



CROSS SECTIONAL SURVEY OF MUSCULOSKELETAL DISORDERS IN BHARATNATYAM DANCERS

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Abstract: The purpose of this study was to assess the musculoskeletal disorders in Bharatanatyam dancers, to assess the pain intensity using numeric pain rating scale and to find out which joints were majorly involved.

Classical Indian dance has earned recognition across the globe; however, the health of dancers who are carrying forth this heritage has not received due attention.

Most musculoskeletal injuries are soft tissue injuries such as sprains strains, and tendinopathies, although stress fractures have also been the focus of some of the literature. Overuse and chronic injuries are commonly reported, and most injuries affect the lower extremities and back.

Along with holding the full sitting and half- sitting positions, performing repeated activities and joint actions such as feet stamping, changing postures, also the professional demands according to the various professions lead to the presence of musculoskeletal disorders in Bharatanatyam dancers.

Index Terms - Bharatanatyam dancers, Musculoskeletal disorders, Nordic Musculoskeletal Questionnaire, Numeric pain rating scale, Dance classes, Navi Mumbai, Joints

1.INTRODUCTION

Bharatanatyam Dancers involved in this study are from the age group 20-30 years , the individuals have different professional backgrounds.

Most musculoskeletal injuries are soft tissue injuries such as sprains strains, and tendinopathies, although stress fractures have also been the focus of some of the literature. Overuse and chronic injuries are commonly reported, and most injuries affect the lower extremities and back [3]

Depending on the type of profession the job demands vary. Bank Accountants, Home makers, Teachers, Cooks, Receptionist, IT professionals etc were included in the study.

The professions which demand sitting for long hours such as Bank Accountants, Receptionist , IT professionals act as predisposing factors for low back pain , neck and upper back pain as there is forward head posture that is attained by the individuals while working on the computers.

Other professions such as Cooks, Teachers, Homemakers job demand includes standing for long hours , bending activities, squatting repeatedly, sitting for long hours , leading to pain in Lower back, Knee and Hip regions .

Therefore, along with holding the full sitting and half- sitting positions , performing repeated activities and joint actions such as feet stamping, changing postures, also the professional demands according to the various professions lead to the presence of musculoskeletal disorders in Bharatanatyam dancers.

II. NEED FOR STUDY

1. To report the incidence of musculoskeletal disorders in Bharatanatyam dancers.
2. Long hours and days of intensive training leads to strain on the regions of the body leading to pain.
3. Also the students while training attempt to adapt certain postures while dancing that lead to various musculoskeletal disorders.
4. The students not only undergo the training process of dancing but also have other psychological, social factors such as exams , academics etc which may contribute to the presence of pain and other musculoskeletal disorders.

III. AIM

- To asses the musculoskeletal disorders in the Bharatanatyam Dancers.

IV. OBJECTIVES

- To asses musculoskeletal disorders via Nordic Musculoskeletal Questionnaire.
- To asses the pain intensity using the Numeric Pain Rating Scale .
- To find out which of the joints are regions are mainly involved.

V. HYPOTHESIS

- **NULL HYPOTHESIS-** There are no musculoskeletal disorders found in Bharatanatyam dancers.
- **ALTERNATIVE HYPOTHESIS -**There are musculoskeletal disorders in Bharatanatyam dancers.

VI. METHODOLOGY

- **STUDY DESIGN.** : Cross sectional survey
- **SAMPLING METHOD.** : Convenience Sampling
- **SAMPLE SIZE.** : 50

- **INCLUSION CRITERIA :**

- Bharatanatyam Dancers.
- People of age group :-20 to 30 yrs.
- Female dancers .
- Bharatanatyam dancers of Navi Mumbai
- Bharatanatyam students who are attending classes since 5 years and more.

- **EXCLUSION CRITERIA :**

- Bharatanatyam students who are attending classes for less than 5 years.
- People with Psychological and cognitive impairment.
- People with visual defects.
- People with Amputation
- People with neurological dysfunction.

- **MATERIALS:**

- Pen
- Pencil
- Writing pad
- Information sheet
- Data collection sheet

VII. PROCEDURE

- Informed consent was taken from the population.
- Permission was taken from the institutional ethical committee.
- Different centers were approached and permission was obtained prior to the study.
- Explanation of the experiment was given to the patient/ Dancers.
- Patients/Dancers willing to give consent to participate in the study were included.
- Participants were selected as per the criteria.
- Nordics Musculoskeletal questionnaire & Numeric Pain Rating Scale were distributed.
- Questions were explained to the participants.
- Data was collected and statistical analysis was done.

DEMOGRAPHICS: Age, sex, dominance along with general characteristics.

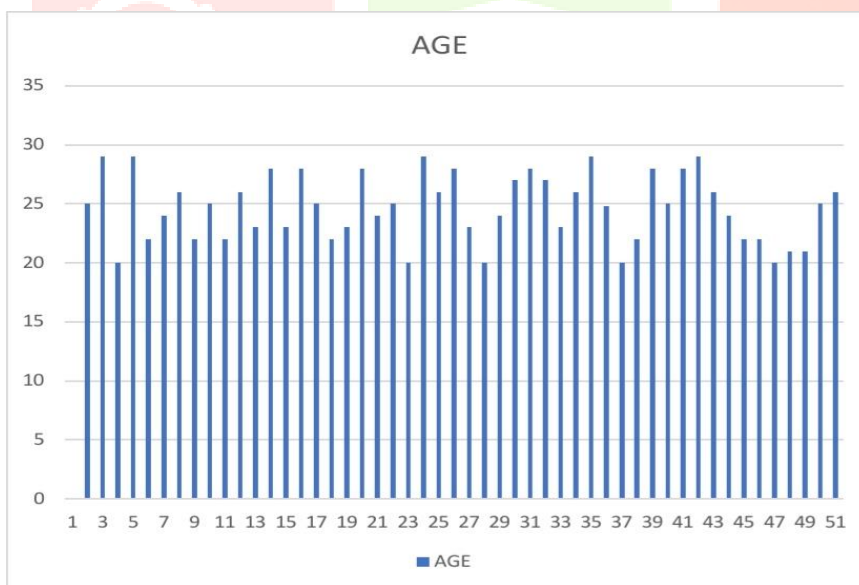
NORDICS MUSCULOSKELETAL QUESTIONNAIRE:

- Nordic Musculoskeletal Questionnaire (NMQ): This is the standard questionnaire which can be used in Musculoskeletal disorders This scale consists of pain in the neck, shoulder, elbow, wrist, Hip, knee, ankle, foot pain.

NUMERIC PAIN RATING SCALE

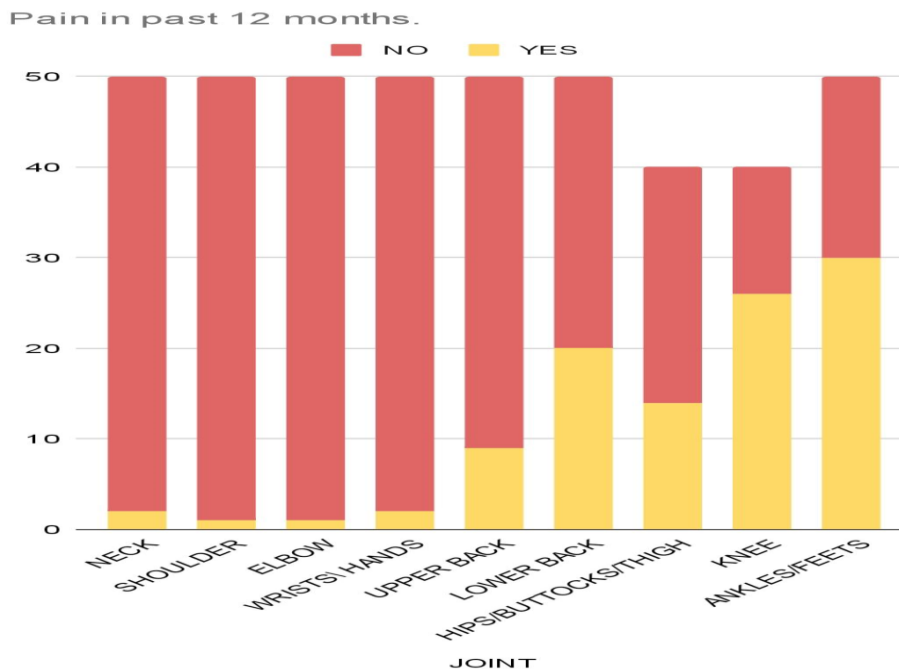
- The Numeric Pain Rating Scale is an outcome measure that is a unidimensional measure of pain intensity in adults, including those who have chronic pain due to rheumatic diseases.
- NPRS is a segmented numeric version the Visual Analog Scale (VAS) in which respondents select a whole number (0-10) that best reflects the intensity of his/her pain.

VIII. RESULTS



Graph 1: demographic characteristics of the participants.

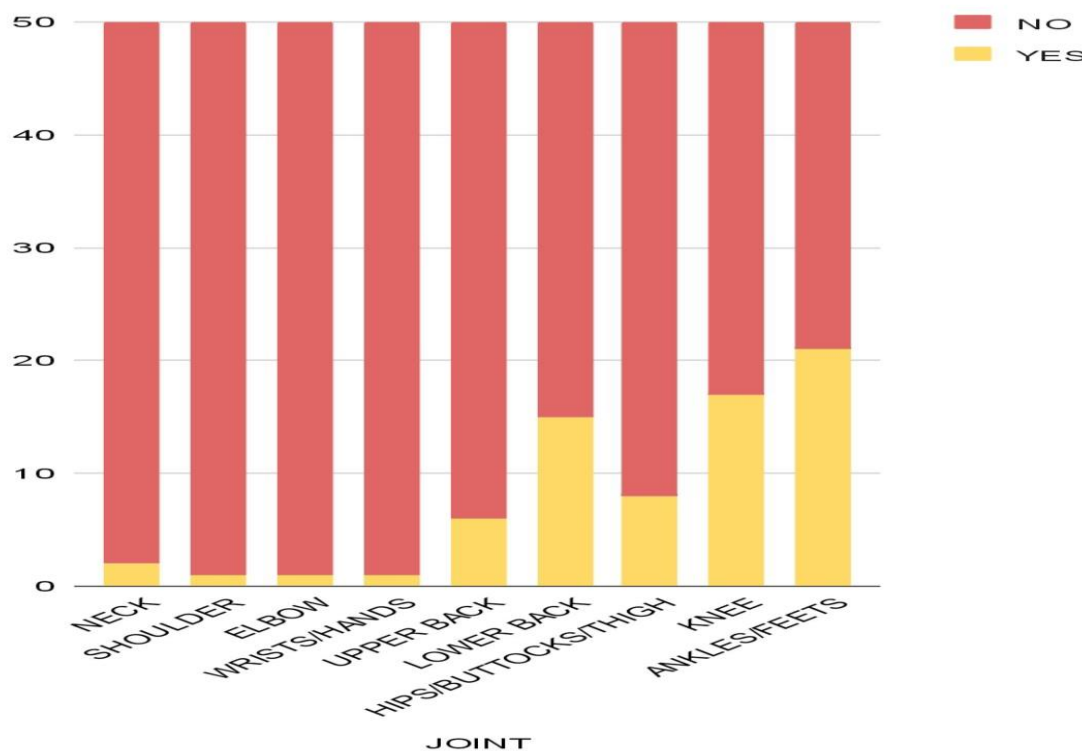
The above bar graph represents that , fifty participants were included in the study. The participants who were included were from the age group of 20-30 years.



Graph 2: Pain experienced in past 12 months.

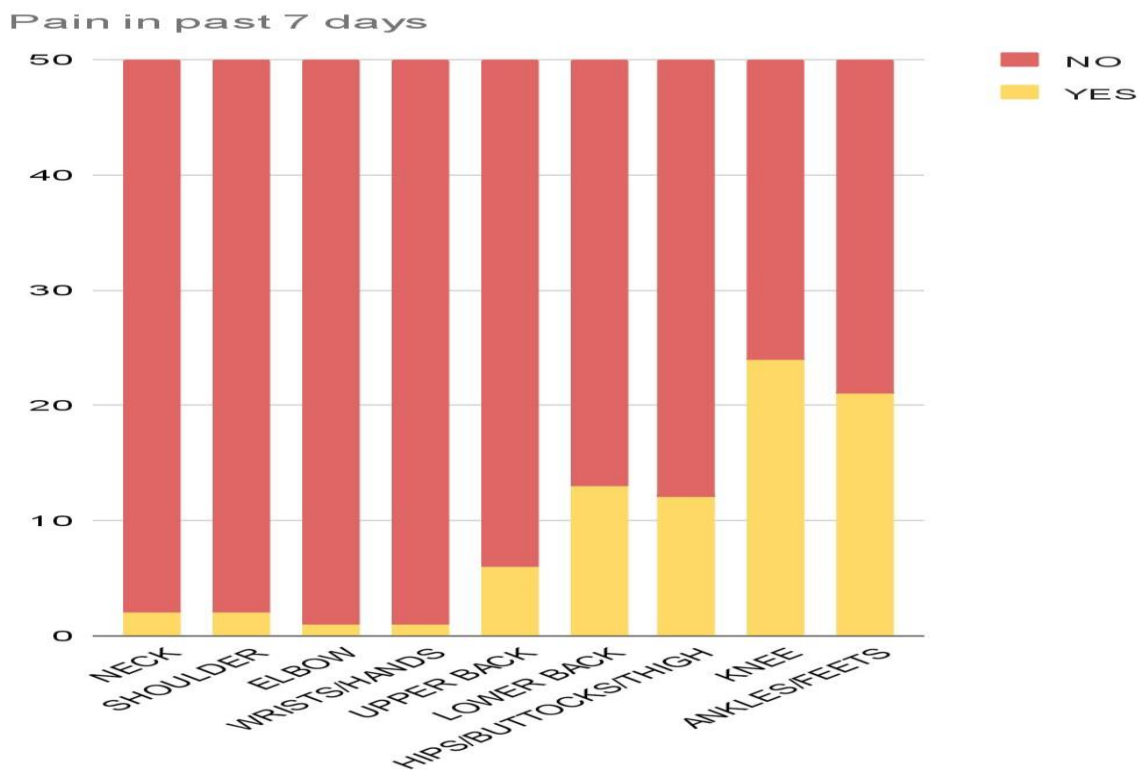
The above graph is made using the data collected by using the Nordic Musculoskeletal Questionnaire. The above bar graph represents that all the participants had pain in some of the other joints of the body in past 12 months. The joints which were involved at a greater extent are as follows, ankles/ feet's (60%), knee(52%), lower back(40%), hips/thighs/buttocks(28%) and upper back (18%).

12 months prevented activities



Graph 3: Participants that faced prevention of activities in past 12 months.

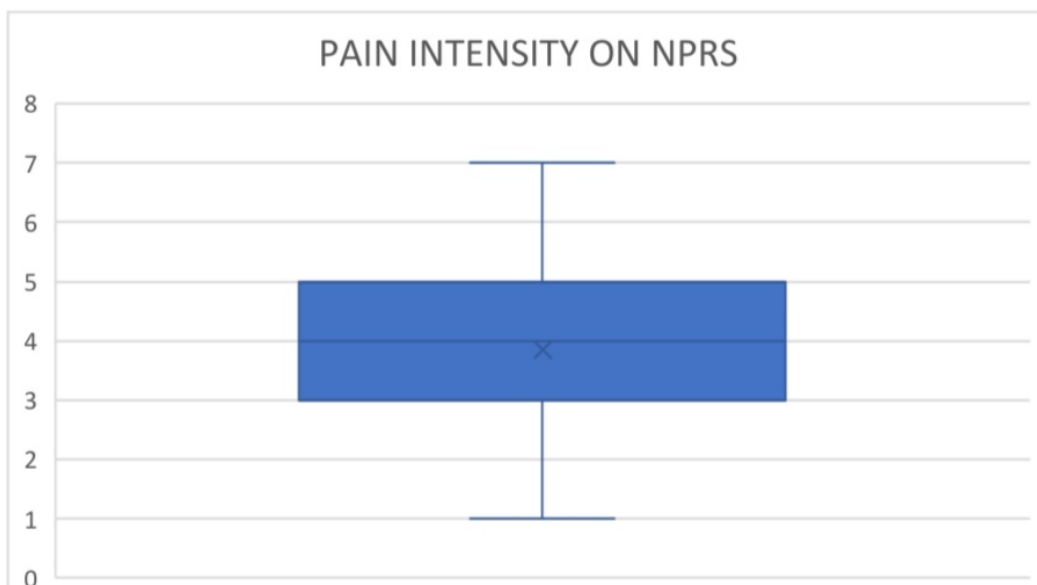
The above bar graph represents, the prevention of activities experienced by the participants because of pain. 42% of the participants experienced prevention of activities due to pain, which was the highest, following 34% of participants that faced prevention of activities due to pain in the knees, and 15% of participants experienced prevention of activities due to low back pain.



Graph 4: Pain experienced in past 7 days.

The above bar graph represents pain experienced by the participants in past 7 days.

The dancers experienced highest amount of pain in the knees which was 48%, followed by pain in ankles and feet's which was 42% and lower being 26%.



Graph 5: Pain perceived by participants on NPR Scale

The above Box and Whiskers chart was made using the data collected through Numeric Pain Rating Scale, it represents the amount of pain experienced by the participants in past 12 months course.

The lowest intensity of pain that was experienced by the participants was 1, highest was 7 and the average range of pain which was experienced by the dancers was between 3-5.

IX. DISCUSSION

This study aimed to assess the musculoskeletal disorders in Bharatanatyam .

Our first objective to assess the musculoskeletal disorders in Bharatanatyam in Navi Mumbai using Nordic Musculoskeletal Questionnaire.

It was found that all the participants reported with musculoskeletal disorders.

Due to the covid situations, dance classes were being conducted online, which must have lead to presence of training errors that took place.

A study by Shaw Bronner, Sheyl Ojofeitimi and Jon Springgson on Occupational Musculoskeletal Disorder in Dancers states that there are various extrinsic and intrinsic factors that lead to the presence of injuries in dancers such as, maintenance of different postures/repetitive movements/rigorous foot work, reduced flexibility and strength , previous injury and joint laxity.[7]

The second objective of this study was to find out which joints are majorly involved.

It was found that the joints which were majorly involved and experienced pain are ankles /feet (60%),knees(52%), lower back(40%) hips/ buttocks/thighs (28%), upper back (18%).

This study correlates with the study by Shaw Bronner, Sheyl Ojofeitimi and Jon Springgson on Occupational Musculoskeletal Disorder in Dancers which stated that the majority of annual dance injuries involve the lower extremity (57–75%), the foot and ankle were most frequently involved (26–57%).[7]

The third objective of this study was to asses pain intensity using numeric pain rating scale .

It was found that the amount of pain experienced by the dancers , the lowest rating of pain experienced is 1, highest being 7, and average range is between 3-5 out of 10.

Incorporation of warm up exercises before starting with the training , also adding stretches of muscles of all the joints of the body should be done.

Dancers should be educated on the importance of maintaining ideal posture during the practice hours.

It is important to spread awareness of strengthening exercises for the muscles of the joints which are majorly involved such as hips, knees and core strengthening should be done.

X. CONCLUSION

- The present study concluded that , all the joints are involved and had pain .
- Ankles and feet were the most prevalent followed by knee and low back pain in Bharatanatyam dancers.

Clinical implications- Performing warm up exercises before training, adding stretches of muscles of all the body joints, also maintaining ideal during practice hours.

XI. REFERENCES

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