Short Communication

Impact of Alexander technique, mirror therapy versus conventional therapy on musician's cramp in guitarists

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ABSTRACT

Introduction and Aim: Musicians may perceive the early symptoms of dystonia because of faulty technique or lack of sufficient preparation. Hand dystonia affecting musicians is often called musician's dystonia or musician's cramp. Guitarists are typically affected in their left hand and the spasms may cause the fingers to contract and curl under when attempting to play. The condition called focal dystonia (musician's cramp), can afflict typist or anyone else who makes repetitive, forceful, precise movements. The objective of the study is to observe the impact of alexander technique versus mirror therapy on musician's cramp.

Methodology: A total of 150 subjects were randomly selected based on the inclusion criteria. The selected subjects were divided in three groups namely group A, B and C respectively. The evaluation parameters were performed using the Likert scale and was framed based on pain, mobility, and grip.

Results: Likert scale for pain, mobility and grip was used to analyse data. The results of this study show that the Alexander Technique is more effective than mirror therapy and conventional therapy to reduce pain and improve mobility and grip for guitarists.

Conclusion: These results suggest that playing guitar by adapting Alexander technique is advantageous for building speed.

Keywords: Alexander technique; focal dystonia; guitarists; mirror therapy; cramp.

INTRODUCTION

It is not just athletes who have aches and pains. Performing artists also draw comparisons to athletes (1). Musicians struggle with injuries too and physiotherapists can also assist with this problem. Musician medicine has become an increasingly popular discipline over the last two decades. The prevalence of "musician's cramp" among guitarists remains uncertain between 29-90% leading pain and 25.8-84.4% affecting in playing the instrument (2).

Hand is the most important and key body part involved to create sound from any musical instrument. Many guitarists are unaware of the effect that overworking the muscles in their arms have the possibility of developing tight and strained muscles which may result in cramp (3). Leading symptoms are pain, weakness, stiffness, and loss of control. The identified risk factors include intensive repetitive use during practice or before auditions and concerts,

recent changes in conductors or teachers, psychological stress, tensions for holding heavy instruments, inadequate skills, etc. and joint relaxation (4). Guitarists' hands are vital to their musical performance. They are often injured, which can make it difficult or impossible to play an instrument. When dealing with guitarists, special evaluation and rehabilitation techniques are required (5).

Guitarists frequently over practice and this can adversely affect the overall picture of the individual body - particularly their upper limbs. Whilst practicing for long period, Musical instrument players can begin to use the wrong body mechanics, which often affect the hands and arms. However, there is little evidence of its use in exercise for effective injury prevention or management for guitar players. One method that may improve deficits in postural coordination is the Alexander Technique.

This study implements three various techniques including, Alexander technique, mirror therapy and conventional therapy (stretching). The Alexander Technique is a way to feel good, relax and move in a comfortable way, as nature intended.

The National Institute for Health and Clinical Excellence (NICE) systematic review the Alexander

Technique Exercise and Massage (ATEAM) 12, a study by the British Medical Research Council (MRC), has been included in the Exercise section, but the Alexander Technique is not a common exercise (6). It's primarily about learning what you shouldn't do, that is, learning to be aware of harmful muscle usage habits, letting go of them and avoiding them, and improving coordination to distinguish them from specific exercises. This technique aims to teach the correct use of postural mechanisms that control standing and movement. The Alexander Technique therapist helps you identify and destroy the harmful habits that you have built up over the life of stress and learn to move more freely. The principle of mirror therapy is to use a mirror to create a reflexive illusion of the affected limbs and trick the brain into believing that the movement has occurred painlessly. It involves playing the affected limb behind the mirror, which is sited so the reflection of the opposing limb appears in the place of the hidden limb.

Musicians create such beauty for so many people and it is a tragedy that many of them expect and accept pain. Injury prevention is imperative, but if musicians do get injured then quick diagnosis, appropriate management, and treatment with a focus on a swift return to playing is paramount for physical, emotional and spiritual wellbeing.In addition, there needs to be open and intensive dialogue between health care professionals, musicians, and performers, to facilitate effective preventative measures and treatment. The aim of the study is to compare the effectiveness between Alexander technique, mirror therapy and conventional therapy on musicians' cramp.

METHODOLOGY

Based on inclusion criteria a total of 150 subjects were randomly selected. The subjects included in this study were students from various music schools in Chennai including Universal Music Academy, Mad Musical Classes, Exodus Music, Unwind School of Music and Madras Guitar School, the informed consent was obtained from the study participants. The inclusion criteria included subjects withage group between 12-70, both male and female subjects, subjects experiencing musician's cramp, right hand dominant guitarists. Subjects having recent fractures of upper limb were excluded.

These subjects were divided in three groups namely group A (Alexander technique), group B (mirror therapy) and group C (conventional therapy) respectively. Evaluation parameter was Likert scale which has been framed based on pain, mobility, and grip. A short history of patients will be captured through physical assessment (7). A Likert scale questionnaire contains a series of statement, inviting the subject to respond to each based on how strongly they feel on a sliding scale. A total of 20 questions has been framed which has been divided in two sets.10 questionnaires for pain and 10 questionnaires for mobility and grip. The left end of the scale was labelled as "no pain" and right end of the scale was labelled as "very severe".

Procedure

The subjects were randomly assigned using simple random sampling technique into three groups, group A was treated with Alexander technique (8), group B was treated with mirror therapy (7) and group C was treated with conventional therapy (7).

Data was collected using the framed Likert scale enclosing questions targeting to assess to compare the effectiveness of Alexander technique, mirror therapy and conventional therapy. The treatment protocol for each therapy was done up to 60 minutes in between treatment session, rest time was given. The total duration of the treatment session was about 60mins/day with 3 sessions/week for 8 weeks.

Group A: Alexander technique

Technique: With the presence of guitar tutor the subjects were made to sit in a chair with a way the chin, guitar, and the knee joint falls in a straight line. The subjects were well positioned to sit with a straight spine and well-placed elbow joint and wrist joint across the guitar neck. Once the position was altered, the subjects were asked to play the guitar for prescribed treatment duration.

Fig. 1: Demonstration of Alexander technique

Group B: Mirror therapy

Technique: Subjects were made to sit on a chair close to the mirror which was placed vertically. The subjects were asked to play the guitar with eyes open

in front of the mirror placed before them for the first 30minutes followed by playing the same guitar with eyes closed for the remaining 30 minutes. The body posture was well altered as described in the above technique.

Fig. 2: Demonstration of mirror therapy

Group C: Conventional therapy

Technique: This group performed passive stretch for wrist flexor inhibition in a sitting position before and after playing the guitar. This technique was divided into three phases respectively.

Phase I – passive stretch for wrist flexors,
5 repetitions for 10 seconds each.
Phase II – playing/practicing the guitar.
Phase III – passive stretch for wrist flexors,
5 repetitions for 10 seconds each.

Fig. 3: Demonstration of conventional therapy

RESULTS

On comparing the pre-test mean values of group A (38.86), group B (38.92) andgroup C (38.78) on Likert Scale for Pain and Mobility scores, it shows significant decrease in the post-test mean values, but group A (22.76) which has the lowest mean value is more effective than group b (32.62) and group c (28.32).

Data analysis

Table1: Comparison of Likert scale for pain score between Alexander, mirror, and conventional therapy

Pain	Alexander	Mirror	Conventional	F-value	Signifi-cance
	Mean±SD	Mean±SD	Mean±SD		
Pre-test	38.86±5.39	38.92±3.21	38.78±4.33	.013	.987*
Post-test	22.76±5.79	32.62±4.12	28.32±3.78	56.48	.001**

*p>0.05), **p≤0.001

Table 1 shows that there is no significant difference in pre-test values of the Likert pain score between group A, group B and group C (*-P>0.05). This table shows that statistically significant difference in post-test values of Likert pain score between group A, group B and group C (**-P≤0.001)

Table2: Comparison of Likert scale for mobility score between Alexander, mirror, and conventional therapy

Mobility	Alexander	Mirror	Conventional	F-value	Signifi-cance
	Mean±SD	Mean ±SD	Mean ±SD		
Pre-test	19.68±4.04	19.86±4.84	19.80±4.24	.022	.978*
Post-test	35.72±4.98	23.36±4.71	34.04±4.53	99.69	.001**

*p>0.05, **p≤0.001

Table 2 shows that there is no significant difference in pre-test values of the Likert mobility score between group A, group B and group C (*-P>0.05). This table shows that statistically significant difference in post-test values of Likert mobility score between groupA, groupB and groupC (**-P≤0.001)

DISCUSSION

The present study demonstrates the Alexander technique, mirror therapy and conventional therapy have exposed a positive effect in relieving pain and improving mobility and grip of musician cramps. Most professional musicians suffer from musculoskeletal disorders (MSDs) at some point in their careers. This phenomenon is called Playing Related Musculoskeletal Disorder (PRMD). (9). It was recorded about 1% of all professional musicians have dystonia in musicians and 87% develop musician's cramp with a male to female ratio of 4:1.

Focal dystonia are often task specific, with involuntary muscle contractions occurring only when patients perform Certain actions such as writing or playing an instrument (10). Musicians can acquire this condition through physical or psychological stress, such as from intense professional environments, excessive technical practice, the demands of mastering an instrument (11).There is a need for health care professionals to encourage physical activity and to question dystonia patients about satisfaction with treatment (12).To manage and prevent these injuries, the structure of physiotherapy services Careful planning is required and a wide range of skills are required. Hence it is advised that the physical therapist should aim to adopt and modify their practice using guidelines to enhance their management of (PRMD) performance related musculoskeletal disorder in musicians (13).

In this study a comparison has been done on the effectiveness of three active interventions like Alexander Technique, Mirror Therapy and Conventional Therapy in subjects playing acoustic guitars. At the deadline of the treatment program all the three groups showed improvement in pain, mobility, and grip. On comparing the pre-test mean values of group A (38.86), group B (38.92) andgroup C (38.78) on Likert scale for pain and mobility scores (21), it shows significant decrease in the post-test mean values, but group A (22.76) which has the lowest mean value is more effective than group B (32.62) and group C (28.32).

Some musicians use techniques such as the Alexander technique in order to gain global physiology awareness of their body whilst playing, the results of the study were shown in correlation with the results obtained from the three groups. Alexander technique showed significant ($P \leq 0.001$) improvements than mirror therapy and conventional therapy, previous studies concluded that result, Alexander technique, mirror therapy and conventional therapy are helpful for decreasing pain and improving mobility and grip for subjects playing acoustic guitar (14). At the end of the study session the data analysis exposed post-test mean value showing a significant difference between group A, group B and group C. The group A showed a significant improvement from pre-test to post-test, with slight difference from group B and group C. Physiotherapists are working on a wide range of attractions in the treatment of convulsions for musicians, anyhow the effectiveness for this interference is limited. A few studies have stated that the session of physiotherapy allow a musician to find the proper biomechanics which becomes imbalanced from the injury. A physiotherapist will provide full body treatment, specific exercise, and regular therapy sessions. Relaxation techniques such as the Alexander technique and Feldenkrais method have been beneficial to musicians. These techniques emphasize self-awareness of body position, muscle tension, and efficiency of movement. A musician should return to playing the instrument gradually after an injury and preferably under the supervision of an occupational or physical therapist (15).

CONCLUSION

This study concludes that the Alexander technique is more effective than Mirror therapy and Conventional therapy to reduce pain and improve mobility and grip for guitarists.

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CONFLICT OF INTEREST

The authors declared no potential conflict of interest.

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