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Audience Response to Dance: An Analysis of Heart Rate Differences During Live Low-Country Dance Performances in Sri Lanka

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Abstract

This study examines the heart rate differences from baseline among healthy volunteer spectators while watching different types of live Low Country dance performances, providing a scientific perspective on Sri Lankan traditional dance. The research problem was framed as follows: Are there any changes in the heart rate of spectators when watching different types of live Low Country dance performances? The study was conducted as cross-sectional research using 48 healthy volunteer participants during 2022–2023. Data was analyzed quantitatively. The scope of the study was limited to live performances of Low Country dance forms: Devol, Giri Dēvi, Gini Sisila, Salu Pāliya, Nonchi Kōlama, and Kalu Yakā dances. Heart rate was measured using 3-channel portable digital ECG monitors while participants observed the performances. The results indicated a reduction in mean heart rate from baseline across all performances. The mean decreases from baseline heart rate ranged from 2.11 bpm to 8.04 bpm. Among the dances, Nonchi Kōlama and Gini Sisila elicited the greatest decreases in heart rate, while the smallest reductions were observed in the Giri Dēvi (2.39 bpm) and Kalu Yakā (2.11 bpm) performances. However, no significant differences were observed across the dances based on movement qualities associated with masculinity or femininity. When the mean decrease in heart rate for different forms of dance was compared to a Devol dance without drumming (used as a control), significant differences were observed only in the Salu Pāliya and Kalu Yakā dances. This research demonstrated a decrease in spectators' heart rates while watching live performances. The results suggest that dance can be developed as a relaxation technique. Preserving this art form holds relevance not only for cultural continuity but also for scientific research on well-being.

Key Words: *Cultural Preservation, Heart Rate, Low Country Dance, Spectators, Relaxation*

1. Introduction

Dance is a timeless expression of humanity, with many of its forms recognized as intangible cultural heritage and deeply valued by human societies. From early times, people have embraced and preserved the art of dance as an integral part of every culture. Humans utilize dance as a medium for various forms of expression, among which self-satisfaction is one. At times, dance is performed for the pleasure of external entities, including both human and superhuman beings. Similarly, it serves various religious and ritualistic purposes. In contemporary contexts, dance is practiced not only as a means of expressing cultural values but also as a form of physical exercise and a medium for promoting mental well-being (Tao et al., 2022; Fong Yan et al., 2024).

As a performing art, dance inherently involves both the performer and the audience. The relationship between the dancer and the audience is interdependent, as each contributes to the overall meaning and experience of the performance. Since dance functions as a performative cultural tradition, the presence of an audience is essential, as the performance itself is often oriented toward engaging and pleasing the spectators.

According to Mackrell (2020), "dance is a powerful impulse, but the art of dance is that impulse channeled by skillful performers into something that becomes intensely expressive and that may delight spectators who feel no wish to dance themselves." It is widely acknowledged that both the performer and the audience experience deep aesthetic and emotional satisfaction through the art of dance.

It is well known in modern society that dance can help to calm the emotions of the audience. The general idea of dance rests on its nature as a pleasing art form. It is worth asking whether this enjoyment is purely mental, or whether there are physiological reactions or impacts involved.

The Eastern philosopher Bharata Muni, in his text *Nāṭya Śāstra*, introduced the concept of *rasa*—the sentiments. *Rasa* is a kind of aesthetic emotion or sentiment experienced by the audience in response to a creative performance. Bharata Muni classified *rasa* into eight categories: Śṛṅgāra (erotic/amorous), Hāsya (humorous), Karuṇa (pathetic), Raudra (furious), Vīra (valorous/heroic), Bhayānaka (terrifying/fearful), Bībhatsa (repugnant/disgust), and Adbhuta (wondrous). His theory of *rasa* outlines the mental responses that occur in spectators during a performance (*The Nāṭyaśāstra* ascribed to Bharata-Muni, 1951).

In Western philosophy, Aristotle's concept of *katharsis* (catharsis), introduced in his seminal work *Poetics* (4th century B.C.), refers to the emotional cleansing or purgation experienced by audiences through art. This concept was primarily based on the tragic plays of that era and is central to Aristotle's theory of drama and its psychological impact (Aristotle, 335 B.C.E./2013). He argued that through the representation of pity and fear in tragedy, audiences undergo a process of emotional

release, leading to the restoration of balance and psychological health. This concept reflects the power of performance to influence spectators' psychological states.

These theories often elude scientific validation because they depend on subjective and cultural interpretations of art and lack quantifiable parameters for emotions such as pity, fear, or aesthetic enjoyment. Moreover, these philosophical concepts were conceived in eras that did not prioritize empirical methods.

With technological advancements, researchers have begun to investigate the effects of dance on both performers and audiences in various ways. Some researchers have found that the presence of an audience affects dancers' emotions and movements (Shikanai & Hachimura, 2014). Concepts such as kinesthetic empathy have also been developed based on audience perception—referring to the sensation of movement felt in one's own body while watching performers. In dance, kinesthesia considers not only the dancer's internal awareness of bodily movement but also the spectator's ability to empathize with and 'feel' the dancer's movements (Reason & Reynolds, 2010). Neuroaesthetics is another emerging field that explores the neurological basis of aesthetic experience.

How spectators are stimulated through dance remains a difficult phenomenon to measure. Aesthetic experience is subjective and shaped by the cultural and social background of the spectator. Although mental stimulation is difficult to quantify, modern science is advanced enough to measure the physical responses that occur when watching a dance performance.

Some studies have measured the physiological experiences of observers (Vukadinović & Marković, 2024) while watching dance performances. This research has revealed that the performance and the audience are interconnected, a relationship that can be evidenced through various audience reactions. Functional brain imaging (fMRI) is one method used to study this connection (Reason et al., 2016).

Changes in heart rate are one of the basic physiological parameters that may occur in spectators while watching dance performances. Heart rate fluctuates due to variations in the heart's electrical activity, influenced by external factors such as exercise, stress, caffeine, alcohol, and illness, as well as internal physiological factors such as age, emotions, body position, medications, and underlying health conditions. Key influencing factors are categorized as physiological (e.g., age, gender, genetics), lifestyle (e.g., physical activity, alcohol use, smoking, drugs, diet), environmental (e.g., time of day, temperature, noise), and methodological (e.g., body position, recording duration, respiration) (Damoun et al., 2024).

Another area of investigation focuses on how specific emotions influence cardiac activity, reflecting autonomic responses. In one study, four emotions were tested using recorded dance performances, and results indicated that heart rate varied across different emotional conditions, with significantly lower heart rates observed

in the amused condition compared to the angry, fearful, and neutral conditions (Wu et al., 2019).

Although the physiological responses of audiences to dance performances have been investigated globally, despite Sri Lanka's rich diversity of traditional dance forms, these have not yet been scientifically examined to assess their effects on audiences. While the cultural and spiritual dimensions of Sri Lankan dance have been studied, research focusing specifically on its physiological impact remains lacking. Therefore, it is essential to scientifically explore the physical responses of audiences to these performances.

Accordingly, this study was conducted with the objective of investigating the heart rate differences from baseline among healthy volunteer spectators while watching different types of live dance performances. The research problem was formulated as follows: *Are there any changes in the heart rate of spectators when watching different types of live dance performances from the Sri Lankan Low Country dance tradition?*

The Sri Lankan dance tradition is mainly based on rituals that are directly focused on healing. Among the three main dance traditions that prevail in Sri Lanka—Kandyan dance, Low Country dance, and Sabaragamu dance—the Low Country dance is the one most closely associated with healing rituals (Dissanayake, 1992). In addition, the Low Country dance tradition exhibits a greater diversity of dance forms than the other two styles.

The Low Country dance is a traditional dance style that originated in the southern coastal areas of Sri Lanka. For this study, seven Low Country dance items were selected based on specific principles, regardless of their original performance context.

Figure 01. Devol Dance

The selected dance forms to assess heart rate differences from baseline among healthy volunteer spectators are:

1. Devol Dance (Figure 01)

The Devol Dance is a purely rhythmic masculine dance originally performed in the *Devol Maduwa*, a traditional ritual prevailing in the southern coastal areas of Sri Lanka. It is a dance form that does not include singing, except during the opening segment. This dance consists solely of rhythmic movements without conveying any specific narrative meaning. It belongs to the masculine dance category, and the main character represents the deity Devol, who is regarded as one of the localized gods in Sri Lanka. According to Bharata Muni's

Nāṭyaśāstra (1951), this dance can be categorized under *Tāṇḍava* dance. The *Vīra rasa* (heroic sentiment) is the dominant emotion conveyed through the performance.

In this study, the Devol Dance (Figure 01) was performed twice within a single session—once accompanied by drumming and once without drumming.

2. Giri Dēvi dance (Figure 02)

Figure 02. Giri Devi Dance

The Giri Dēvi Dance, recognized for its characteristic feminine elements, was originally performed in the Kōlam Maduwa with a mask as part of a folk-art tradition that originated in the coastal regions of Sri Lanka. In contemporary times, however, it is most often presented on stage, frequently without strict adherence to its original ritualistic features. The Giri Dēvi Dance is performed by a female dancer without wearing a mask, portraying the mythical character Giri Dēvi in Sinhalese folklore—a beautiful princess whom the dance form represents. The predominant sentiment (rasa) expressed in this performance is Śṛṅgāra (erotic or amorous). The Giri Dēvi Dance is accompanied by drumbeats and singing that complement the dance movements. In its feminine grace and melodious nature, this dance form distinctly differs from the Devol Dance.

3. Gini Sisila dance (Figure 03)

Figure 03. GinisisilaDance

Gini Sisila is a distinctive dance that involves the use of fire torches in both hands. During the performance, the dancer places the torches in the mouth, creating the illusion of consuming or eating fire. The dancer's body comes into contact with the flames without apparent harm, captivating the audience's attention.

This performance evokes a sense of curiosity and wonder among spectators. The predominant sentiments (rasa) expressed in this dance are *Vīra* rasa (heroic) and *Adbhuta rasa* (astonishment or awe).

4. Salu Pāliya dance (Figure 04)

Salu Pāliya is a traditional mask dance that originally formed part of the folk ritual known as Sanniyakuma, practiced in the southern coastal regions of Sri Lanka. The dance is performed with spoken dialogues recited by the dancer and accompanied by a drummer. It typically aims to entertain and amuse spectators during traditional ritual performances.

The dancer wears black clothing and a white scarf draped around the shoulders. Through its dialogue and interactive performance style, the dance actively engages the audience. The predominant sentiment (rasa) expressed in Salu Pāliya is Hāsya (humor).

Figure 04. Salu Pāliya

5. Nonchi kōlama (Figure 05)

Figure 05. Nonchi Kolama

Nonchi Kōlama is a traditional mask dance performed within the Kōlam dance tradition of the Low Country. It is notable for engaging the audience through the performers' dialogues and expressive movements. The character depicted is an elderly woman named Nonchi Akkā (Figure 05) — akkā meaning "elder sister" — who appears as a poor old lady attempting to present herself as a young girl.

The mask, costume, and physical portrayal are designed to reflect this characterization. The dialogues center around this theme and are intended to amuse and entertain the spectators. The predominant rasas or sentiments conveyed in this dance are Bībhatsa rasa (disgust) and Hāsya rasa (humor).

6. Kalu Yakā dance (Figure 06)

The *Kalu Yakā* mask is typically large, dark-colored, and fearsome, featuring bulging eyes, sharp teeth, and exaggerated facial features that provoke fear and awe. The predominant *rasa* or sentiment conveyed in this dance is *Bhayānaka rasa* (terrible or fearful sentiment).

Figure 06. Kalu Yakā Dance

However, the performance concludes with humorous acts intended to dispel the fear associated with the devil character. In Sri Lankan ritual practices, there is often an effort to reduce the fear of demonic figures by rendering these characters more familiar and less threatening to the afflicted individual. In this research, the *Kalu Yakā* dance was examined for its expression of intense emotions—particularly fear (*Bhayānaka rasa*)—followed by light humor that re-engages the audience, consistent with its original traditional purpose.

Among these dances, the **Devol** (Figure 1) and **Giri Dēvi** (Figure 2) performances are categorized as masculine and feminine dance forms, respectively. They correspond to the Indian concepts of **Thāndava** (vigorous) and **Lāsya** (graceful) as described in *The Nāṭyaśāstra* (Bharata-Muni, 1951). These dances do not involve mask performance, nor do they evoke terrifying moods or amusement. Both emphasize rhythm through bodily movement rather than narrative or symbolic expression, thereby classifying them as examples of **pure dance (Nritta)**. Although the Giri Dēvi dance is accompanied by singing, its gestures do not convey specific meanings.

The **Ginisisila** (Figure 3) dance captivates audiences through daring fire displays, while **Salu Pāliya** (Figure 4) is characterized by its humorous elements, and **Kalu Yakā** (Figure 6) evokes fear. **Nonchi Kōlama** (Figure 5) integrates elements of both disgust and humor.

These six dance forms were selected for the study based on their distinct characteristics, particularly regarding movement techniques and the specific sentiments or **rasa** they communicate to audiences. To evaluate the effect of drumming on dance, the Devol Dance (Figure 1) was performed twice—once accompanied by vocalized drum syllables and once with live drumming. Altogether, seven performances were conducted, as the two variations of the Devol dance were performed separately.

Most of these dances originate from Sri Lankan ritual traditions, originally intended for healing purposes. However, this therapeutic function has gradually diminished, with many contemporary performances emphasizing entertainment rather than the alleviation of physical or mental suffering. Although numerous categories exist within the Low Country dance tradition, these particular dances were chosen for their prominence in contemporary theatrical practice.

This study also explores the potential of **dance as a therapeutic tool**. Accordingly, it was conducted in a natural setting without emphasizing ritualistic dimensions, thereby examining the possibility of applying dance therapy in everyday contexts rather than ritual frameworks. Furthermore, the research contributes to the broader understanding of Sri Lanka's **intangible cultural heritage** within a scientific perspective, particularly in light of ongoing technological transformations.

2. Materials and Methods

2.1 Population, Sample and sample selection

This research employed quantitative methods and was conducted as a cross-sectional study during live performances of seven different dance forms belonging to the Low Country dance tradition of Sri Lanka between 2022 and 2023. The performances included the Devol Dance with drums and without drums, Giri Dēvi Dance, Gini Sisila Dance, Salu Pāliya Dance, Nonchi Kōlama, and Kalu Yakā Dance. The study was designed within an objectivist paradigm and was based on heart rate measurements of healthy volunteer spectators.

To measure heart rate responses while watching these Low Country dance forms, a sample of 48 spectators was randomly selected, comprising academic and non-academic staff members of the University of Sri Jayewardenepura, Sri Lanka. The live performances were specifically organized for this research and conducted in the university's dance practical hall. Participants were invited to attend according to their availability. The sample consisted of 48 individuals, including 16 males and 32 females, aged between 20 and 60 years.

Previous research has shown significant differences in the perception and appreciation of dance between professional dancers and non-dancers (Calvo-Merino et al., 2005; Cross et al., 2006; Reason & Reynolds, 2010). Spectatorship is not a neutral or passive act; it is shaped by the individual background, knowledge, and cultural context of the observer.

This study included healthy volunteers who had a keen interest in dance but had not formally learned dance as a discipline. Participants provided informed consent and spent approximately 45–60 minutes watching the performances. Sufficient time was allotted for participants to familiarize themselves with the ECG leads attached to their bodies, which continuously measured their heart rate throughout the performances. This normalization period allowed participants to become comfortable with the equipment and fully engage in, and appreciate, the performances.

2.2 Method of data collection

The study was conducted with three volunteers participating at a time. The seven dance forms were performed sequentially in random order for each group of three, with a one-minute interval between each performance. The dancers, selected as resource personnel, were professional performers. To ensure consistency in environmental conditions throughout the data collection period, all sessions were conducted before 12 noon.

A trained nurse from the university medical center was responsible for attaching the ECG leads. Participants were able to watch the performances while wearing portable ECG monitors. Three-channel portable digital ECG monitors with continuous recording were used to measure heart rate.

ECG recordings began at the point of lead attachment, prior to the participants entering the dance hall. Participants were allowed 10–15 minutes to acclimatize to the equipment. The ECG monitors continuously recorded heart rates in digital format, starting before the performance to establish a baseline and continuing until the conclusion of the performance. Recordings were also maintained for three minutes after the performance ended.

2.3 Data analysis

Statistical analysis was conducted using SPSS for Windows. Quantitative methods were employed to summarize the characteristics of the study population and the study outcomes. Standardized tables were created to clearly present the study population and the measured variables. Analysis of variance (ANOVA) was used to examine differences in the dependent variables both between groups and within groups.

2.4 Ethical considerations

The study received ethical approval from the Ethics Review Committee of the Faculty of Medical Sciences, University of Sri Jayewardenepura, Sri Lanka (Ref. No: ERC 17/19). Participation was voluntary and non-coercive. Volunteers with no history of chronic diseases and not taking any medications were included in the sample. Exclusion criteria comprised individuals with a history of entering trance-like states, those who had formally studied dance in schools or universities, and individuals actively involved in dance. Additionally, volunteers whose baseline heart rate exhibited abnormal variations, those taking medications that could affect heart rate, and individuals with thyroid disorders were also excluded.

3. Results and Discussion

3.1 General characteristics of the study population

The study sample consisted of 16 (33%) males and 32 (67%) females. The mean age of the study sample was 36.22 (± 9.23SD) years (Table 1).

Table 1. Age and gender distribution of the study sample

	Number	Percentage (%)	Mean Age (±SD)	Age range (Years)
Male	16	33	35.53 (9.00)	24 - 54
Female	32	67	36.60 (9.47)	23 - 56
Total	48	100	36.24 (9.23)	23 - 56

3.2 Heart rate changes during the traditional low country dance performances

ECG measurements indicated a mean baseline heart rate of 85.28 beats per minute (SD ± 11.55) among all participants. The results showed a reduction in mean heart rate from baseline immediately after watching the seven dance performances, compared to the initial heart rate measured before the commencement of the performances (Table 2).

Table 2. Mean decrease in heart rate in relation to different forms of dances

Dance form	Mean heart rate before watching the performances (beats per minute/bpm)	Reduction of mean heart rate after watching performances (beats per minute/bpm)
Salu Pāliya	81.92 (18.04)	3.40
Kalu Yakā	83.21 (18.06)	2.11
Devol Dance with drumming	80.12 (17.33)	5.21
Devol Dance without drumming	78.35 (19.80)	6.97
Nonchi Kōlama	79.03 (16.49)	8.04
Gini Sisila	81.05 (11.46)	7.88
Giri Dēvi	79.66 (16.60)	2.39

*Mean basal heart rate = 85.28 (±11.55SD) beats per minute.

Among the seven dances, *Nonchi Kōlama* (79.03 ± 16.49 bpm) and *Gini Sisila* (81.05 ± 11.46 bpm) elicited the greatest decreases in heart rate, with mean reductions of 8.04 bpm and 7.88 bpm, respectively, whereas *Giri Dēvi* (2.39 bpm) and *Kalu Yakā* (2.11 bpm) produced the smallest decreases (Table 2).

Although *Nonchi Kōlama* and *Gini Sisila* exhibited the largest reductions in heart rate, the two dances differ substantially in thematic content, gestures, and overall presentation. *Nonchi Kōlama* evokes disgust (*Bībhatsa rasa*) and humor (*Hāsya rasa*), while *Gini Sisila* generates curiosity and astonishment (*Adbhuta rasa*). Previous research has shown that amusement can lead to a decrease in heart rate (Wu et al., 2019). This finding aligns with the results of *Nonchi Kōlama* in the present study, while *Salu Pāliya*, another humorous performance, also produced a decrease in heart rate, albeit to a lesser extent than *Nonchi Kōlama*.

The *Gini Sisila* fire dance, which involves gestures such as touching fire to the body and performing fire-eating, evokes a sense of wonder (*Adbhuta rasa*) and, at times, fear among the audience. Traditionally, *Gini Sisila* is performed at night, where the interplay of darkness and fire enhances its visual and emotional impact. In this study, however, it was performed during daytime hours to maintain consistency across all seven dance forms. It is possible that the results might differ if the performance were conducted at night under darker conditions.

The *Devol Dance* (80.12 ± 17.33 bpm) showed a moderate mean decrease of 5.21 bpm. In contrast, *Salu Pāliya* (81.92 ± 18.04 bpm), *Kalu Yakā* (83.21 ± 18.06 bpm), and *Giri Dēvi* (79.66 ± 16.60 bpm) were associated with comparatively smaller reductions, ranging from 2.11 to 3.40 bpm (Table 2). *Salu Pāliya* and *Kalu Yakā* are traditional mask dances, bearing notable similarities to *Nonchi Kōlama*, as all three contain dramatic elements and dialogue. *Salu Pāliya* features considerable humor but does not evoke the disgust experienced in *Nonchi Kōlama*. *Kalu Yakā* is unique in that it begins with fear-inducing scenes but concludes on a neutral or lighthearted note. The character initially frightens the audience through appearance and swordplay, then lightens the mood with humorous dialogue.

In this study, *Hāsya rasa* (amusement) was evoked by *Salu Pāliya*, while *Nonchi Kōlama* incorporated elements of both *Bībhatsa rasa* (disgust) and *Hāsya rasa* (humor**)**. Among these, *Nonchi Kolama* produced the greatest decrease in heart rate, whereas *Salu Pāliya* resulted in a smaller reduction. The *Salu Pāliya* dance primarily conveys humor (*Hāsya rasa*) through dialogue, while *Nonchi Kōlama* combines humor in external appearance, gestures, and dialogue, eliciting stronger feelings of both humor (*Hāsya rasa*) and disgust (*Bībhatsa rasa)*. If the audience does not fully understand the dialogue spoken by the *Salu Pāliya* character, the intended humor may not be fully perceived. Therefore, it can be inferred that *Salu Pāliya* may not convey its intended sentiments to the audience as effectively as *Nonchi Kolama*.

The smallest reduction in heart rate was observed in the *Giri Dēvi* Dance (2.39 bpm) and in *Kalu Yak*ā (2.11 bpm) (table2). These findings are noteworthy, given the distinct characteristics of these two dance forms. *Giri dēvi* is a graceful dance performed by a female dancer, evoking primarily an erotic sentiment (*Shringāra rasa*) without eliciting other emotions. *Kalu Yak*ā is a mythological figure depicted by a performer wearing a devil mask. These two dances resulted in the smallest decrease in heart rate among all seven performances. Compared to the other dance performances, the *Kalu Yak*ā dance is characterized by its predominantly furious nature, which may explain the smallest decrease in heart rate observed. Previous research has shown that negative emotions typically increase heart rate, whereas positive emotions have a more variable effect (Kreibig, 2010). However, the *Kalu Yak*ā dance does not convey purely negative emotions throughout the performance. Although it initially evokes a sense of fury through the dancer's gestures and external appearance, the character gradually adopts a more empathetic tone, interacting playfully with the audience. This shift toward a more neutral emotional state may have prevented an increase in heart rate, aligning with previous findings that amusement is associated with a decrease in heart rate (Wu et al., 2019). This finding suggests that Sri Lankan ritualistic dance possesses a strong potential for promoting mental relaxation, indicating a psychotherapeutic effect even when demon characters are featured.

In all seven dance forms, the observed reduction in heart rate was consistent, indicating that participation in these performances may have had a beneficial effect on the mental and physiological responses. In general dance has been known to provide various benefits, including stress reduction, emotional expression, and relaxation. The participants seemed to have experienced a calming effect from the dance forms, regardless of their specific characteristics. This outcome indicates that

dance as a performing art is directly associated with a relaxing physiological response among the audience.

3.3 Comparison of Heart Rate Reduction Across Different Dance Forms

The study found that *Giri Dēvi* dance leads to the lowest decrease in heart rate (2.39 bpm), in contrast to *Devol* (5.21 bpm) which shows a moderate change (Table 2).

As both dances are the most similar in their characteristics but significant difference with the masculine and feminine forms of dance, we compared the results of both dance forms.

Table 3. Comparison of mean decrease in heart rate in relation to different forms of dances – with *Devol Dance* (*Thāndava*/Masculine form) and *Giri Dēvi* Dance (*Lāsya*/feminine form)

Parameters	t-value	p- value[#]
Devol Dance vs Giri Dēvi	- 1.232	0.225

[#] Paired sample t-test.

Specifically, the *Giri Devi* dance is described as a graceful performance presented by a female dancer, while the *Devol* dance is characterized by its masculine energy and vigorous movements. Although the nature and energy levels of the *Giri Dēvi* and *Devol* dances differ significantly in style and expression, no statistically significant difference ($p > 0.05$) was found in the reduction of spectators' heart rates (Table 3).

This finding suggests that, at least in the context of this study, the gender or energetic qualities of the dance forms did not have a significant impact on spectators' heart rate. Both forms affected the audience in different ways without considering their gender base energetic values. Both dance forms possess unique characteristics that can captivate spectators. However, the influence of masculinity and femininity on these characteristics should be explored across a wider range of dance traditions to reach a more conclusive understanding. In the present study comparing *Devol* dance and *Giri Dēvi* dance, no significant difference in spectators' heart rates was observed between the two forms.

A comparison of the mean heart rate reduction between the *Devol* dance performed without drumming and with drumming revealed no statistically significant difference.

Table 4. Comparison of Mean Decrease in Heart Rate Between *Devol Dance* Without Drumming and With Drumming

Parameters	t-value	p- value[#]
Devol with drums vs without drums	- 0.945	0.350

[#] Paired sample t-test.

One of the objectives of this research was to determine whether the heart rate of spectators is affected by the rhythm of sound (Drumming and Singing).

The study included performances of the *Devol* dance with drumming and without drumming. When there was no drumming, the dancer vocalized drum syllables while performing. Data was collected to observe the heart rate of participants while they are exposed to dance performances accompanied by drumming and without drumming. Results indicated that there is no significant difference ($p>0.05$) in reduction in heart rate between the two types of dances (Table 04).

Various studies have explored the effects of music on heart rate and have found that certain types of music can cause physiological changes in individuals. Recent research on Affective and physiological responses to environmental noises and music (Gomez & Danuser, 2004) investigated that both similarities and differences in physiological parameters emerge when comparing the results for noises and music. But in this research no difference was found between the dance without accompanying drums, and dance with accompanying drums.

Reasons for these results cannot be postulated now but should be explored after further investigations in the future. It can be inferred that audiences may focus less on the music than on the visual elements presented in a dance performance.

Table 5. Comparison of mean decrease in heart rate in relation to different forms of dances in comparison to a dance without drumming as control

Parameter	t-value	p- value[#]
Salu Pāliya	-0.247	0.036*
*Kalu Yak*ā	2.871	0.006*
Nonchi	-0.507	0.614
Gini Sisila	0.401	0.690
Giri Dēvi	-1.232	0.225

[#] Paired sample t-test.
* Significant at $p<0.05$

When comparing the mean decrease in heart rate in relation to different forms of dances in comparison to a dance without drumming (*Devol*) as control, significant differences were observed with *Salu Pāliya* (negative) and *Kalu Yak*ā dance forms (Table 5).

The results indicate that there was no significant difference in heart rate observed according to the drum participation or gender performer. Since this was only a baseline study in a specific context, it is premature to draw conclusions without further research involving more dance forms and settings.

The research observed a decrease in heart rate from baseline across all dance forms tested and suggests that further studies could investigate the effects of various types of dances on spectators' heart rates.

4. Conclusion

Dance is widely recognized as an important aspect of intangible cultural heritage. Every culture has its own distinct dance traditions, passed down through generations. Many dance forms originated from rituals believed to possess magical powers, though lacking scientific evidence. In Sri Lanka, traditional dances still serve both entertainment and ritualistic purposes, with their benefits yet to be scientifically validated.

This research shows that all seven dances chosen for the study demonstrated a reduction in heart rate among healthy volunteers, regardless of their original context or characteristics. The mean decrease from baseline heart rate ranged from 2.11bpm to 8.04.bpm. Among the dances, *Nonchi Kōlama* elicited the greatest decrease in heart rate (8.04bpm) while the smallest reduction in heart rate was observed in *Kalu Yak*ā (2.11bpm) performances. The Nonchi Kōlama, characterized by elements of disgust and humor, significantly reduces audience heart rates. Similarly, the Kalu Yakā performance, which evokes intense and often unsettling emotions, also results in a decrease in heart rate from baseline. Although negative emotions typically elevate heart rate, the Kalu Yakā dance demonstrates a capacity to lower it, likely due to the humorous and entertaining segment that concludes the performance. This effect highlights the psychotherapeutic potential embedded within Sri Lankan ritual dance traditions.

No statistically significant difference was observed between dances of varying features, including the movement qualities associated with masculinity or femininity. Only the *Salu Pāliya* and *Kalu Yak*ā *dances* shows significant differences in the mean decrease in heart rate in relation to different forms of dances in comparison to a Devol dance without drumming as control. Since this was only a baseline study in a specific context, it is premature to draw conclusions on the impact of different characteristics without further research involving more dance forms and settings.

The results indicate that watching dance reduces spectators' heart rates, regardless of some performance's characteristics. According to Bharata Muni's *rasa* theory, dance and drama evoke *rasa* or sentiments that provide aesthetic pleasure. Our study also finds that viewers enjoy dance and experience various *rasa or sentiments*, each linked to different degrees of heart rate reduction.

Further investigation could support its development as a therapeutic approach by adapting ritual dance outside its original context. Rituals remain prevalent in society as methods for mental and physical healing but replicating them in their traditional form is challenging in the current sociocultural environment. These findings provide a scientific perspective on Sri Lankan Traditional dances as a relaxation method and present an opportunity to introduce this cultural practice into scientific discourse.

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