



The Effectiveness Of Blackburn Exercises On Pain And Disability In Scapular Dyskinesia Among Elite Badminton Players (An Experimental Study).

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Abstract:

Background:

Badminton is a racket sport for two or four people, with a temporal structure characterized by actions of short duration and high intensity. Scapular dyskinesia was found to have a greater reported prevalence (61%) in overhead athletes compared with non-overhead athlete (33%). Blackburn exercises are one of the ways to treat shoulder pain and to regain proper mobility and decrease painful movements. These scapular stabilization exercises, based on stretching and strengthening, aim to improve muscle strength and joint position sense.

Methodology:

Experimental study was performed from May 22 to November 22. A purposive sampling technique was applied to select 23 participants. The scapular assistance test was performed to assess scapular dyskinesia. Blackburn exercises were given to reduce pain and disability in scapular dyskinesia.

Results:

23 participants were included in the study. Paired Test was done. The result obtained for blackburn exercises on badminton players in scapular dyskinesia, pain measured by VAS suggests significance as P value obtained was (<0.0001) and T value was (17.1965). The result obtained for blackburn exercises on badminton players in scapular dyskinesia, disability measured by SPADI suggests significance as P value obtained was (<0.0001) and T value was (13.3955).

Conclusion:

This study shows that the effect of blackburn exercise is extremely significant to reduce pain and disability in scapular dyskinesia in badminton players measured by VAS and SPADI.

Keywords:

VAS, SPADI, BLACKBURN EXERCISES

INTRODUCTION

Badminton is a racket sport for two or four people, with a temporal structure characterized by actions of short duration and high intensity. This sport has five events: men's and women's singles, men's and women's doubles, and mixed doubles, each requiring specific preparation in terms of technique, control and physical fitness. Players are generally tall and lean, with an ectomesomorphic body type⁽¹⁾.

Since, badminton requires overhead shoulder motions very often, which abducts and externally rotate the shoulder joint. Some possible causes of shoulder injury including overtraining, inadequate skill level, wrong movement, lack of warm up, stiff muscles, lack of recovery from injuries and muscle imbalance.⁽²⁾

Scapular dyskinesia is a condition responsible for alteration of the normal position and kinematics of the scapula rather than a disease.

Scapular dyskinesia was found to have a greater reported prevalence (61%) in overhead athletes compared with nonoverhead athlete (33%).

The exercise program is emphasized to activate and strengthen the scapular stabilizers. Protocol followed includes strengthening exercises for scapular stabilizers (Deltoid , Rotator cuff muscles , Middle trapezius , Lower trapezius , Serratus anterior , Rhomboids and Lattissimus dorsi) .

Scapular stabilization is necessary for overhead sports as the demand of sport is for scapula to move in co-ordinated manner to play well.

Blackburn exercises are one of the ways to treat shoulder pain and to regain proper mobility and decrease painful movements. These scapular stabilization exercises, based on stretching and strengthening, aim to improve muscle strength and joint position sense.

Here ,we are conducting study to check the effectiveness of Blackburn exercises on pain and disability in scapular dyskinesia among elite badminton players .

NEED OF STUDY

As badminton requires repeated arm movement, there are majority of chances of having chronic overuse injuries of shoulder joint. Scapular Dyskinesia is most commonly seen in overhead athletes due to their heavy demand of work on unilateral upper extremity function .

Due to this players experience difficulty in playing because of pain and Disability . So protocol should be given to reduce pain and disability and improve the performance while playing.

In this study we are going to use Blackburn exercises to reduce pain and disability caused due to scapular dyskinesia while playing badminton.

AIM

To study the effectiveness of Blackburn exercises on pain and disability in Scapular Dyskinesia among elite badminton players.

OBJECTIVES

To study the effectiveness of Blackburn exercises on pain in scapular dyskinesia among elite badminton players .

To study the effectiveness of Blackburn exercises on disability in scapular dyskinesia among elite badminton players .

HYPOTHESIS

Null hypothesis (h0)- There will be no effect of Blackburn exercises on pain and disability in Scapular Dyskinesia among elite badminton players.

Alternative hypothesis (h1)- There will be effect of Blackburn exercises on pain and disability in scapular dyskinesia among elite badminton players .

METHODOLOGY

Sample size : 23

Study setting : badminton court in and around Pune(Maharashtra)

Study Design : Experimental Study Sample

method : Purposive Sampling

Study duration : 6 months

MATERIALS

Plinth

Towel roll

Pen Paper

Visual analogue scale

SPADI scale

INCLUSION CRITERIA

Gender – both male and female badminton players.

Age –players between 18 to 29 years of age.

Players playing for atleast 3 hours /day and usually 6 days a week

Scapular assistance test were positive .

Players who were playing for more than 2 years .

Players with more than 3 and less than 8 on VAS.

Players willig to participate in the study .

EXCLUSION CRITERIA

Players who had recent the upper limb fracture , fracture of the vertebrae and ribs and dislocation of shoulder joint.

Players who were on any other exercise protocol .

Players who were going for a competitive match soon.

Players who had radiating pain in the arm due to neurological disorder and cardiovascular diseases such as myocardial infarction , Respiratory diseases such as Asthama .

Players who were on anti-inflammatory medication.

PROCEDURE

- Study Study had begun with presentation of synopsis to an ethical committee and clearance were obtained.
- Various badminton court was visited in and around the Pune , MAHARASHTRA
- Samples are selected according to inclusion and exclusion criteria.
- Informed consent was taken and subjects were explained the aim and objectives of the study .
- The subject were made to do warm up exercises such as neck stretch , triceps stretch , biceps stretch , shoulder stretch , dynamic chest , dynamic back , mid back turns, knee circles , hip circles , toe touch before the treatment and cool down exercises such as shoulder stretch , triceps stretch , hip flexor stretch, standing forward bend , quadriceps stretch , after the treatment .
- Protocol was given for 2 weeks. 5 days per week with 3 repetition per day .

BLACKBURN EXERCISES :

1. - Prone horizontal abduction (neutral) :

- Lie on the table, face down, with arms hanging straight down to the floor and palms facing down
- Raise arms out to the side, parallel to the floor
- Hold for 6 seconds and lower slowly .



Figure 1 : Prone horizontal abduction (neutral)

2. Prone horizontal abduction (full external rotation) :

- Lie on the table, face down, with arms hanging straight to the floor, and thumbs rotated up (hitch-hiker position)
- Raise arms out to the side with slightly in front of shoulder, parallel to the floor
- Hold for 6 seconds and lower slowly.



Figure 2: Prone horizontal abduction (full external rotation)

3 .- Prone horizontal scaption (neutral) :

- Lie on the table, face down, with arms hanging straight down to the floor and palms facing down.
- Raise your arms to the side but slightly forward by about 30 degree compared to horizontal abduction.
- Hold for 6 seconds and lower slowly .



Figure 3 : Prone horizontal scaption (neutral)

4 .- Prone horizontal scaption (full external rotation) :

- Lie on the table face down, with arms hanging straight to the floor, and thumbs rotated up (hitch-hiker position)
- Raise your arms to the side but slightly forward by about 30° compared to horizontal abduction
- Hold for 6 seconds and lower slowly .



Figure 4 : .- Prone horizontal scaption (full external rotation)

5.- Prone horizontal external rotation :

- Lie on the table; face down, with arms abducted horizontal to side and elbows bent 90 degree pointing down.
- Rotate arms externally so that forearms come parallel to ground point Forward
- Hold for 6 seconds and lower slowly.



Figure 5 : Prone horizontal external rotation

6 . - Prone horizontal extension :

- Lie on the table, face down, with arms hanging straight down to the floor and palms facing forward.
- Raise your arms to the horizontal parallel the thorax
- Hold for 6 seconds and lower slowly.



Figure 6 : Prone horizontal extension

STATISTICAL ANALYSIS

The pre and post analysis was done within groups using paired t test which showed extremely significant results. The study data was statistically analysed using Graph Pad instat v 3.1

RESULT

23 participants were included in the study.

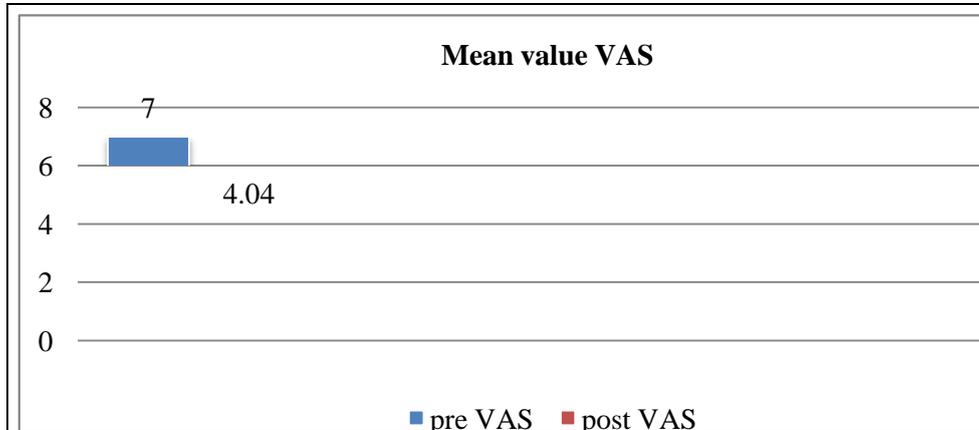
Paired Test was done.

The result obtained for blackburn exercises on badminton players in scapular dyskinesia, pain measured by VAS suggests significance as P value obtained was (<0.0001) and T value was (17.1965)

The result obtained for blackburn exercises on badminton players in scapular dyskinesia, disability measured by SPADI suggests significance as P value obtained was (<0.0001) and T value was (13.3955)

	Blackburn exercise	P value	T value	Result
VAS	Pre 7 post 4.04	<0.0001	17.1965	Extremely significant

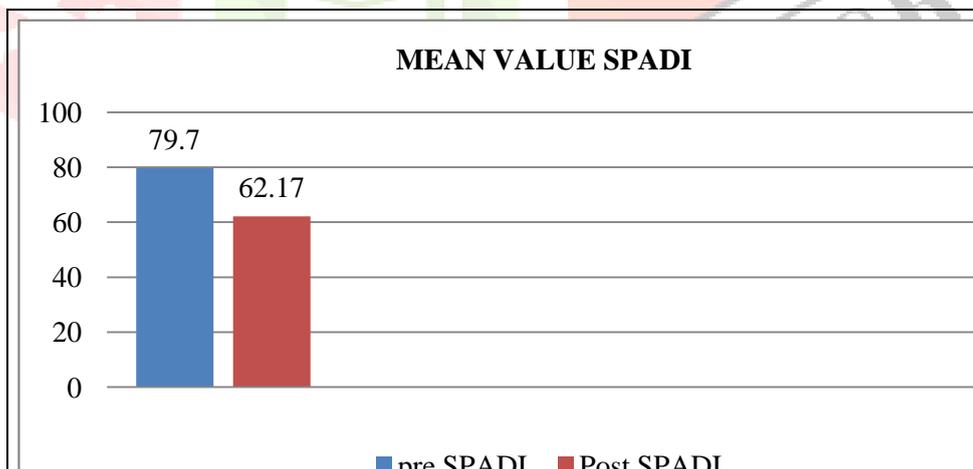
Table no. 1 : Data analysis VAS



Graph 1 : Mean value VAS

	Blackburn exercises	P value	T value	Result
SPADI	Pre 79.70 post 62.17	<0.0001	13.3955	Extremely significant

Table no. 2 : Data analysis : SPADI



Graph 2 : Mean value SPADI

DISCUSSION :

This study is done to know the effectiveness of blackburn exercises on badminton players in scapular dyskinesia. As blackburn exercises are scapular stabilization exercises and these are used by many researcher to reduce pain in musculoskeletal condition. The stastical analysis shows Extremely significant result as there is decrease in pain which is measured by VAS and Disability which is measured by SPADI The exercise program is emphasized to activate and strengthen the scapular stabilizers . Protocol followed includes strengthening exercises for scapular stabilizers (Deltoid , Rotator cuff muscles , Middle trapezius , Lower trapezius , Serratus anterior , Rhomboids and Lattisimus dorsi) . According to Myers et al. Scapular dyskinesia may be a consequence of many factors such as biomechanical and physiological abnormalities, bone anatomy altered by posture or bone lesions, muscle injuries due to direct trauma, microtraumas that lead to imbalances, fatigue and painSince , badminton requires overhead shoulder motions very often , which abducts and externally rotate the shoulder joint .some possible causes of shoulder

injury including overtraining , inadequate skill level , wrong movement , lack of warm up , stiff muscles ,lack of recovery from injuries and muscle imbalance. The Blackburns series consists of 6 “holds”, that are each held for 6 seconds. The isometric 6 second hold helps to increase time under tension and will help those muscles tighten up more quickly. The key with these holds is to squeeze the shoulder blades tightly for 6 seconds . The isometric exercise involves contraction of muscles and that will increase muscle endurance and strength . The isometric exercise works on golgi tendon organ which is present at the junction of tendon and muscle fibre responds to muscle contraction by sending action potential to increase muscle tension. In Blackburn exercises , The prone horizontal abduction helps in strengthening of middle trapezius and rhomboids, Prone horizontal scapation helps in strengthening of lower trapezius and latissimus dorsi, prone horizontal external rotation helps in the strengthening of latissimus dorsi and prone horizontal extension helps in the strengthening of upper trapezius. According to Annika Taulaniemi, et al. Exercise is the most effective treatment for the management and prevention of pain . Physical activity and exercise have been shown to activate endogenous pain inhibitory mechanisms and lead to a reduction in sensitivity to noxious stimuli regardless of the type of physical activity. Also, blackburn exercises works in the same way to reduce pain. The isometric 6 second hold helped in increasing the strength of the muscles which will help to decrease the disability which is produced by weakness of muscles . Due to increase in strength players can play with less difficulty and more efficiency. This study has focused on all types of scapular dyskinesia as blackburn exercise work on all scapular muscles and helps in the strengthening of scapular muscles.

CONCLUSION

This study shows that the effect of blackburn exercise is extremely significant to reduce pain and disability in scapular dyskinesia in badminton players measured by VAS and SPADI.

LIMITATIONS

In this study females and males was not considered specifically.

FUTURE SCOPE

Further studies need to be carried on comparison between different age groups.

Further studies are also recommend using protocols of longer duration.

Further studies need to compare effect on males and females specifically .

REFERENCES

- 1 . Phomsoupha M, et al. The science of badminton: game characteristics, anthropometry, physiology, visual fitness and biomechanics. Sports Med. 2015 Apr;45(4):473-95. doi: 10.1007/s40279-014-0287-2. PMID: 25549780. The science of badminton: game characteristics, anthropometry, physiology, visual fitness and biomechanics
2. A Muttalib , et al. Malaysian orthopaedic journal 2009 vol 3 no.2 A survey on recreational badminton players.
- 3 .Robert postachini , et al. OA Musculoskeletal Medicine October 2013 . Scapular Dyskinesia : Diagnosis and treatment
- 4 . Ajit Dabholkar , et al . Sports science and human performance 2015 . Scapula Associated Impairments in Badminton players .
5. Anjana Mahale et al, International Journal of Health Sciences and Research Vol.10; Issue: 11; November 2020 . Prevalance of scapular dyskinesia in elite badminton players in pune.
6. Burkhart SS, et al,. The disabled throwing shoulder: spectrum of pathology Part I: pathoanatomy and biomechanics. Arthroscopy. 2003 Apr;19(4):404-20. doi: 10.1053/jars.2003.50128. PMID: 12671624. The disabled throwing shoulder: spectrum of pathology Part I: pathoanatomy and biomechanics .
- 7 . Benedicte Forthomme et al . Sports Med . 2008 . Scapular positioning in atheletes shoulder : particularities , clinical measurements and implications .
8. Matthew B Burn et al. Orthopaedic journal of sports medicine 4.2016 . Prevalance of scapular Dyskinesia in overhead and non overhead atheletes – A systematic review .
- 9 . P Sathya, et al,. Musculoskeletal problems in badminton players under 17. Int J Phys Educ Sports Health 2018;5(5):67-70.
10. Rasika Panse, et al. IJPESH 2018; 5(6): 19-21 Effects of Blackburn exercises in shoulder impingement on pain and disability in rock climbers .
11. LambaDheeraj et al., IJSRR 2018, 7(4), 850-860 To Compare Blackburn Exercises with Conventional Physiotherapy in

