

# Prevalence of Musculoskeletal Pain and Fatigue Among Amateur Hip-Hop Dancers: A Cross-Sectional Study

Susan Annie George<sup>1</sup>, Akash M.L<sup>2</sup>, Jesvina Vincent Parambi<sup>3</sup>, Shaima P.V.<sup>4</sup>

<sup>1</sup>Associate Professor, Medical Trust Institute of Medical Sciences, Cochin, Kerala & Ph.D. Scholar, Srinivas University, Mangalore,

<sup>2,3,4</sup>Final year Physiotherapy students, Medical Trust Institute of Medical Sciences, Cochin, Kerala

Corresponding Author: Susan Annie George

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## ABSTRACT

**Background:** Hip hop dance is one of the most physically demanding dance forms causing high incidence of pain and fatigue among amateur hip hop dancers. The pain and fatigue in turn causes them to adopt improper movement techniques and can lead to injuries which is one of the main factors that leads to short lived dance careers.

**Aim:** The aim of this study was to find out the prevalence of musculoskeletal pain and fatigue among amateur hip hop dancers.

**Method:** A cross sectional survey study was used. A purposive sample method composed of 103 amateur hip hop dancers between the ages of 10 to 30 years in and around Kerala. The outcome measures used were Modified Nordic Questionnaire for assessing musculoskeletal pain and Fatigue Assessment Scale for assessing the fatigue.

**Result:** 70 people (67.9%) experienced musculoskeletal pain during the last 3 and 6 months. 34 (33%) people experienced low back pain, 25 people experienced neck pain (24.2%), 22 (21.3%) people have had pain in their wrist/hands, 18 people (17.4%) have had pain in their shoulder and ankle/feet, knee pain was felt by 17 (16.5) people. Using the fatigue assessment scale it was found out that 68 (66%) experienced moderate fatigue and 3(3%) experienced severe fatigue.

**Conclusion:** From this study we concluded that there is a significant prevalence of musculoskeletal pain and fatigue among amateur hip hop dancers that interferes with

their dance participation and makes their careers short lived.

**Keywords:** Hip-hop dancers, Musculoskeletal pain, Fatigue, Modified Nordic Questionnaire, Fatigue Assessment Scale

## INTRODUCTION

Hip-hop dancing is a dynamic kind of dance that blends several freestyle motions to produce a work of cultural art. Hip-hop dancing has developed into one of the most well-known and influential dance genres through its three primary techniques of popping, locking, and breaking [1]. Hip hop performers report injury rates that are comparable to gymnastics but greater than other dance genres. These dancers should get instruction in biomechanics, injury avoidance, and the proper use of safety gear [2]. Professional hip hop dancers are known to adopt relatively safe practice routines compared to amateur hip hop dancers by using proper footwear, knee and ankle pads, kinesiology tapes, adequate warm up and cool down and proper postures and techniques. In the case of amateur hip hop dancers, they spent hours practicing their routine with faulty techniques, repeating high impact and high stress movements without any safety considerations. The development of preventative training programmes and the implementation of treatments aimed at reducing the incidence

of both musculoskeletal pain and fatigue can be aided by an understanding the prevalence of pain and fatigue among amateur hip hop dancers.

**Aim:**

- To determine the prevalence of musculoskeletal pain and fatigue among amateur hip hop dancers.

**Objectives:**

- To find out the occurrence of musculoskeletal pain among amateur hip hop dancers
- To find out the occurrence of fatigue among amateur hip hop dancers.

**MATERIALS & METHODS**

**Study design:** Cross-sectional study

**Study setting:** Dance studios/academies in Kerala

**Sample method:** Purposive sampling

**Study duration:** 3 months

**Sample size:** 103 amateur hip-hop dancers were recruited for this study. The age group of all the participants ranges from 10 to 30.

**Materials used:**

- Pen
- Paper
- Google forms
- Demographic chart
- Modified Nordic Questionnaire
- Fatigue Assessment Scale

**SELECTION CRITERIA**

**Inclusion Criteria**

- Age: 10 - 30yrs
- Both genders
- Amateur dancers
- Minimum dance practice of 6 hours per week
- Dancers who are willing to participate

**Exclusion Criteria**

- Professional hip hop dancers.
- Amateur dancers below age group of 10 and above age group of 30.
- Dancers who are not willing to cooperate.

- Any previous injuries unrelated to dance.

**Study Procedure:**

The subjects were carefully selected according to the inclusion and exclusion criteria and the Consent was taken from the respondent for the participation in the study. We introduced ourselves and briefly explained the purpose of study to the dancers who met the criteria for the study. The subjects was first asked to fill a demographic questionnaire (including years of dance training, hours of practice per week, practice days missed due to fatigue or pain). The questionnaires were circulated among dance academies and dance troops and were also sent as google forms to dancers that we were unable to reach in person. The Nordic Questionnaire was used to assess the musculoskeletal pain and Fatigue Assessment Scale was used for assessment of fatigue.

**RESULT**

Age group	Number
10 – 15 years	26
16 – 20 years	13
21 – 30 years	64

**Table: 1** represents the number of participants divided among three age categories

Assessed using Modified Nordic Questionnaire:

Total Number of study population	103
Dancers who have experienced pain	70
Dancers who have not experienced pain	33

**Table: 2**

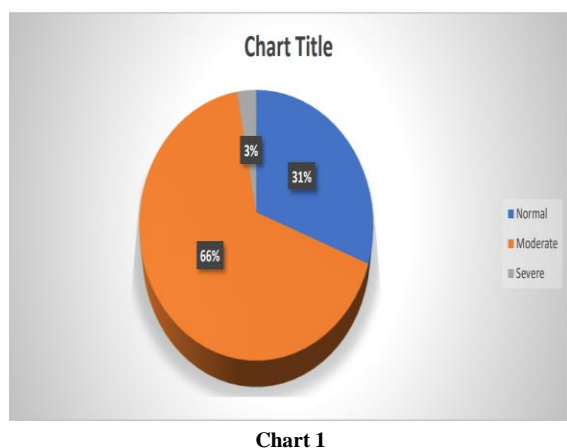
The above table summarizes the number of people that have and have not experienced pain in last 3 and 12 months which was assessed using the Modified Nordic Questionnaire.

REGION	NUMBER	PERCENTAGE
Lower back	34	33%
Neck	25	24.2%
Wrist/Hand	22	21.3%
Shoulder	18	17.4%
Ankle/Feet	18	17.4%
Knee	17	16.55%
Upper back	12	11.65%
Elbow	12	11.6%
Hip/Thighs	10	9.7%

**Table: 3**

The above table shows the percentage of prevalence of musculoskeletal pain in different regions among amateur hip hop dancers. The highest being the lower back with 33% and the least being hips/thighs with 9.7%. Also, high prevalence of pain in age group was 21-30 yrs.

Assessed using the Fatigue Assessment Scale:



The above pie chart shows the graphical representation of data received during fatigue assessment using the Fatigue Assessment Scale. 31 people (31%) were reported normal, 68 people (66%) were found to have moderate fatigue and 3 people (3%) reported severe fatigue. Also, high prevalence of fatigue in age group was 21-30 years.

## DISCUSSION

The purpose of this study was to determine the prevalence of musculoskeletal pain and fatigue among Hip-hop dancers. The medical literatures available are mainly about ballet dance and very few about hip-hop. Studies about amateur hip-hop dancers in India or Kerala can be described as very few to none. In our study we found out that there is a significant prevalence of musculoskeletal pain and fatigue among hip-hop dancers. Our findings while assessing with Modified Nordic Questionnaire shows that musculoskeletal pain occurrence among amateur dancers was 67.9% out of 103 subjects experienced

in line with the findings of some prior studies that reported a 70% of the respondents having pain in the musculoskeletal system occurring in context of dancing both within the last 3 and 12 months, with the lower back being most frequently and strongly affected (Jasmine Lampe et al 2019). In our study also, our findings show that lower back is the most common site of pain with 33%, and neck being the second most (24.2%). The reason mainly being due to sticking their hips too far out, not staying over the centre when they do back bends, lack of back muscle strength, hyperextension of spine and various other reasons.

Briefly a hip-hop dancing technique includes combination of foot work and flexibility of movement in the upper body involves core muscle and trunk motor control, while turns and jumps require proper core stabilizations. It is clear that position obtained during such performances hardly to be observed as anatomically natural or functional. Consequently, such unnatural body positions with quick changes in the movements and intensive rotation increase forces that affect lower back. All together the reasons for pain among amateur hip-hop dancers can be due to over exertion, faulty techniques, lack of sufficient warm up and cool down, lack of use of protective equipment, repetitive high impact movements. The high prevalence of musculoskeletal pain between the age of 21-30 among our study population could be explained by the fact that it is in line with findings of Hamilton (1986,61) who reported that older dancers experienced more injuries, major physical problems and required long recovery period than young dancers [3]. This may be also due the fact that our demographic population consisted mostly of participants between the ages of 21 -30.

Fatigue among the amateur hip-hop dancers was assessed using the fatigue assessing scale. Through the data analysis it was found that 69% amateur hip hop dancers experienced moderate to severe fatigue.

About 66% had moderate fatigue and 3% had severe fatigue. The highest fatigue was seen among study population between the ages of 21 – 30 years. The fatigue experienced by amateur hip-hop dancers are due to long hours of continuous dance practice, overexertion which in turn leads to adverse movement patterns and can cause injuries. Dancers require exceptional postural control to combat mechanically unstable positions. Dancers are prone to develop fatigue which may increase the risk of injury<sup>[4]</sup>. Fatigue may reduce the dancer ability to maintain the muscle synergies required for stable human movements. Thus, fatigue presents as a potential risk factor for injury in dancers. Fatigue significantly decrease muscular force development and contraction velocity, increases the forces imposed on passive tissue, adversely alters neural feedback and has negative effect on joint stability.

## CONCLUSION

The study concludes that there is a significant prevalence of musculoskeletal pain and fatigue among amateur hip-hop dancers that interferes with their dance participation and make their dance careers short lived. Understanding the prevalence can help in preventive training and establishment of interventions aiming to decrease the prevalence of both musculoskeletal pain and fatigue.

### Declaration by Authors

**Ethical Approval:** Approved

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**Conflict of Interest:** The authors declare no conflict of interest.

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