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PREVALENCE OF SCAPULAR DYSKINESIS AMONG DHOL PLAYERS OF AGED 20 TO 40 YEARS IN JALGAON: A CROSS-SECTIONAL STUDY

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Abstract

Background: Dhol playing involves repetitive, forceful, and sustained upper-limb movements that may place considerable stress on the shoulder complex and scapular stabilizing muscles. repetitive shoulder movements may contribute to altered scapular positioning and movement, commonly referred to as scapular dyskinesis. however, limited information is available regarding scapular dyskinesis among dhol players. **Aim:** to study the prevalence of scapular dyskinesis among dhol players aged 20 to 40 years in jalgaon. **Objectives:** to determine the prevalence of scapular dyskinesis among dhol players and to identify the common pattern of scapular dyskinesis. **Methodology:** an observational cross-sectional study was conducted among dhol players in jalgaon over a period of six months. a total of 80 male dhol players aged 20–40 years, with at least one year of dhol-playing experience, were included using convenient sampling. participants with severe shoulder or scapular injuries, neurological conditions affecting the upper limb, or musculoskeletal disorders of the upper extremity were excluded. scapular dyskinesis was assessed clinically using the lateral scapular slide test (lsst). the test was performed in three positions, and a bilateral difference of 1.5 cm was considered positive according to the study protocol. **Results:** among the 80 participants, 41 (51%) demonstrated scapular dyskinesis, whereas 39 (49%) did not. type i was the most frequently observed pattern, present in 35 participants (43.75%), followed by type iii in 21 (26.25%), type ii in 12 (15%), and type iv in 12 (15%). the mean age of the participants was 24.76 ± 3.05 years, and the mean dhol-playing experience was 2.08 ± 0.93 years. **Conclusion:** the study found that scapular dyskinesis was prevalent among dhol players aged 20–40 years in jalgaon, with 51% of participants showing positive findings. type i scapular dyskinesis was the most common pattern. these findings highlight the importance of early screening, ergonomic education, and preventive physiotherapy strategies focusing on scapular muscle function in dhol players.

Keywords: scapular dyskinesis, dhol players, lateral scapular slide test, shoulder, scapular movement, prevalence, physiotherapy.

Introduction

Shoulder joint function may be affected by changes in scapular position and motion. When scapular motion becomes altered, the appropriate term to use would be scapular dyskinesia. ⁽¹⁾ “dys” (alteration of) “kinesis” (motion) is a general term that reflects loss of control of normal scapular physiology, mechanics, and motion. Scapular dyskinesia is defined as alterations in the normal position of the scapula and the patterns of scapular motion during scapulohumeral movements. Scapular “winging” has been used as a term synonymous with dyskinesia; however, “winging” is best reserved for altered scapular motion driven by neurological compromise ⁽²⁾

The scapula is the large triangular-shaped bone behind the thoracic region and an important link between the trunk and the shoulder complex with a key role for the upper limb kinematic chain. ⁽³⁾ The scapula's stability is dependent on the surrounding musculature, with several muscles that attach directly to the scapula. ⁽⁴⁾ Scapular control is essential for effective shoulder movement, particularly during arm elevation. The scapula upwardly rotates, posteriorly tilts, and externally rotates, while the clavicle elevates, retracts, and posteriorly rolls. This coordinated movement involves the acromioclavicular and scapulothoracic joints and contributes to the scapulohumeral rhythm, which has a 2:1 ratio of humeral to scapular movement. For 180 degrees of arm elevation, 120 degrees come from the glenohumeral joint and 60 degrees from scapular upward rotation. Key muscles for upward rotation include the upper and lower trapezius and the serratus anterior, while the thoracic spine extends to support the movement. ⁽⁵⁾

Shoulder dysfunction (SD) is associated with various pathologies including acromioclavicular instability, shoulder impingement, rotator cuff injuries, glenoid labrum injuries, and clavicle fractures. Contributing factors include tightness of the pectoralis minor and short head of the biceps, as well as stiffness of the posterior glenohumeral capsule. Additionally, neck-related issues such as mechanical neck pain and cervical nerve root syndromes, along with posterolateral problems like excessive thoracic kyphosis and cervical lordosis, are commonly observed in athletes and can exacerbate SD. ^(6,7,8,9,10)

Kibler has defined three dyskinetic patterns. Type i is the prominence of the inferomedial border of the scapula due to abnormal posterior tilt of the scapula; when this type occurs isolatedly, the scapula may be lower than the opposite side. Type ii consists in the prominence of its entire medial border of the scapula. These types could be seen with superior labrum injuries (slaps). Type iii displays upward rotation of the superomedial border of the scapula around of the scapula, this type can be seen when the size of the acromio humeral space decreases or potential rotator cuff injuries occur. Also type iv is defined as normal scapular position and motion. ⁽¹¹⁾

Lateral scapular slide test, also known as the (lsst), is a clinical assessment used by healthcare professionals, particularly in physical therapy and sports medicine, to evaluate scapular (shoulder blade) mobility and the presence of scapular dyskinesia or abnormal movement patterns. It is often employed in the assessment of individuals with shoulder pain, dysfunction, or suspected scapular related issues. ⁽¹²⁾

Need of the study.

Dhol playing is a physically demanding activity involving repetitive, forceful, and sustained upper limb movements that place significant stress on the shoulder complex, particularly the scapular muscles. Such repetitive actions may lead to altered scapular motion, muscle imbalance, and the development of scapular dyskinesia, resulting in shoulder pain and functional limitations. Although scapular dyskinesia has been studied among athletes, there is a lack of research focusing on traditional musicians such as dhol players, who often perform for prolonged durations without adequate rest or ergonomic awareness. In Jalgaon, where dhol playing is an integral part of cultural and social events, no data exist on the prevalence of scapular dyskinesia in this population. Therefore, this study is needed to determine the prevalence of scapular dyskinesia among dhol players in Jalgaon, to promote early identification, preventive physiotherapy interventions, and enhance performance and musculoskeletal health.

Aim

To find the prevalence of scapular dyskinesia among dhol players of aged 20 to 40 years.

Objectives

To find out the prevalence of scapular dyskinesia among dhol players using Lateral Scapular Slide test.

To observe the pattern of scapular dyskinesia.

Research question

What is the prevalence of scapular dyskinesia among dhol players aged 20 to 40 years?

Review of literature

Yuksel e, yesilyaprak ss. Scapular stabilization exercise training improves treatment effectiveness on shoulder pain, scapular dyskinesia, muscle strength, and function in patients with subacromial pain syndrome: a randomized controlled trial. Journal of bodywork and movement therapies. 2024 jan 1;37:101-8. They included sixty-four patients with sps who also exhibit observable scapular dyskinesia defined by the scapular dyskinesia test were recruited and randomized to scapular stabilization exercise training group or to control group. All participants received the same rehabilitation protocol including glenohumeral and scapular mobilization, pendulum exercises, shoulder stretching, range of motion exercises, strengthening, and proprioceptive exercises. This study indicate that scapular stabilization exercises added to the shoulder mobilization, stretching, and strengthening are effective in improving scapular dyskinesia, reducing pain, increasing muscle strength and shoulder function in patients with sps accompanied by scapular dyskinesia. (13)

1. Dhama k, sharma s. A study to assess scapular dyskinesia in healthy individuals aged 25-35 years. International journal of science and healthcare research [internet]. 2022 jul;7(3):157-67. Ethical clearance from the committee of the institution and consent from participants was taken. Participants were screened, after which the lateral scapular slide test. This study indicate that there was prevalence of scapular dyskinesia in healthy individuals between the age of 25-35 years, thus can be used as a baseline strategy for rehabilitation program. (14)

2. Sağlam g, telli h. The prevalence of scapular dyskinesia in patients with back, neck, and shoulder pain and the effect of this combination on pain and muscle shortness. Agri: journal of the turkish society of algology/tu? Rk algoloji (ag? R?) Derneği'nin yayın organidir. 2022 apr 1;34(2). They included: a total of 121 patients with neck, back, or shoulder pain were included in this prospective cross-sectional study. Demographic and clinical data of the patients were recorded. It was evaluated the intensity of pain with the visual analogue scale (vas), the presence of muscle shortness with muscle shortness tests, and scapular dyskinesia with the lateral scapular slide test. This study indicates that evaluation of the presence of scapular dyskinesia in a physical examination in patients with neck, back, and/ or shoulder pain will be a guide for the diagnosis and treatment of pain-related problems. (15)

3. Sciascia a, kibler wb. Current views of scapular dyskinesia and its possible clinical relevance. International journal of sports physical therapy. 2022 feb 2;17(2):117. Eighty-three percent of patients with shoulder pain seek treatment due to impaired function in key activities. Dysfunction, resulting from a combination of anatomical, physiological, and mechanical issues, lead to symptoms and injuries. This model helps in structuring the clinical evaluation process. This study highlights that scapular dyskinesia involves multiple factors, best assessed through a comprehensive physical exam. While understanding pathoanatomical causes is important, focusing on scapular contributions and motor control in rehabilitation is crucial. Future research should standardize methods for better comparison and quality. (16)

4. Jung jw, kim yk. Scapular dyskinesis in elite boxers with neck disability and shoulder malfunction. *Medicina*. 2021 dec 9;57(12):1347. They include seventy-two elite boxers participated in this study. Scapular dyskinesis was evaluated as normal, subtle, and obvious. Neck disability index (ndi), shoulder internal (ir), and 10 external (er) range of motion (rom), isometric strength of ir and er, and pectoralis minor length were measured and compared with the severity of scapular dyskinesis. Results: thirty-eight boxers showed scapular dyskinesis. Ndi score was significantly different. Isometric ir strength was significantly different. The length of the pectoralis minor was significantly different and the dominant and non-dominant arm ir rom was significantly different. It concluded that the prevalence of scapular dyskinesis is high among elite boxers. Boxers with scapular dyskinesis presented shoulder malfunction as well as neck disability. Further investigation is necessary to examine the relationship between scapular dyskinesis and neck disability in boxer. ⁽¹⁷⁾
5. Mahale a, bisen r, kalra k. Prevalence of scapular dyskinesia in elite badminton players in pune. *Intern j health sci res*. 2020 nov;1:127-34. A 100, injury-free, male and female elite badminton players (18-29 years old) playing for 5 to 10 years with regular training of 1.5-2 hours per session with a minimum of 4 sessions per week were included in the study. The sd was measured by performing the lateral scapular slide test (lsst). This study indicates that sd is prevalent in elite badminton players on the dominant side with type 1 being the commonest. Players who played between 8 to 10 years reported with an increased prevalence. ⁽¹⁸⁾
6. Andres j, painter pj, mcilvain g, timmons mk. The effect of repeated shoulder motion on scapular dyskinesis in army rotc cadets. *Military medicine*. 2020 may;185(5-6):e811-7. They include about 30 army reserve officer training corps (rotc) cadets participated in the research study. The cadet's level of shoulder function was determined using the quick disabilities of the arm shoulder and hand and pennsylvania shoulder score shoulder scores. Cadets performed an exercise protocol of 30 repetitions of weighted shoulder motion in the frontal plane. Shoulder and scapular musculature strength measurements were recorded prior to and immediately following the exercise protocol using hand-held dynamometry. The scapular dyskinesis test was performed prior to the exercise protocol and during the last five repetitions of the exercise protocol. They concluded that repeated shoulder motion increased the frequency of scapular dyskinesis in army rotc cadets. The cadets that developed scapular dyskinesis also reported greater disability and lower function of the upper extremity. The results provide a link between scapular dyskinesis, upper extremity function, and the strength of the scapular stabilizing muscles. Improving the strength of the scapular stabilizing musculature might reduce the effects of repeated arm motions. ⁽¹⁹⁾
7. Hickey d, solvig v, cavalheri v, harrold m, mckenna l. Scapular dyskinesis increases the risk of future shoulder pain by 43% in asymptomatic athletes: a systematic review and meta-analysis. *British journal of sports medicine*. 2018 jan 1;52(2):102-10. They included five studies were included with a total of 419 athletes' prospective studies that assessed athletes for scapular dyskinesis and recorded incidents of shoulder pain were included. Study quality was assessed using the downs and black checklist. Meta-analysis was conducted to derive a pooled risk ratio (rr) for the development of shoulder pain in athletes with scapular dyskinesis compared with those without scapular dyskinesis. This study indicates that athletes with scapular dyskinesis have 43% greater risk of developing shoulder pain than those without scapular dyskinesis. ⁽²⁰⁾
8. Depreli o, ender angın e, yatar ig, kirmizigil b, malkoc m. Scapular dyskinesis and work-related pain in office workers-a pilot study. *Int j phys ther rehab*. 2016;2(117):2. They included 36 office workers were participated to this study. Lateral scapular slide test (lsst) was used to evaluate the scapular dyskinesis. For evaluation activities and functionality of upper extremity of individuals, the shortened version of the disabilities of the arm, shoulder and hand questionnaire (quick dash) was used. Neck disability index (ndi) was used for functional evaluation of the neck. Visual analogue scale (vas) was used for assessing the severity of pain. It concluded that percentage of scapular dyskinesis was found high at office worker in this pilot study. Although the number of people affects the reliability of the results, study will be developed by increasing the number of people in the future. ⁽²¹⁾

9. Braman jp, engel sc, laprade rf, ludewig pm. In vivo assessment of scapulohumeral rhythm during unconstrained overhead reaching in asymptomatic subjects. Journal of shoulder and elbow surgery. 2009 nov 1;18(6):960-7. The contribution of scapulothoracic and glenohumeral motion to overall shoulder motion remains difficult to determine. We sought to determine the exact ratio between these two motion components in order to better understand overall shoulder kinematics in asymptomatic individuals in unconstrained reaching. This study assessed shoulder motion using bone-fixed sensors to quantify scapulohumeral motion during unconstrained raising and lowering of the arm. Electromagnetic tracking devices rigidly fixed to bone pins recorded active scapular and humeral motion. We found a difference in the ratio of glenohumeral elevation to scapular upward rotation during arm rising (2.3) and lowering (2.7). Each degree of glenohumeral elevation yielded scapular upward rotation of 0.43 ((raisin compared with downward rotation of 0.3} ((lowering), across the motion arc. Until 125 of glenohumeral elevation, the scapula internally rotated and then externally rotated with further elevation. Scapular upward rotation and posterior tilting progressively increased until maximal elevation. Scapulohumeral rhythm was greatest in the first increment of raising the arm and higher overall when lowering the arm. Understanding these data allows improved evaluation of potential motion abnormalities in patients with shoulder pathology and may improve treatment for restoration of normal shoulder motion. 22009 journal of shoulder and elbow surgery board of trustees. ⁽²²⁾

Materials

1. Informed consent
2. Patient evaluation sheet
3. Marker
4. Measuring tape
5. Pen and paper

Methodology

Study design/type: observational study.

Study population: dhol player.

Study setting: jalgaon.

Study duration: 6 months.

Sampling method: convenient sampling.

Sample size: 80

Minimum sample size (n) - estimation of population proportion

$$n = \frac{Z^2 pq}{d^2}$$

P	Your guess of population p (any value<1)	0.61
Q	1-p	0.39
1-α	Confidence level set by you	0.95
Z	Z value associated with confidence	1.96
D	Absolute precision	0.11
N	Minimum sample size	76

Selection criteria

Inclusion criteria: -

Male individual between 20 to 40year old.

Dhol player with at least a year or more experience.

Exclusion criteria: -

History of severe shoulder or scapular injuries.

Neurological diseases affecting upper extremity (brachial plexus injury. Wrist drops).

Musculoskeletal injury or diseases upper extremity (recurrent shoulder dislocation, frozen shoulder, fracture upper limb).

Unwilling to provide informed consent.

Outcome measure

Lateral scapular slide test (lsst):

Kibler described a test to clinically measure static scapular positions called the lateral scapular slide test (lsst). This test involves measuring the distance from the inferior angle of the scapula to the nearest

vertebral spinous process using a tape measure or goniometer in three positions: shoulder in neutral, shoulder at 40-45 degrees of coronal plane abduction with hands resting on hips, and the shoulder at 90 degrees abduction with the arms in full internal rotation.

The lateral scapular slide test (lsst) demonstrates good to excellent inter-rater reliability, with intraclass correlation coefficient (icc) values ranging from 0.70 to 0.96 across the three test positions. ⁽¹²⁾

The lateral scapular slide test (lsst) demonstrates limited diagnostic validity, with reported sensitivity ranging from 35–50% and specificity ranging from 48–58% ⁽¹³⁾

Procedure

Permission from institutional ethical committee was taken.



Subjects was selected according to the inclusion and exclusion criteria.



Purpose of study was explained and a written consent was taken from the subject.



Subject was assisted with lateral scapular slide test.



After collecting data statistical analysis was done.

The test is done in 3 positions. With the arm abducted to 0° 45° and 90° degrees in the coronal plane.

Position 1 involves placement of the shoulder in glenohumeral joint in neutral, with the arms relaxed at the side.



Position 2 the humerus is placed in medial rotation and 45° degrees abduction, by positioning the patient's hands around the waist.



Position 3 the humerus is placed in maximal medial rotation and 90^0 degrees abduction.



Measurements of scapular position are taken bilaterally from the inferior angle of the scapula to the spinous process of the thoracic vertebra in the same horizontal plane (the reference vertebra) in all 3 test positions.

Test is positive when there is a difference of 1.5 cm when measurements are compared bilaterally.

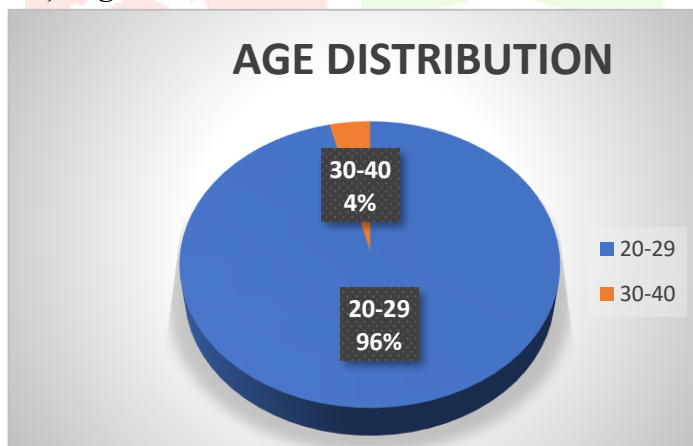
Statistical analysis

A total 80 participants were a part of this study. The obtained data of outcome measures was noted and entered in ms excel before it was statistically analysed all the results are shown in tabular as well as graphical format to visualize the statistically difference more clearly.

Table 1): Age wise Distribution

Sr.no.	Variable	Groups	Frequency	Percentage
1	Age (in year)	20 to 29	77	96
		30 to 40	3	4
Mean			SD	
24.76			3.04	

The table shows age wise distribution of study subject. 20 to 29 age percentage is 96 and 30 to 40 ages are 4. Mean age value is 24.76 and SD value is 3.04 in this project.

Graph 1): Age wise Distribution

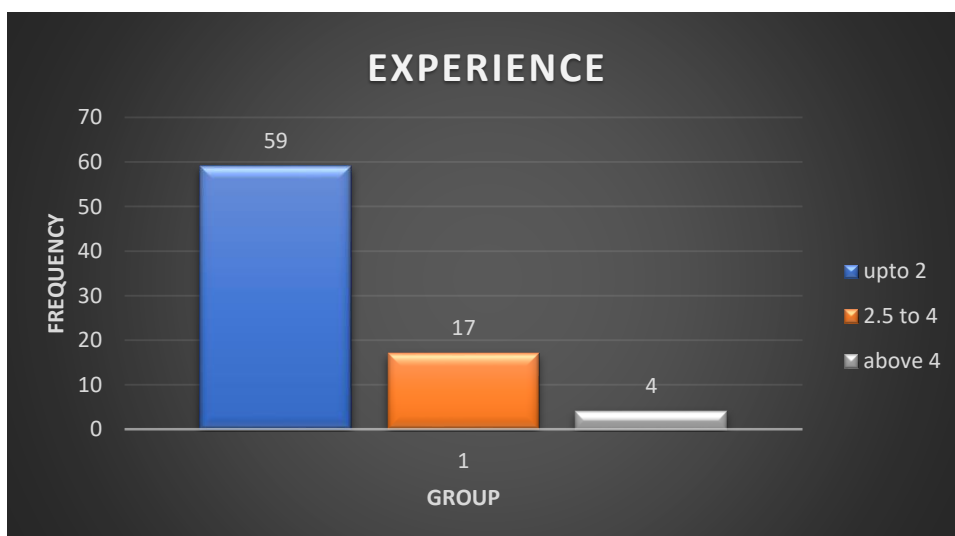
The graph shows age wise distribution of study subject. 20 to 29 age percentage is 96 and 30 to 40 ages are 4. Mean age value is 24.76 and SD value is 3.04 in this project.

Table 2): Experience wise Distribution

Sr.no	Variable	Groups	Frequency	Percentage
2	Experience (in year)	Up to 2	59	73.75%
		2.5 to 4	17	21.25%
		Above 4	4	5%

Mean	SD
2.08	0.93

The Table shows experience wise distribution of study subject mean experience value is 2.08 and SD value is 0.93 in this study project.

Graph 2): Experience wise Distribution

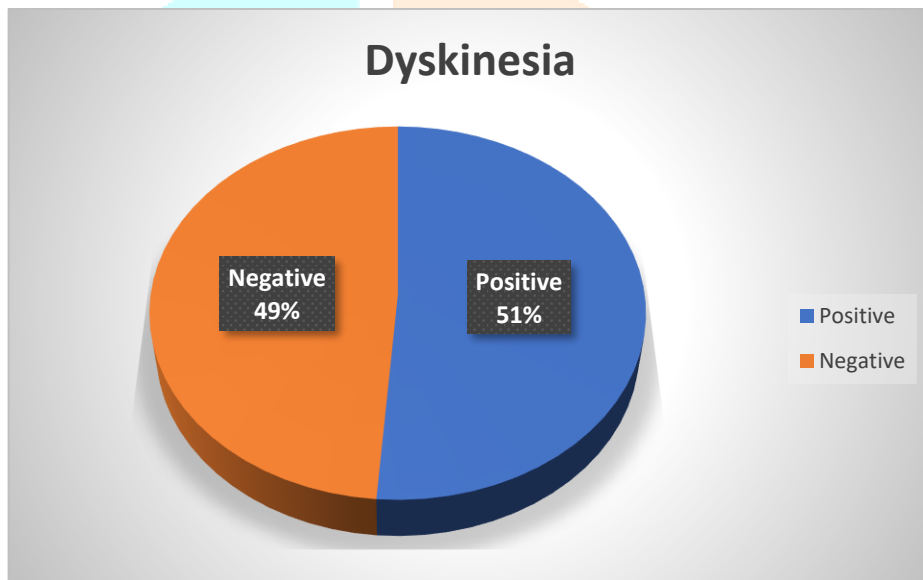
The graph shows experience wise distribution of study subject mean experience value is 2.08 and SD value is 0.93 in this study project.

Table 3): Scapular Dyskinesis among Dhol players

Sr.no.	Variable	Group	Frequency	Percentage
3	Dyskinesis	Positive	41	51
		Negative	39	49

This table
shows out
of 80

participate in this study. 41 participate had positive dyskinesia and their percentage is 51. 39 participate had negative dyskinesia and their percentage is 49.

Graph 3): Scapular Dyskinesis among Dhol players

This graph shows out of 80 participate in this study. 41 participate had positive dyskinesia and their percentage is 51. 39 participate had negative dyskinesia and their percentage is 49.

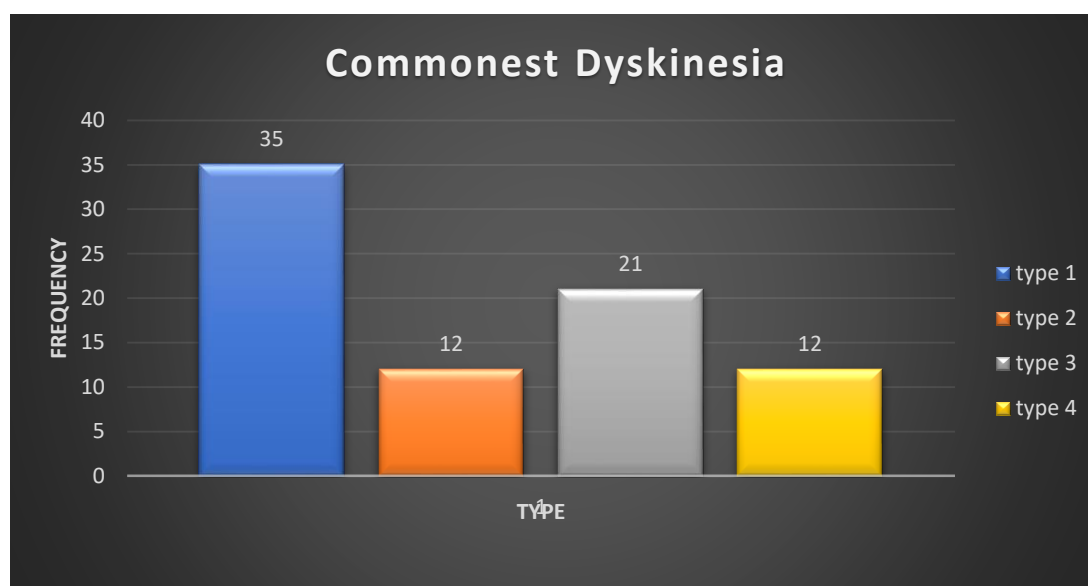
Table 4): Commonest Scapular dyskinesis among Dhol players

Sr.no	Variable	Groups	Frequency	Percentage
4	Commonest dyskinesis	Type 1	35	43.75%
		Type 2	12	15%

		Type 3	21	26.25%
		Type 4	12	15%

The table shows out of 80 dhol player participate in this study. Type 1 most common type in dhol player compare to type 2,3,4.

Graph 4): Commonest Scapular dyskinesia among Dhol players

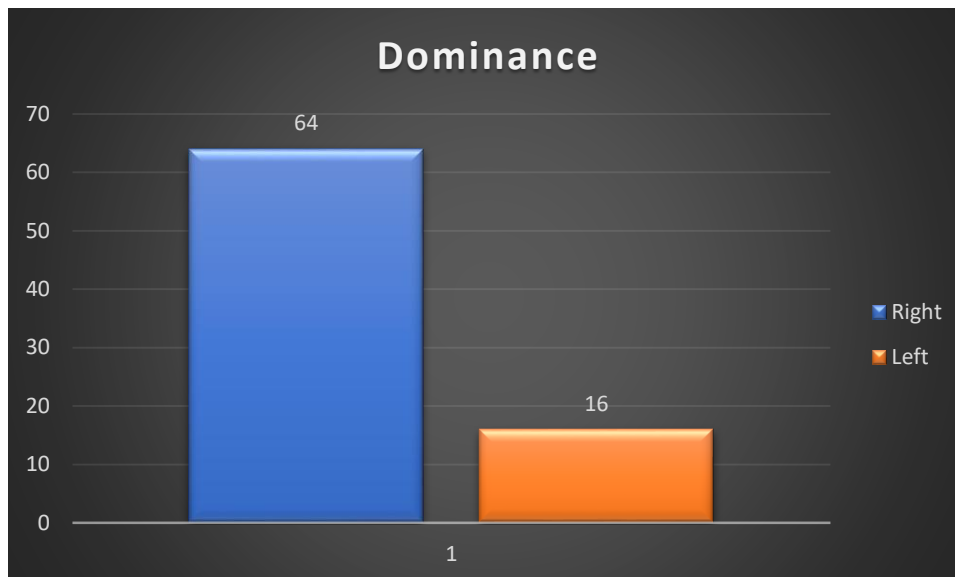


The graph shows out of 80 dhol player participate in this study. Type 1 most common type in dhol player compare to type ,2,3,4.

Table 5): Dominance wise Distribution

Sr. No.	Dominance	Frequency	Percentage
5	Right	64	80%
	Left	16	20%

This Table shows that right hand dominance was more prevalent, with 64 participants (80%), whereas 16 participants (20%) had left hand dominance.

Graph 5): Dominance wise Distribution

This Graph shows that right hand dominance was more prevalent, with 64 participants (80%), whereas 16 participants (20%) had left hand dominance.

Results

Total 80 sample were recorded according to inclusion and exclusion criteria.

The graph shows age wise distribution of study subject. 20 to 29 age percentage is 96 and 30 to 40 ages are 4. Mean age value is 24.7625 and sd value is 3.04915 in this project.

The graph shows experience wise distribution of study subject mean experience value is 2.08125 and sd value is 0.927920467 in this study project.

Out of 80 participate in this study. 41 participate had positive dyskinesia and their percentage is 51. 39 participate had negative dyskinesia and their percentage is 49.

Out of 80 truck drivers participate in this study. Type 1 most common type in dhol player compare to type2,3,4.

Type 1 is 43.75%. Type 2 is 15%. Type 3 is 26.25%. Type 4 is 15%

Discussion

The predominance of type i scapular dyskinesis observed in this study is comparable with previous studies conducted in athletes, where inferior angle prominence was the most common pattern. This may be explained by weakness of the lower trapezius and serratus anterior along with tightness of the pectoralis minor, resulting in excessive anterior tilting of the scapula. Overall, the present study demonstrates that scapular dyskinesis is common among dhol players. Considering the repetitive shoulder movements involved in dhol playing, routine screening, ergonomic education, and scapular stabilization exercises should be incorporated into preventive physiotherapy programs to reduce the risk of future shoulder dysfunction and improve functional performance.

The present study aimed to determine the prevalence of scapular dyskinesis among dhol players aged 20–40 years in jalgaon. A total of 80 participants were assessed using the lateral scapular slide test (lsst). The findings revealed that 51% of the participants had scapular dyskinesis, while 49% demonstrated normal scapular alignment and movement. Among the different patterns, type i scapular dyskinesis (43.75%) was the most frequently observed.

The high prevalence of scapular dyskinesis in the present study may be attributed to the repetitive, forceful, and prolonged upper limb movements required during dhol playing. Continuous striking of the drum places repeated mechanical stress on the scapular stabilizing muscles, especially the serratus anterior and trapezius, resulting in muscular fatigue, altered scapular positioning, and impaired scapulohumeral rhythm. Consistent with the randomized controlled trial by yuksel and yesilyaprak (2024), who demonstrated that individuals with scapular dyskinesis had reduced shoulder function, muscle weakness, and pain. They further reported that scapular stabilization exercises significantly improved scapular mechanics, muscle strength, and functional outcomes, highlighting the clinical importance of identifying scapular dyskinesis early. ⁽²³⁾

A systematic review by burn et al. (2024) further reported that abnormal scapular movement is frequently observed in individuals performing repetitive overhead tasks and is associated with an increased risk of shoulder pain and functional limitation. This supports the findings of the present study, where more than half of the dhol players demonstrated scapular dyskinesis. ⁽²⁴⁾ The present findings are also supported by turgut et al. (2023), who reported that repetitive overhead activities are associated with reduced scapular muscle endurance and altered scapular kinematics. Their study suggested that prolonged repetitive upper limb movements increase the likelihood of developing scapular dyskinesis because of muscular fatigue and impaired neuromuscular control. ⁽²⁵⁾

Similarly, sciascia and kibler (2022) emphasized that scapular dyskinesis is not a disease but a physical impairment that contributes to shoulder dysfunction through altered scapular motion and muscle imbalance. They recommended that clinicians routinely assess scapular movement in individuals involved in repetitive upper limb activities, as early correction of abnormal scapular mechanics can prevent future shoulder injuries. ⁽²⁶⁾ The prevalence observed in the present study is lower than that reported in some athletic populations but higher than that reported in healthy individuals by dhami and sharma (2022). This difference may be due to variations in the study population, physical demands, duration of activity, and assessment methods. ⁽²⁰⁾

Jung et al. (2021) found a high prevalence of scapular dyskinesis among elite boxers and reported that individuals with scapular dyskinesis demonstrated reduced shoulder function and increased neck disability. This supports the concept that repetitive upper limb activities, irrespective of the sport or occupation, can adversely affect scapular control. ⁽¹⁴⁾ The results are also supported by andres et al. (2020), who demonstrated that repeated shoulder motion significantly increased the occurrence of scapular dyskinesis in army rote cadets. Their findings indicate that repetitive shoulder loading can fatigue the scapular stabilizing muscles, leading to altered scapular movement. ⁽²⁰⁾

Conclusion

The study concludes that the prevalence of scapular dyskinesis was found positive 51% and negative 49% of total participants. 41 participants out of 80 had positive scapular dyskinesis and 39 participants had negative on age wise between 20-40 and experience wise between 1-4. This study also concludes that scapular dyskinesis type i was the most common type of scapular dyskinesis in dhol players.

Limitation

Scapular dyskinesis was assessed only using the Lateral Scapular Slide Test (LSST). More advanced assessment methods such as 3D motion analysis or electromyography (EMG) were not used

The study included only male participants aged 20–40 years; therefore, the results cannot be generalized to female dhol players or other age groups.

Future scope

Future research can be done by recording the response in the dhol players after the training period by focusing on the strengthening of the scapular muscles that commonly go into weakness due to overuse.

Additionally, comparative studies of scapular strengthening protocols can be done between type 1 and 2.

Comparison of scapular dyskinesis can be done with different healthcare professionals and industrial worker.

Explore how age and gender affect the prevalence and severity of scapular dyskinesis in dhol players, offering insights for customized intervention approaches.

Clinical implications

Dhol players involves repetitive upper limb movements that have not been extensively studied, especially in terms of the affected side and the specific type of scapular dyskinesis (sd). therefore, it is important to find out the prevalence of scapular dyskinesis among dhol players.

References

1. shadmehr a, sarafraz h, heidari blooki m, jalaie sh, morais n. reliability, agreement, and diagnostic accuracy of the modified lateral scapular slide test. man ther. 2016 aug;24:18-24. doi: 10.1016/j.math.2016.04.004. epub 2016 apr 19. pmid: 27317502.
2. disorders of the scapula and their role in shoulder injury – a clinical guide to evaluation and management. springer; 2017.
3. hwang m, lee s, lim c. effects of the proprioceptive neuromuscular facilitation technique on scapula function in office workers with scapula dyskinesis. medicina (kaunas) 2021.
4. williams gr jr, shakil m, klimkiewicz j, iannotti jp. anatomy of the scapulothoracic articulation. clin orthoprelat res. 1999; 359: 237246.doi: 10.1097/00003086-199902000-00027.
5. fung m, kato s, barrancas pj, elias jj, mcfarland eg, nobu hara k, et al. scapular and clavicular kinematics during humeral elevation: a study with cadavers. j shoulder elbow surg. 2001; 10 (3):278-85
6. borstad jd. resting position variables at the shoulder: evidence to support a posture-impairment association. physical therapy. 2006 apr 1;86(4):54957.

7. Borstad Jd, Ludewig Pm. The Effect Of Long Versus Short Pectoralis Minor Resting Length On Scapular Kinematics In Healthy Individuals. *Journal Of Orthopaedic& Sports Physical Therapy*. 2005 Apr;35(4):227-38.
8. mcclure pw et al. direct 3-dimensional measurement of scapular kinematics during dynamic movements in vivo. *j shoulder elbow surg*. 2001;10:269-277.
9. panagiotopoulos ac, crowther im. scapular dyskinesia, the forgotten culprit of shoulder pain and how to rehabilitate. *sicot-j*. 2019;5.
10. crosbie j, kilbreath sl, hollmann l, york s. scapulohumeral rhythm and associated spinal motion. *clinical biomechanics*. 2008 feb 1;23(2):184-92.
11. kibler wb, sciascia ad, editors. disorders of the scapula and their role in shoulder injury: a clinical guide to evaluation and management. springer; 2017 may 27
12. curtis t, roush jr. the lateral scapular slide test: a reliability study of males with and without shoulder pathology. *n am j sports phys ther*. 2006 aug;1(3):140-6. pmid: 21522226; pmcid: pmc2953361.
13. yuksel e, yesilyaprak ss. scapular stabilization exercise training improves treatment effectiveness on shoulder pain, scapular dyskinesis, muscle strength, and function in patients with subacromial pain syndrome: a randomized controlled trial. *journal of bodywork and movement therapies*. 2024 jan 1;37:101-8.
14. dharmi k, sharma s. a study to assess scapular dyskinesia in healthy individuals aged 25-35 years. *international journal of science and healthcare research [internet]*. 2022 jul;7(3):157-67.
15. sađlam g, telli h. the prevalence of scapular dyskinesia in patients with back, neck, and shoulder pain and the effect of this combination on pain and muscle shortness. *agri: journal of the turkish society of algology/tu? rkalgoloji (ag? r?) derneg? i'nin yayın organidir*. 2022 apr 1;34(2).
16. sciascia a, kibler wb. current views of scapular dyskinesis and its possible clinical relevance. *international journal of sports physical therapy*. 2022 feb 2;17(2):117.
17. jung jw, kim yk. scapular dyskinesis in elite boxers with neck disability and shoulder malfunction. *medicina*. 2021 dec 9;57(12):1347.
18. mahale a, bisen r, kalra k. prevalence of scapular dyskinesis in elite badminton players in pune. *intern j health sci res*. 2020 nov;1:127-34.
19. andres j, painter pj, mcilvain g, timmons mk. the effect of repeated shoulder motion on scapular dyskinesis in army rotc cadets. *military medicine*. 2020 may;185(5-6):e811-7.
20. hickey d, solvig v, cavalheri v, harrold m, mckenna l. scapular dyskinesis increases the risk of future shoulder pain by 43% in asymptomatic athletes: a systematic review and meta-analysis. *british journal of sports medicine*. 2018 jan 1;52(2):102-10.
21. depreli o, ender anđın e, yatar ig, kirmizigil b, malkoc m. scapular dyskinesis and work-related pain in office workers-a pilot study. *int j phys ther rehab*. 2016;2(117):2.

22. braman jp, engel sc, laprade rf, ludewig pm. in vivo assessment of scapulohumeral rhythm during unconstrained overhead reaching in asymptomatic subjects. *journal of shoulder and elbow surgery*. 2009 nov 1;18(6):960-7.
23. yuksel e, yesilyaprak ss. *scapular stabilization exercise training improves treatment effectiveness on shoulder pain, scapular dyskinesis, muscle strength, and function in patients with subacromial pain syndrome: a randomized controlled trial*. *j bodyw mov ther*. 2024;37:101-108.
24. burn mb, mcculloch pc, lintner dm, harris jd. *scapular dyskinesis and shoulder disorders: an updated systematic review*. *sports health*. 2024.
25. turgut e, duzgun i, baltaci g. *scapular muscle endurance, kinematics, and shoulder function in individuals performing repetitive overhead activities*. *j shoulder elbow surg*. 2023.
26. sciascia a, kibler wb. *current views of scapular dyskinesis and its possible clinical relevance*. *int j sports phys ther*. 2022;17(2):117.

