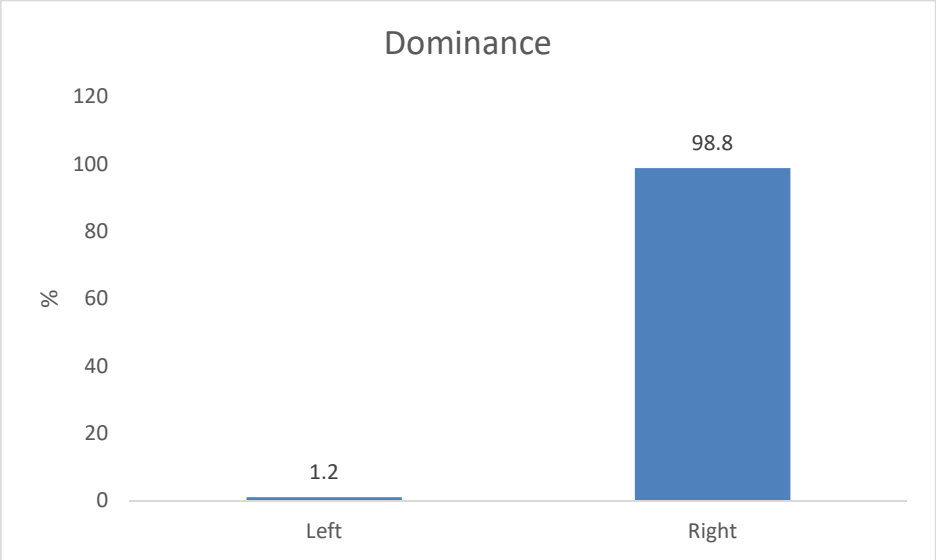


There were 148 (89.2%) of farmers having negative scapular slide test and 18 (10.8%) of farmers having positive scapular slide test.

Table 3: Dominance wise distribution of manual working farmers

Dominance	Frequency	Percent
Left	2	1.2
Right	164	98.8
Total	166	100

Graph 3: Bar diagram representing dominance wise distribution of manual working farmers



There were only 2 (1.2%) of farmers having left dominance and 164 (98.8%) of farmers having right dominance.

Table 4. Age wise distribution of manual working farmers

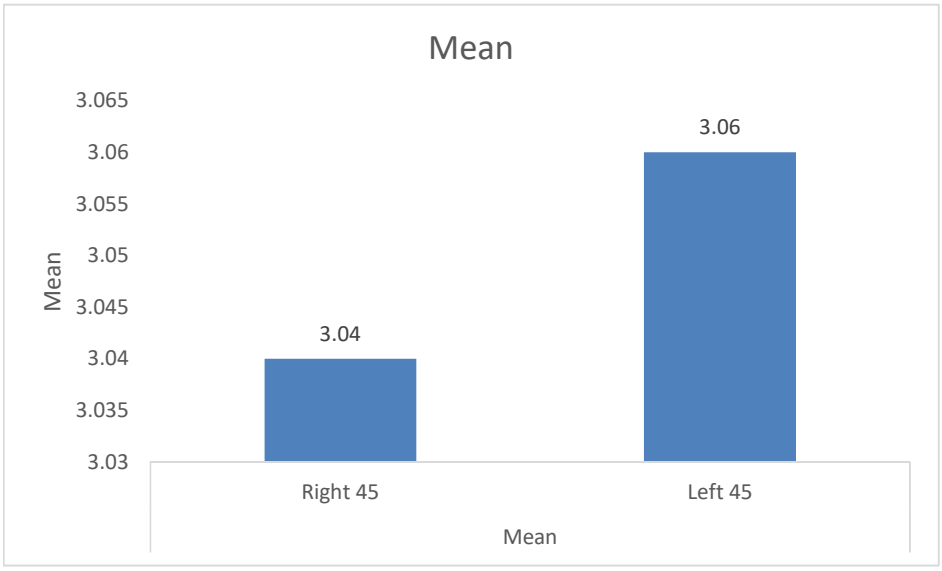
Age (in years)	Minimum	Maximum	Mean	Std. Deviation
	25	35	29.05	3.39

Mean age of the farmers was 29.05 years

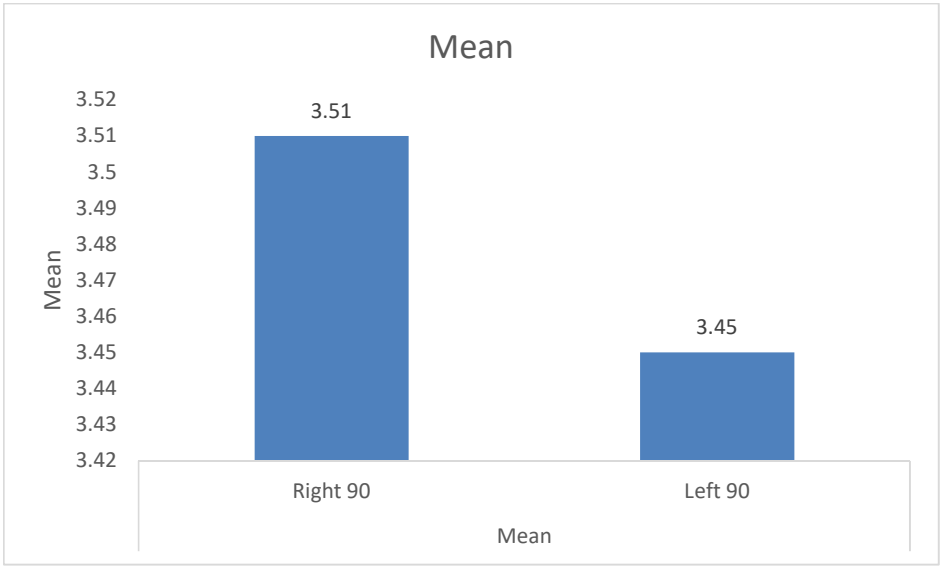
Table 5. Mean result of scapular slide test in right and left side at different degrees

Scapular test				
Variables	**Minimum**	**Maximum**	**Mean**	**Std. Deviation**
Right 45	1.5	4.1	3.04	0.35
Right 90	2	5.5	3.51	0.48
Right 120	2.4	46	4.27	3.29
Right 150	2.5	6	4.41	0.50
Left 45	1.5	4.1	3.06	0.38
Left 90	2	4.6	3.45	0.37
Left 120	2.4	33.7	4.16	2.35
Left 150	3.8	6.5	4.38	0.43

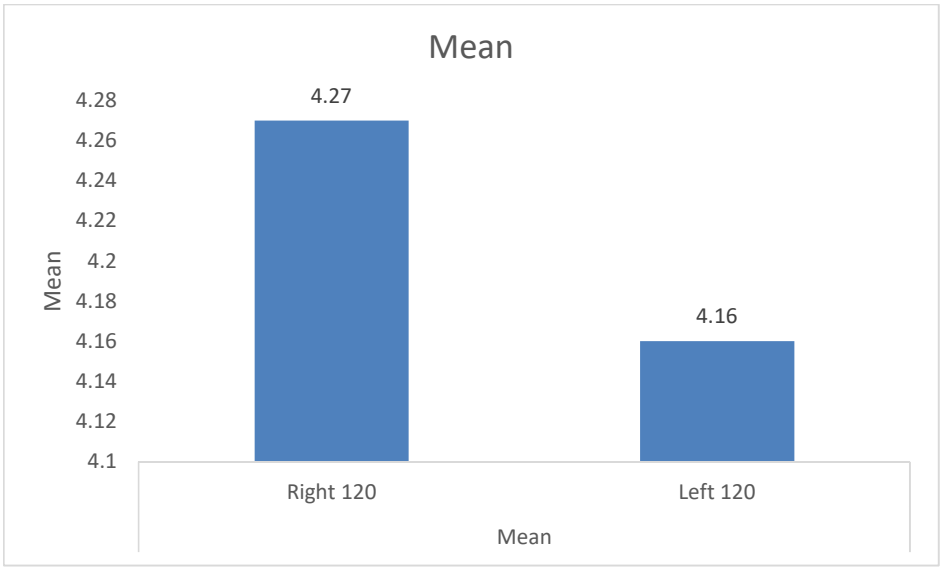
Graph 4: Bar diagram representing mean result of scapular slide test at 45 degree



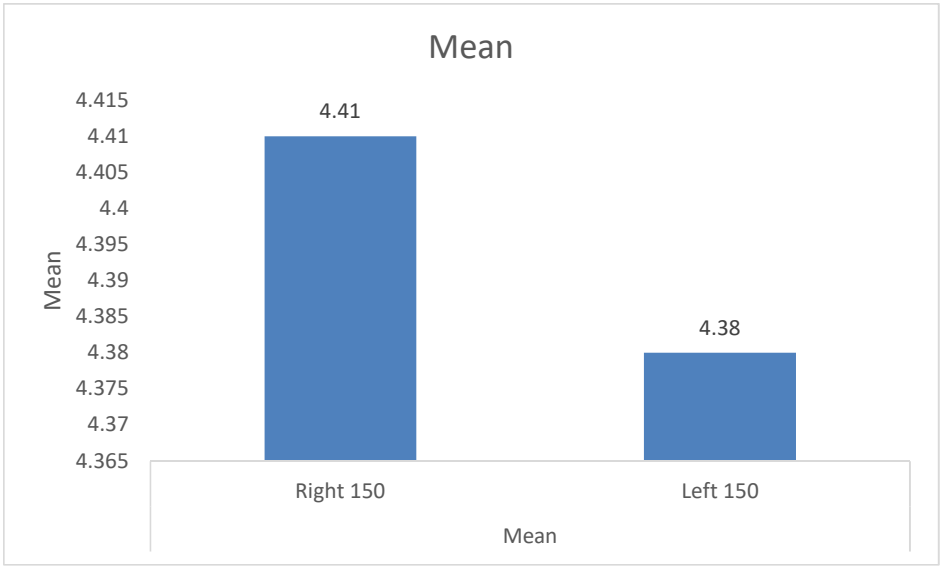
Graph 5: Bar diagram representing mean result of scapular slide test at 90 degree



Graph 6: Bar diagram representing mean result of scapular slide test at 120 degree



Graph 7: Bar diagram representing mean result of scapular slide test at 150 degree



DISCUSSION

The present study aimed to assess scapular dyskinesia in manual working farmers aged 25 to 35 years using the Scapular Slide Test (SST). The findings revealed that 10.8% of farmers demonstrated positive results, suggesting the presence of scapular dyskinesia, while 89.2% showed normal scapular movement. This indicates that a significant portion of the farming

population experiences early scapular imbalance due to repetitive and strenuous work demands. Farming involves prolonged bending, lifting, and overhead activities that place substantial strain on the shoulder complex. Repetitive use of the dominant hand, poor posture, and limited recovery time may contribute to muscular fatigue and altered scapulohumeral rhythm. These mechanical alterations can lead to microtrauma in stabilizing muscles, particularly the serratus anterior and lower trapezius, which are essential for maintaining scapular stability.

The results of this study are consistent with earlier research. Jain et al. (2018) reported that shoulder musculoskeletal disorders were present in 56.4% of manual working farmers, while Walker-Bone and Palmer (2002) described farming as one of the most physically demanding occupations, leading to a high incidence of shoulder and back pain. Osborne et al. (2012) further identified musculoskeletal disorders as more prevalent among farmers than in non-farming populations, with lower back and upper limb pain being most frequent. These findings support the current study's observation that repetitive motion and physical strain inherent in farming contribute to scapular dysfunction. Moreover, Kee and Haslam (2019) noted that ergonomic interventions significantly reduced work-related musculoskeletal problems among Korean farmers. Implementing similar preventive measures, such as posture correction, workplace modifications, and strengthening programs for shoulder stabilizers, may help reduce scapular dyskinesia and enhance occupational health among Indian farmers. Future studies incorporating motion analysis and electromyography may provide deeper insights into dynamic scapular movements and rehabilitation strategies.

CONCLUSION

This study concludes that 10.8% of manual working farmers exhibited scapular dyskinesia. Although most farmers showed normal scapular motion, repetitive and physically demanding farm activities increase the risk of shoulder dysfunction. Early screening and physiotherapy-based preventive strategies can improve musculoskeletal health and occupational performance among farmers.

LIMITATION

The Scapular Slide Test provides only a static evaluation and does not measure scapular movement during functional tasks. Future research incorporating motion analysis or electromyography could provide deeper insights into scapular dynamics among farmers.

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