Jurnal SPORTIF: Jurnal Penelitian Pembelajaran
Vol. 9 No. 3, December 2023, pp. 384 – 400
https://doi.org/10.29407/js_unpgri.v9i3.20546

# The influence of kinesthetic intelligence in enhancing the choreographic creativity of aerobics instructors

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Received: 5 July 2023; Revised: 23 September 2023; Accepted: 21 October 2023; Available online: 02 December 2023.

## Abstract

This study aimed to determine how crucial kinesthetic intelligence is in adding to the choreographic creativity of callisthenics preceptors. This exploration system was carried out by experimental exploration styles using quantitative approaches. Purposive sampling was used as a sampling technique. The subjects of this research were 40 licensed aerobics instructors. Data analysis Techniques used Quantitative Analysis Techniques. The instrument used was the TTCT-Verbal Test (Torrance Test of Creative Thinking-Verbal) from Joy Paul Guilford. Data analysis using SPSS statistical software with the Two Way ANOVA Test. The results of this research stated that instructors with high kinesthetic intelligence exhibited no significant effect on choreographic creativity (Sig. 0.961 > 0.05). However, instructors with low kinesthetic intelligence showed an increase in choreographic creativity (Sig. 0.036 < 0.05). The final results showed that low and high levels of kinesthetic intelligence have no influence on choreographic creativity (Sig. 369 > 0.05). These unexpected results challenge existing understanding, offering a new perspective that kinesthetic intelligence is not a crucial thing that can influence choreographic creativity in aerobics teaching. Consequently, the study advises aerobics instructors to enhance their choreography creativity, emphasizing the need to consider not only appropriate training methods but also the physical components conducive to success.

**Keywords:** kinesthetic intelligence, creativity, choreography, aerobics, aerobics instructors.

**How to Cite:** Riyadi, S., Sabarini, S. S., Liskustyowati, H., & Yuzela, A. (2023). The influence of kinesthetic intelligence in enhancing the choreographic creativity of aerobics instructors. Jurnal SPORTIF : Jurnal Penelitian Pembelajaran, 9(3), 384-400. https://doi.org/10.29407/js_unpgri.v9i3.20546

**Authors contribution:** a – Preparing concepts; b – Formulating methods; c – Conducting research; d – Processing results; e – Interpretation and conclusions; f - Editing the final version

## INTRODUCTION

Public awareness about healthy living by exercising aerobic exercise is now increasing. In recent years, competitive aerobics has developed rapidly in our country (Zhu et al., 2021). The success of competitive gymnastics depends on various factors, including physical fitness, mental acuity, unique talents, musical preferences, and the athlete's expressive

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abilities (Gong et al., 2022). To achieve perfectly choreographed routines, athletes must enhance their physical speed, maintain an ideal body shape, exhibit graceful agility, and possess muscular strength.

While competitive slimnastics is not currently part of the Olympics, many countries are considering it as a distinct discipline separate from fitness gymnastics (He & Zhang, 2022). Aerobics is an essential trendy sports item loved by the general public and integrates slimnastics, dance, music, fitness, and entertainment (Zhou, 2021). Studies showed that low-intensity aerobic exercise can produce growth-stimulating neurotrophic combining factors (Margiana et al., 2021). Education, especially those to facilitate physical fitness, can include movement and songs videlicet slimnastics (Sukmawati et al., 2021). The first-person arrangement is performed by structurally rearranging the commotion sequences that first appear in the video to understand the kinesthetic level and possible implicit arrangements (Feng et al., 2022). Just as a well-structured cotillion conveys a coherent physical message, skillfully executed aerobics routines achieve rhythmic harmony (Davidson, 2021). Cotillion literacy encompasses a complex array of knowledge, including ontology and cotillion epistemology, demanding expertise in body movement, training methods, creativity, historical context, meaning, imitation, proposition, choreography, and performance (Saearani et al., 2021).

Choreographic gymnastics is dedicated to nurturing the creativity of scholars in crafting both original and traditional routines. Whether through private or public education, the goal is to cultivate individuals capable of creating performances with depth and meaning (Astuti, 2021). Kinesthetic intelligence involves using your whole body to express ideas and emotions, like actors, athletes, dancers, or hands-on skills such as artisans, sculptors, mechanics, and surgeons (Pratama et al., 2020). Since cotillion art relies on hidden knowledge, it's natural to show how things work visually through physical movement (Saearani et al., 2021). The positive impact of cotillion on mood maybe because it's like a challenging


https://doi.org/10.29407/js_unpgri.v9i3.20546
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dance that involves shifting, spinning, and coordinating with music (Harrison et al., 2020).

On the other hand, Kinesthetic intelligence is the ability to express thoughts and emotions through physical actions, as actors, athletes, and dancers do. It also includes the skill of using hands effectively for tasks such as crafting, sculpting, fixing things, and performing surgeries (Mashkoor & Hameed, 2022). Based on the definition of kinesthetic intelligence, aerobics is widely embraced as an accessible means of maintaining body shape and enhancing overall health. It integrates gymnastic elements, promoting flexibility, muscle extension, and cardiopulmonary function (Li, 2022). Functional ability refers to the ability to use the implicit function effectively and the athlete's brain power, which is an essential factor for determining the position of an aerobic athlete (He & Zhang, 2022). Aerobics aims to showcase athletes' ability to perform intricate movements flawlessly while engaging in complex, high-intensity sports set to music (Chen, 2021). However, some scholars have found that optional callisthenics classes often need to catch up in achieving desired body shape and health benefits due to insufficient physical training and course design (Xiao, 2021). Effective aerobics instructors, known as callisthenics preceptors, blend their expertise in dance and music to create safe and diverse programs (Qi, 2022). Aerobics is very helpful for perfecting the physique and shaping the body. It can wrap muscle filaments with colourful muscle exertion intensity so as to achieve the purpose of shaping the body (Cheng & Nie, 2022). It also improves lung efficiency by increasing oxygen intake and heart rate (Shin et al., 2022). Consistent practice and sensory stimulation can enhance the kinesthetic intelligence of aerobics instructors, which, in turn, fosters their ability to encourage creative choreography. Bodily/kinesthetic intelligence involves the skilful manipulation of different body parts, using tools effectively, and creating artistic expressions (Shahzada et al., 2021).

Moreover, brief descriptions are given for the total intelligence and the ten multiple intelligences, with a focus on kinesthetic intelligence,

alongside others such as verbal, logical, musical, interpersonal, intrapersonal, naturalist, spiritual, and empirical intelligences (Bratko et al., 2020). The capacity for kinesthetic empathy, the ability to mentally embody actions, highlights the profound human connection achieved through physical observation (Davidson, 2021). It is important to note that advancing to the highest level of performance requires mastering fundamental movements and specific sports skills that engage the entire body (Sulistiyowati et al., 2022). Research has shown that educational interventions can enhance muscle endurance, strength, and the activation of electromyography (EMG) in muscles supporting the spine, pelvis, and hip area. Interestingly, girls tend to excel in verbal, kinesthetic, musical, naturalist, and practical skills, along with having advanced logical intelligence (Metwally et al., 2021). Actors often rely on various forms of mental imagery, including visualizing movement, kinesthetic imagination of the sensation of motion, and drawing analogies (like moving as if they were animals, trees, waves, or falling leaves) to enhance their craft (Bek et al., 2021). Developing choreographic creativity tailored to different levels of kinesthetic intelligence requires various testing tools. One of the test instruments required is the TTCT-Verbal Test (Torrance Test of Creative Thinking-Verbal).

Kinesthetic intelligence is important in the process of constructing an aerobic exercise movement. It is important for an aerobics instructor to develop kinesthetic intelligence to enhance creativity, express ideas, thoughts and feelings, and skills using hands and feet to create innovative aerobic movement sequences (Yuzela et al., 2023). The kinesthetic intelligence potential that exists in aerobic gymnastics instructors has great benefits in improving choreographic creativity. The higher the kinesthetic intelligence potential of an aerobics instructor, the better their creativity in creating aerobic exercise sequences (Leasa et al., 2017). Kinesthetic intelligence is an expression of the way of thinking of an aerobic exercise instructor that can be used as a modality in assembling a series of aerobic exercise movements (Koçak, 2019). Kinesthetic intelligence in aerobic


https://doi.org/10.29407/js_unpgri.v9i3.20546
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movements does not develop by itself but needs to be trained and optimized. Factors that can affect kinesthetic intelligence, such as environmental factors, experience or knowledge, need to be optimized to improve kinesthetic intelligence (Mashkoor & Hameed, 2022). The kinesthetic intelligence potential that exists in aerobics instructors has great benefits in increasing choreographic creativity. For this reason, the influence of kinesthetic intelligence on the choreographic creativity of aerobic exercise instructors needs to be evaluated on an ongoing basis through measurable observations.

Some aerobics instructors still need help to create diverse choreography due to a lack of understanding and knowledge about the importance of kinesthetic intelligence in making a series of aerobic exercise movements. In addition, the kinesthetic intelligence level of each aerobics instructor produces a different score for each individual. So, the difference in the level of kinesthetic intelligence of aerobics instructors affects the results of choreographic creativity tests.

Based on existing conditions, it is necessary to design an understanding and knowledge for aerobics instructors about the importance of kinesthetic intelligence in improving choreographic creativity. For example, how does a person's kinesthetic intelligence affect his creativity in making a series of aerobic exercise movements. This research aims to find out how much influence kinesthetic intelligence has on increasing the creativity of aerobics instructors' choreography. This study is significant due to its potential to improve the quality of aerobics instruction, enhance fitness outcomes, and provide practical guidance for the training of aerobics instructors. This research will contribute as a consideration for gymnastics trainers to prospective gymnastics instructors to increase choreographic creativity.

## METHOD

1. Study methods

This study employs a quantitative research approach utilizing quasi-experimental techniques. It applies experimental methodologies to assess

the impact of one or more variables on others and examine the hypothesis of a causal connection. The experimental research carried out in this study tested the influence of the kinesthetic intelligence variable on the aerobic choreography creativity variable. Kinesthetic intelligence and choreographic creativity are assessed at each training using two methods, namely audio and audiovisual. Then, the assessment results are analyzed to determine the significance of the influence of these two variables.

2. Study participants

The participants in this study were aerobics instructors. Purposive sampling was used as a sampling technique. The sample selected as research subjects were aerobic gymnastics instructors aged 20-50 with 40 licensed aerobics instructors.

The instructors consist of 25 female instructors and 15 male instructors, which consist of 6 aerobics instructors from Surakarta City, 4 aerobics instructors from Sukoharjo Regency, 7 aerobics instructors from Boyolali Regency, 4 aerobics instructors from Klaten Regency, 6 aerobics instructors from Sragen Regency, 5 aerobics instructors from Karanganyar Regency and 8 aerobics instructors from Sragen Regency Wonogiri.

3. Study organization

The procedure for preparing test instruments refers to observation tests using measurement scales (Triana, 2020), namely: (1) developmental ability that shows physical movement skills to know physical motion skills, (2) the ability to receive stimuli (physical abilities) to measure proficiency in responding to various responses, (3) the ability to express, solve or produce a problem solution through motion (perceptual abilities) to know the ability to perceive with various themes. The TTCT-Verbal Test (Torrance Test of Creative Thinking-Verbal) and The Choreography Creativity test refer to Joy Paul Guilford as the TTCT-Verbal Test (Torrance Test of Creative Thinking-Verbal).

In this research, the test used is an objective test by selecting multiple choice questions that are relevant to the basic competencies and indicators that have been created. The final test is a test given to the


https://doi.org/10.29407/js_unpgri.v9i3.20546
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aerobics instructor after treatment has been given to the group given the treatment. The implementation procedure in this research is that the aerobics instructors pay attention to an aerobics exercise choreography. Demonstrations are given via video or film. The aerobics instructor pays attention and observes the demonstration carefully and with full concentration. The next step is that the aerobics instructor is instructed to imagine and imagine the movements demonstrated earlier. Movements that have been recorded and described in the aerobics instructor's mind are written in a Google Form. Monitoring imagery training is carried out by means of the sample (aerobics instructor) writing down whatever exercise movements they imagine, writing them into a series of exercise movements. Researchers can find out the success of creative aerobic exercise choreography using imagery training.

4. Statistical analysis

Data analysis techniques used quantitative analysis techniques. Quantitative analysis techniques are carried out so that the conclusions obtained from testing research hypotheses can be scientifically justified, statistical analysis techniques that must meet the requirements are: 1) normality of data, and 2) homogeneity of variance. After the data from the population are normally distributed and come from the same or homogeneous variants, they are then statistically tested with ANOVA. Data analysis using SPSS statistical software with the Two-Way ANOVA Test aims to obtain data on the effect of high and low kinesthetic intelligence on the creativity of aerobics instructor choreograph.

## RESULT

The findings of this research are conveyed through an explanation of the data processing outcomes, which incorporate the study's results. The study encompassed 40 instructors aged between 20 and 50, with a majority of the selected participants being over 35 years old. Therefore, kinesthetic intelligence is grouped into high and low levels. Data was obtained through assessment of training using audio and training using audiovisuals from high and low kinesthetic intelligence groups.

Data that have been obtained through tests and measurements are then analyzed, which includes the normality test, homogeneity test, and ANOVA test. The results of the normality test (Table 1), homogeneity test (Table 2), and ANOVA test (Table 3) can be seen below.

**Table 1.** Normality test results with kolmogorov smirnov

| **N** | | **40** |
|---|---|---|
| Normal Parameters[b] | Mean | 0E-7 |
| | Std. Deviation | 7,49724013 |
| Most ExtremeDifferences | Absolute | ,079 |
| | Positive | ,079 |
| | Negative | -,056 |
| Kolmogorov-Smirnov Z | | ,501 |
| Asymp. Sig. (2-tailed) | | ,963 |

a. Test distribution is Normal.
b. Calculated from data.

Based on Table 1, it is known that the significance value of Asymp. Sig. (2-tailed) of 0.963 is greater than 0.05. So, the data is normally distributed.

**Table 2.** Levene's test of equality of error variances

| F | df1 | df2 | Sig. |
|---|---|---|---|
| ,578 | 3 | 36 | ,633 |

Based on Table 2, it is known that the Sig. Levene's Test for Equality of Variances is 0.633 because the Fcount is 0.578 with a probability value of Sig. 0.633 is more significant than 0.05, it can be concluded that all these variables have the same variance.

The ANOVA test was conducted to test the effect of kinesthetic intelligence in improving the creativity of aerobics instructor choreography, so it is necessary to test the hypothesis. The ANOVA test results can be seen in Table 3 below.


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**Table 3.** Tests of between-subjects effects

| Source | Type III Sumof Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Corrected Model | 333,517[a] | 3 | 111,172 | 1,865 | ,153 |
| Intercept | 142635,249 | 1 | 142635,249 | 2392,970 | ,000 |
| High-Level Kinesthetic Intelligence | ,144 | 1 | ,144 | ,002 | ,961 |
| Low-Level Kinesthetic Intelligence | 284,089 | 1 | 284,089 | 4,766 | ,036 |
| High-Level and Low-Level Kinesthetic Intelligence | 49,284 | 1 | 49,284 | ,827 | ,369 |
| Error | 2145,814 | 36 | 59,606 | | |
| Total | 145114,580 | 40 | | | |
| Corrected Total | 2479,331 | 39 | | | |

a. R Squared = ,135 (Adjusted R Squared = ,062)

Referring to the ANOVA test results in Table 3, it can be seen that 1) high-level kinesthetic intelligence has no significant effect on choreographic creativity (Sig = 0.961 > 0.05), 2) low-level kinesthetic intelligence significantly affects choreographic creativity (Sig = 0.036 < 0.05), and 3) low level and high kinesthetic intelligence have no interaction with choreographic creativity (Sig = 369 > 0.05). From the analysis obtained, it can be concluded that high-level kinesthetic intelligence has an effect on choreographic creativity, shown by a significance value of less than 0.05. Meanwhile, data related to low-level and high kinesthetic intelligence have no interaction with choreographic creativity, as shown by a significance value of more than 0.05. In detail, the picture of the absence of interaction can be shown in Figure 1 below.

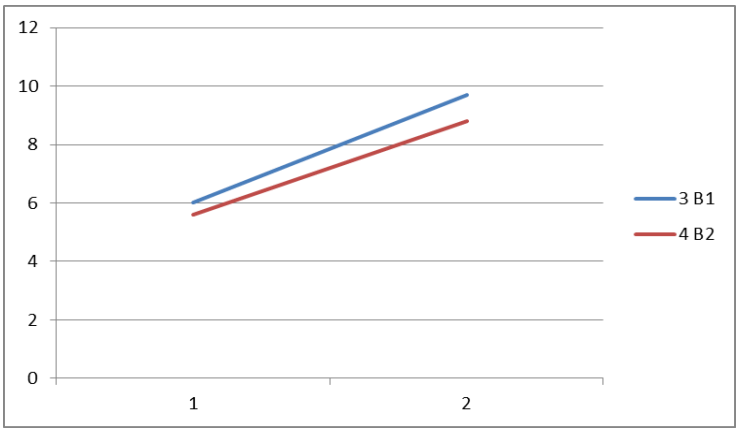


**Figure 1.** Form of Interaction Changes in Choreography Creativity Test Results

Description: A1 = Training with audio; A2 = Training with audio visual; B1 = Low kinesthetic intelligence; B2 = High kinesthetic intelligence

When viewed in Figure 1, the data shows that there is an increase in the value of 3.7 in the low kinesthetic intelligence group from the value of training using audio (6.0) to the value of training using audiovisual (9.7). In the high kinesthetic intelligence group, there was also an increase in the value of 3.2 from the value of training using audio (5.6) to the value of training using audiovisual (9.2). The average comparison to the rise in the results of the choreographic creativity test produced by the group with low kinesthetic intelligence is better than the group with high kinesthetic intelligence with a difference of 0,5. From Figure 1, the red and blue lines do not cross, so it is concluded that there is no interaction between kinesthetic intelligence and choreography creativity. Thus, it cannot be proven that there is an influence between high and low levels of kinesthetic intelligence on the choreography creativity of aerobics instructors.

## DISCUSSION

The research findings reported that high kinesthetic intelligence does not significantly affect choreographic creativity, but low kinesthetic intelligence can significantly affect choreographic creativity. In addition, the two kinesthetic intelligences (high and low level) do not interact with each other with choreographic creativity. Data related to low-level and high


https://doi.org/10.29407/js_unpgri.v9i3.20546
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kinesthetic intelligence have no interaction with choreographic creativity. These findings answer the research objective that kinesthetic intelligence does not play a significant role in increasing the choreography creativity of gymnastics instructors.

Kinesthetic intelligence is a modality to perform aerobic exercise movements (Imrah Dewi et al., 2021; Laely & Yudi, 2018). Kinesthetic intelligence is very important for every human being because one of the benefits of intelligence is that it can help someone in dealing with various existing problems, both problems in everyday life and problems in a job. By providing a stimulus through the five senses that are filled and regularly practised, the development of one's intelligence will continue to increase. Intelligence can also be interpreted as a way of understanding and thinking about someone who can be a guide and capital in learning. In the process of assembling a gymnastics movement, one of the important potentials to be continuously developed in a gymnastics instructor is kinesthetic intelligence (Sukmawati et al., 2022), where the aerobics instructor has the ability to use the whole body (physically) to express ideas, thoughts and feelings as well as skills using hands and feet to create a series of gymnastic movements.

The findings of this study provide a different understanding of the relationship between kinesthetic intelligence and choreographic creativity in aerobics teaching. Contrary to expectations, this research revealed that a high level of kinesthetic intelligence did not have a significant influence on choreographic creativity. The numbers generated in the data analysis show that the average comparison of the increase in the results of the choreographic creativity test produced by the group with low kinesthetic intelligence is better than the group with high kinesthetic intelligence with a score difference of 0,5. This unexpected result challenged the conventional belief that increased physical talent should translate into creative choreography that excels in aerobics. On the other side, low kinesthetic intelligence showed a large influence on choreographic creativity. The implication is that to improve choreographic creativity, it is

optional for an instructor to have good kinesthetic intelligence (Mashkoor & Hameed, 2022). A study found that the presence of an organizational structure can impact creativity, and as a result, a modified think-tank model is suggested. This model aims to align with the goal of optimizing the creative input from individuals (Davidson, 2021). This suggests that although those with limited kinesthetic intelligence may face challenges in performing physical movements well, they have a distinct ability to imagine and devise innovative aerobic routines.

Additionally, the absence of a significant interaction between high and low levels of kinesthetic intelligence suggests that these two dimensions of intelligence operate independently in relation to choreographic creativity. These findings underscore the need to look beyond physical attributes when assessing instructor capacity in creative choreography (Rahman & Athoillah, 2022).

Although the findings report significant results in the influence of high kinesthetic intelligence on choreographic creativity, this study also has limitations, including that the researcher did not strictly control whether the improvement was really due to the treatment given. This study also involved 40 instructors from several areas in Surakarta City, Central Java Province, ages 20-50, where most of the selected samples were above 35 years old, so the number of ages affects aspects of kinesthetic intelligence, which also directly affects the results of this study. In the process of assembling a gymnastics movement, one of the important potentials to continue to develop in an aerobics instructor is kinesthetic intelligence (Bek et al., 2021; Shahzada et al., 2021), where the aerobics instructor has the ability to use the whole body (physical) to express ideas, thoughts and feelings as well as skills using the hands and feet. To create a series of gymnastic movements.

In the end, kinesthetic intelligence as a modality in performing aerobic movements emerged as an important factor in this research. It is important to realize that kinesthetic intelligence is a valuable asset for individuals not only in the context of fitness but also in everyday life and


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professions. It serves as a tool to solve problems, guide decision-making, and encourage continued growth in understanding and learning (Mashkoor & Hameed, 2022; Sukmawati et al., 2022). These findings reinforce the importance of kinesthetic intelligence, particularly in the field of aerobics teaching, where instructors must utilize their physicality to convey ideas, emotions, and skills through choreographed movements.

This research has limitations, such as researchers cannot monitor in detail, and there are also differences in age and social status so that each respondent has a different level of thought pattern. Therefore, the suggestion that can be made to aerobics instructors is to increase choreographic creativity, in addition to choosing the right training method or form of exercise, it is also necessary to consider the components of physical condition that can support its success.

## CONCLUSIONS

The findings of this study showed that kinesthetic intelligence does not play a significant role in increasing the choreography creativity of gymnastics instructors. This study provided a different understanding of the relationship between kinesthetic intelligence and choreographic creativity in aerobics teaching. New light on the connection between kinesthetic intelligence and choreographic creativity in aerobics instruction. These findings offer valuable insights for aerobics instructors, gymnasts, and the general public. They suggest that while individuals with limited kinesthetic intelligence may encounter challenges in executing physical movements proficiently, they possess a unique talent for envisioning and creating innovative aerobic routines.

These findings will certainly be a basis for consideration for gymnastics trainers to prospective gymnastics instructors. In addition, gymnastics instructors will also make the basis of these findings to apply imagery exercises to improve choreographic creativity. In increasing choreographic creativity, besides choosing the right training method or form of exercise, it is also important to consider the components of physical conditions that can support its success.

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