

Short Communication-2

Occurrence of Bioccipital Tendonitis/ Rotator Cuff Tendonitis in the Subjects involved in Bench- Press Activities in Gymnasium

Raju Sharma¹ & Jaspreet Singh Vij²

¹ Lecturer, Department of Physiotherapy, Lyallpur Khalsa College, Jalandhar, Punjab

² Lecturer, S. Bhagwan Singh Postgraduate Institute of Biomedical Sciences and Research, Balawala, Dehradun

Abstract

The study was conducted to register the occurrence of Bioccipital/ Rotator Cuff Tendonitis in the subjects involved in Bench Press Activity in gymnasium. Fifty male subjects (age group 20-30 years), having shoulder pain for at least three weeks, were selected randomly and were interviewed for the present history of shoulder pain, from various gymnasia. The subjects were interviewed through a questionnaire and assessed using standard orthopedic examination techniques. The value of Z (3.68) >3 showed a definite relationship between subjects doing Bench Press activity in gymnasium and occurrence of Bioccipital / Rotator Cuff tendonitis. This study gave preliminary data on the incidence of tendonitis in subjects who train with weights. Occurrence of these shoulder injuries can be prevented by a proper knowledge of the technique, supervision and knowledge about the mass of poundage lifted.

Key Words: **Hawkin's Test, isometric abduction, isometric external rotation, injury**

Introduction:

It is commonly seen that people going to gymnasium are more impressed by the amount they can bench as compared to they can dead lift or squat. So the use of gymnasium equipment is becoming increasingly popular both at home and in leisure centers and in gymnasia. But, people are unaware of the various risk factors involved or even the proper technique of lifting. Therefore at last they sustain some form of injury.

Shoulder injuries are the most common injuries, which occur among weight lifters and power lifters¹. Among body builders and power lifters, the upper extremity, particularly the shoulder and elbow joint, showed the highest injury rate. More than 40% of all injuries occur in this

area. The low back region and the knee were other sites of elevated injury occurrences².

The objective of this study was to register the occurrence of Bioccipital/ Rotator Cuff Tendonitis in the subjects involved in Bench Press Activity in gymnasium.

Materials and Methods:

Fifty subjects (age group 20-30 years), having shoulder pain for at least three weeks, were selected randomly and were interviewed for the present history of shoulder pain, from various gymnasia. These subjects were regular to gymnasia for more than 3 months and were specifically involved in Bench Press Activity for upper limb training. Those subjects who were involved major in other lifts such as lateral

pulleys, inclined Bench Press were excluded.

These subjects were doing 3 sets of 15 repetitions each twice weekly and heterogeneity was noted in the amount of poundage lifted. The subjects were interviewed through a questionnaire, which included training programme, types of lifts, locations, type and history of injury. All were clinically examined using standard examination techniques.

Special test battery: Orthopedic examination consisted of special tests like Speed's test, Yergason's test³, Empty can test, Lift off test, Neer's impingement test (1983), Hawkins Kennedy test (1980), Apprehension test, Relocation test, Sulcus sign test with arm at zero degree of abduction (*Neer, 1983*), painful arc, isometric contraction of rotator cuff muscles.

For interpretation of clinical findings, following criteria was laid down:

- 1) History of Bench Press activity related shoulder pain.
- 2) Positive test from special tests.
- 3) Presence of any one of the following:
 - Tenderness at greater tuberosity.
 - Painful arc.
 - Painful active contraction of any rotator cuff muscle.

Similar criteria were also used by *Sinha and Sandhu (2002)* in their study on Male Indian Overhead Athletes and by *Mujohara et al (1998)* on the quadriplegic rugby wheelchair players.

Simple percentile method was used to calculate the percentage of subjects afflicted with tendonitis.

Z-test of proportions was used to test the statistical significance of occurrence of Rotator Cuff/ Bioccipital tendonitis in these subjects.

$$Z = \frac{(p-P)\sqrt{PQ/n}}$$

Table 1: Clinical Evaluation Findings of Bioccipital and Rotator Cuff Tendonitis

Clinical Findings	Bioccipital Tendonitis	Rotator Cuff Tendonitis
	n=10	n=28
Positive Speed's test	6	-
Positive Neer's test	-	13
Positive Hawkin's test	-	26
Tenderness over Greater Tuberosity	1	18
Tenderness over Bioccipital Groove	8	2
Positive lift off test	-	3
Positive empty can test	-	4
Painful arc	2	11
Painful isometric abduction	-	16
Painful isometric external rotation	-	5
Positive Yergason's test	4	-

Results:

Overall 76% (n=38) subjects in this study were found afflicted with Rotator Cuff / Bioccipital tendonitis as per the criteria laid down (Table 1). The value of Z (3.68) is significant i.e. the proportion of persons with the tendonitis can be said to be highly significant. Among the subjects positive for tendonitis, 26.3% (n = 10) were positive for Bioccipital tendonitis and 73.68% (n = 28) were positive for Rotator Cuff tendonitis. Among those positive for rotator cuff tendonitis, nearly 93% of them had positive Hawkins' Kennedy test, 46%

had positive Neer's impingement test, 39% had painful arc and 57% had painful isometric abduction.

Discussion/Conclusion:

The results of this study showed a definite relationship between subjects doing Bench Press activity in gymnasium and occurrence of Bioccipital / Rotator Cuff tendonitis, which are in accordance with the findings of *Goertzen et al (1989)* who found 40% shoulder injury rate among body builders.

Madsen and McLaughlin (1984) also identified three kinematic factors relevant to injury risk in the bench press, namely-speed of bar, path of bar and sequence of bar movements. Neviasser emphasized unfavorable position of rotator cuff during lifting as one of the factor leading to shoulder injury. Similarly *Herbert's et al (1984)* found excessive strain in the supraspinatus and infraspinatus with excessive load during elevation. But *Raske et al (2002)* found no correlation between shoulder injuries and any specific exercise¹. During bench Press activity, the weight lifters desire to achieve higher limits of performance coupled with the rotator cuffs' unfavorable position during lifting often leads to shoulder injury. The rotator cuff is placed in a compromised position during the lift.

Herberts et al (1984) in their study emphasised on the biomechanical studies confirming the view that the shoulder muscles are heavily loaded when the arm is elevated. Excessive hand tool mass increases the strain markedly in some muscles, particularly the supraspinatus and infraspinatus. So if there are flaws in the technique, it can severely open the acromial

Injury prevention is the main job of team therapist. This requires knowledge of

process and can result a severe amount of strain at the shoulder joints. Apart from faulty technique, lack of guidance and supervision is one of the major factors leading to injury. Another main factor that can contribute is excessive amount of poundage lifted. People, for the purpose of figure making and bodybuilding often go for a higher mass of poundage and at last sustain some form of injury.

Although no data exists in literature to confirm these findings, it is possible that the use of weight machines rather than free weights may decrease the incidence of injuries. However, weight-training coaches generally agree that the major lifts using free weights allow the development of coordinated strength and power in multiple muscle groups more effectively than do weight machines. If people use proper technique under good supervision, they can probably decrease injuries caused by the major lifts; proper coaching is not readily available in the gymnasium. So a small sample size of only male subjects, heterogenosity in the amount of poundage lifted and diagnosis on the basis of clinical findings are some of the limitations of this study.

This study gave preliminary data on the incidence of tendonitis in subjects who train with weights. Prospective research is needed to provide more accurate injury risks and more specific data concerning the causes of injury. Injury incidence depends on the quality, content, and intensity of the training programme. Thus evaluation of subjects in other gymnasia, and subjects involved in other activities, will give a more complete picture of the risks of this activity.

the incidence and causes of injury in a given activity. These data are not available

for musculoskeletal injuries caused by weight training, which is now widely used a conditioning method by many. Available injury data concern only selected populations. In addition to better information concerning injury rates, a better understanding is needed of the specific risk factors for injury. Occurrence of these shoulder injuries can be prevented by a proper knowledge of the technique, supervision and knowledge about the mass of poundage lifted. As the popularity of strength training grows, there will be ample opportunity to continue to catalog the injury patterns associated with this activity.

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