

Implementation of the Philosophical Meaning of the Janger Dance Oriented on Ethno-Bio-Education Based on Ergonomics to Improve Public Concern Towards Health

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ABSTRACT

The purpose of this study was to determine whether implementing the philosophical meaning of the ethno-bio-educational, ergonomic-based *Janger* dance can improve health governance and quality. The approach used was participatory ergonomics, ensuring community involvement from the planning stage through implementation. A quasi-experimental study with a randomized pre- and posttest group design was applied, involving 32 *Janger* dancers as subjects. The results showed an increase in: (1) understanding of health governance by 16.64%, (2) caring attitudes toward health governance by 16.75%, and (3) health quality as seen from a decrease in musculoskeletal complaints by 22.61%, fatigue by 18.08%, and stress due to learning by 16.79%. The conclusion is that implementing the philosophical meaning of the ethno-bio-educational, ergonomic-based *Janger* dance can improve community understanding and caring attitudes toward health governance and has implications for improving health quality.

Keywords: Ergonomics, Ethno-Bio-Education, Governance, and *Janger* Dance

INTRODUCTION

Ethno-bio-education is a branch of biology that examines biology education and its implementation within specific community groups. The study explores biology education through the customs, religion, culture, arts, and beliefs of specific ethnic groups, particularly the Balinese. In this context, ethno-bio-education is explored through the philosophical meaning of the *Janger* dance, linked to its health-oriented learning or training mechanisms, with indicators including musculoskeletal complaints, fatigue, and stress due to learning.

The ergonomics concept used as a reference is socio-cultural ergonomics, namely ergonomic concepts or principles related to local wisdom, which is an element of traditional culture with a long history and lives within the collective consciousness of humans and communities worldwide. Related to natural resources, cultural resources, human resources, economics, law, and security, local wisdom can be utilized as an important study in the application of ergonomics in society. Conceptually, local wisdom is part of a simple knowledge system [1-2] among the diverse types of local wisdom. Several local wisdoms have been discovered that possess quality and excellence, containing universal values such as historical, religious, ethical, aesthetic, scientific, and technological, known as "local genius." Socio-cultural ergonomics is highly synergistic with efforts to implement local wisdom and local genius, as there will be a reciprocal relationship between ergonomic principles and the principles of local wisdom and local genius in addressing problems encountered in society. The ergonomic principles studied in socio-cultural ergonomics, which form the basis of

ethno-bio-education, are highly relevant for implementation through the philosophical interpretation of the Janger dance, linked to its learning or training mechanisms, with indicators of musculoskeletal complaints, fatigue, and stress due to learning [1-4].

The application of ergonomics that strives for a person to always be in a healthy, safe, and comfortable condition, and free from stressful conditions and inadequate working conditions in activities, such as work disharmony, mutual suspicion, and excessive authority from the leadership, as well as uncomfortable environmental conditions such as noise, heat, inadequate air circulation, and low or high humidity is something that is urgent to be implemented [1-7]. If this is ignored, then the quality of service to the community is believed to be disrupted and can even cause various disorders to body organs and ultimately reduce comfort and work productivity. One way that can be taken to improve the quality of service to the community is through the use of socio-cultural ergonomic principles with the hope that the application of ergonomics is more down to earth and can be synergized with local social and cultural concepts [1-4].

Understanding the community of observers and performers of the *Janger* dance regarding the strategy of implementing training and mentoring in the philosophical meaning of Janger dance, oriented towards ethno-bio-education based on ergonomics to increase public awareness of health, always paying attention to the physiological indicators of the human body, for example: the muscular system, skeletal system, respiratory system, nervous system, cardiovascular system, digestive system, and sensory organs, and synergizing with traditional, social, cultural, and spiritual activities will be a very important part of public health governance. Through a systemic, holistic, interdisciplinary, and participatory (SHIP) approach, healthy, safe, and comfortable governance will be realized and physiologically free from various diseases that can disrupt public health [1-4]. The application of ergonomics that strives for a person to always be healthy, safe, and comfortable, and free from unhealthy environmental conditions during activities is urgent and must be implemented as soon as possible [1-4, 8-15].

Empowerment, training, and mentoring of community observers and performers of the Janger dance, using a philosophical interpretation oriented toward ethno-bio-education based on ergonomics, constitutes a sustainable development strategy linked to social, cultural, and spiritual activities. From this development perspective, it is recognized that human capacity is crucial in efforts to increase independence and internal strength over material and non-material resources [5-7, 12-19].

The research questions are: (1) can the implementation of the philosophical meaning of the *Janger* dance oriented toward ethno-bio-education based on ergonomics improve health governance? (2) can the implementation of the philosophical meaning of the Janger dance oriented toward ethno-bio-education based on ergonomics improve attitudes toward health governance? and (3) can the implementation of the philosophical meaning of the Janger dance oriented toward ethno-bio-education based on ergonomics improve health quality based on indicators of musculoskeletal complaints, fatigue, and stress due to learning?

The aim of the study was to prove that the implementation of the philosophical meaning of the ethno-bio-education-oriented *Janger* dance based on ergonomics can improve health governance, caring attitudes towards health governance, and health quality based on indicators of musculoskeletal complaints, fatigue, and stress due to learning.

LITERATURE REVIEW

Ergonomics in Community Empowerment

Ergonomics comes from the Greek words *ergon* (work) and *nomos* (rule). Ergonomics is defined as the science, technology, and art of adapting tools, work methods, and the environment to human capabilities, abilities, and limitations, achieving healthy, safe, comfortable, and efficient working conditions and environments, leading to maximum productivity [1-4]. Ergonomics is essential in any activity involving humans, taking into account their capabilities and task demands.

Human capabilities are largely determined by factors such as profile, physiological capacity, psychological capacity, and biomechanical capacity. Task demands are influenced by the characteristics of the work material, the tasks to be performed, the organization, and the environment in which the work is performed [1-4]. Ergonomics can minimize the negative impacts of science and technology. Various occupational diseases, accidents, pollution, poisoning, job dissatisfaction, and human error can be avoided or minimized [1-4, 18-21]. Ergo-entrepreneurship, in this context, is defined as ergonomic concepts that can be implemented in developing an individual's entrepreneurial knowledge and attitudes, enabling them to compete in the global era.

A systemic, holistic, interdisciplinary, and participatory (SHIP) approach will create a healthy, safe, and comfortable environment that is physiologically free from musculoskeletal disorders, does not result in excessive workloads, can slow the onset of fatigue, and increase job satisfaction [1-4, 18-21]. The application of ergonomics that strives for a person to always be in a healthy, safe, and comfortable condition, and free from stressful conditions and inadequate environmental conditions in activities, such as noise, pollutants, inadequate light intensity, environmental temperatures that are too hot or cold, and inadequate air circulation, is something that is urgent to be implemented and must be implemented as soon as possible [18-21]. If this is ignored, then the quality of public health is believed to be disturbed and can even cause deformities in body organs and ultimately reduce work productivity. One way that can be taken so that the community is always in a healthy, safe, comfortable, effective and efficient condition and has a caring attitude towards their health requires ergonomic principles that are in synergy with local wisdom in the form of *Tri Hita Karana*. If this is not done, it will cause various disorders, abnormalities, and diseases that affect a person's health, for example; (1) disruption of general human body mechanics, particularly in the skeletal system (osteology) and the muscular system (myology); (2) pain in the vertebrae (spine); (3) deformity or degeneration of the intervertebral discs (the discs in the spinal joints), which can lead to low back pain; (4) fatigue occurs more quickly; (5) workload, as measured by heart rate, increases; and (6) the emergence of Carpal Tunnel Syndrome (CTS) [1-4, 22-25].

Sutajaya, et al. [4] view community development as a matter that focuses on helping communities of all ages to grow and develop through various facilitations and supports so that they are able to decide, plan, and take action to manage and develop their physical environment and social well-being. This process takes place with the support of collective action and networking developed by the community. This means that community empowerment through ergonomics training actually strives to make the community aware of the importance of health and fitness in the workplace. On the other hand, through ergonomics training, sustainable development can be realized, because it will create resilient workers without being exposed to unsafe, unhealthy, and uncomfortable working conditions. Ultimately, an effective, efficient, and productive work mechanism will be achieved.

Consideration of Local Wisdom in Community Empowerment

Tri Hita Karana, as Bali's cultural heritage, is deeply connected to ergonomics, as it is rich in philosophy, values, and local ethics, focusing on the harmonious configuration of values [1-4]. Ergonomic principles prioritize comfort, health, safety, efficiency, effectiveness, and work productivity, closely linked to the *Tri Hita Karana* concept, which significantly influences Balinese behavior in their daily activities. Furthermore, the ancestral concept of balance, known as *Tri Hita Karana*, has consistently inspired natural resource management in Bali. The application of ergonomics in the informal sector, based on local wisdom, strives to achieve balance between human activities and the natural resources surrounding them. Limiting activity time is an ergonomic effort to harmonize task demands with human capabilities and the environmental factors that accompany human activities.

Local wisdom is an element of traditional culture with a long history and lives within the collective consciousness of humans and communities worldwide, relating to natural resources, cultural resources, human resources, economics, law, and security. Conceptually, local wisdom is part of a simple knowledge system. Among the diverse types of local wisdom, some possess quality and excellence, embodying universal values

such as historical, religious, ethical, aesthetic, scientific, and technological elements, known as local genius [1-4].

Balinese culture places a strong emphasis on the balance of relationships with God, humans, and the environment. The dynamism of this balance is closely linked to the passage of time and the prevailing circumstances (*desa, kala, patra*). The concept of *desa kala patra* also serves as a reference for improving work stations and processes in small industries, as this concept significantly influences the success of ergonomic interventions in a region. The teachings of *Catur Purusartha* (*Dharma, Artha, Kama, Moksa*) are directed toward achieving the goal of eternal freedom and prosperity throughout the universe, termed *mokshartam jagadhita*. This goal is achieved through *Catur Marga* (*Karma, Bhakti, Jnana, Raja*). This concept is closely related to the principles of ergonomics which emphasize human efforts to increase work productivity in achieving well-being and maintaining the quality of physical and mental health [1-4].

Socio-Cultural Factors in Community Empowerment

Sutajaya, et al. [4] stated that the crystallization of cultural values excavated from the earth of Indonesia are: (a) the element of divinity expressed by *bhinneka tunggal ika tan hana dharma mangrua* which means different but one and no religion has different goals where the elements of harmony and religious tolerance become a unifying framework; (b) the element of egalitarian humanity can be found in the social order of life, namely respecting fellow believers and helping each other if disaster strikes; (c) the element of unity that is clearly visible in the existence of togetherness (collectives), family, unity and oneness and mutual cooperation; (d) the element of democracy as a characteristic of democracy is seen in decision-making carried out through deliberation and consensus; and (e) the element of justice is reflected in the life of customary law as one aspect of culture that regulates fairly and is the obligation of local citizens. This opinion is closely related to the elements that need to be considered in the application of ergonomics, especially in Bali, namely: (a) work is believed to be a person's dharma and the results will be accounted for to God (*Ida Sang Hyang Widhi Wasa*) through the implementation of *karma marga* as a form of devotion to Him; (b) through the implementation of ergonomics from an early age, it is hoped that more humane working conditions will be achieved and not force someone to work beyond their limits, abilities, and capabilities; (c) a job can be done effectively and efficiently with maximum results if done together through a conducive work team; (d) the element of democracy as a characteristic of democracy is very evident in a work organization that applies the SHIP approach (systemic, holistic, interdisciplinary and participatory) because this approach provides opportunities for everyone to contribute equally in every decision-making and those who are selfish and authoritarian will be eliminated; and (e) the element of justice can be seen in the wage system where the principle of ergonomics always emphasizes a proportional wage system according to the workload or risks faced by workers.

Ergonomics-oriented community empowerment research that touches on the elements of the human body, namely: *bayu* (strength), *sabda* (voice) and *idep* (mind) can be explained that: (1) in determining problems in the workplace, attention should be paid to the nutritional or energy status and utilization of muscle power (*bayu*) related to the subjects to be involved and the ergonomic interventions imposed on the research subjects, (2) in making research protocols, the elements of the *sabda* or opinion (voice) of the subjects need to be considered, because something that the researcher wants is not necessarily in accordance with the wishes of the subjects, and (3) when improving working conditions, it is necessary to invite the subjects to think participatory or utilize their *idep* in order to reach an agreement that benefits both parties [1-4]. The research also touches on the elements of logical means, namely *desa* (place), *kala* (time) and *patra* (habits) it can be explained that: (1) in the research process, the characteristics of the research location (place) are very decisive for the success of a study because it is related to the method of selecting samples, the design used, and the data collection strategy. For this reason, it is necessary to know the characteristics of a region that will be used as a research object so that the research can run smoothly with maximum results, (2) the time of the research also determines the validity and reliability of the data obtained because if the allocation of research time is wrong, it can have fatal consequences or the research will fail, for example: research is carried out when there is a religious ceremony, this will certainly affect the condition of the subject, and (3) local customs need to be considered in order to obtain accurate data because someone's habits that may have been carried out for years or even centuries do not act as a confounding variable or become a masking effect in data analysis [1-4].

Janger Dance in Ethno-Bio-Education Studies

The *Janger* dance, as a form of dance and song, is performed energetically and joyfully. The jokes and laughter of the dancers make them forget for a moment the burdens of life experienced during their daily activities. This dance is predominantly danced by teenagers, but adults and even the elderly are also interested in dancing and singing *Janger* songs. The dynamism of the *Janger* dance will have implications for the physiological training mechanisms of the body that are equivalent to sports activities. The strains of *Janger* songs with low to high tones can train the respiratory organs (lung alveoli, bronchioles, bronchi, and trachea) which are supported by the training mechanisms of chest breathing (thoracic respiration) and abdominal breathing (abdominal respiration).

Dynamic movements during training and performances are believed to have implications for the training of organs in the body's physiological system, namely: (a) organs in the musculoskeletal system, (b) organs in the cardiovascular system, (c) organs in the nervous system, (d) organs in the circulatory or transportation system, (e) organs in the digestive system, (f) organs in the respiratory system, (g) organs in the endocrine system, (h) organs in the excretory system, and (i) all organs in the endodermia (10 sensory organs) [4]. The ten sense organs that can be trained through the *Janger* dance are: (a) *Panca Budhindria* consisting of: (1) *Caksu Indria* or the sense of sight (eyes), (2) *Srota Indria* or the sense of hearing (ears), (3) *Ghrana Indria* or the sense of smell (nose), (4) *Jihwa Indria* or the sense of taste (tongue), and (5) *Twak Indria* or the sense of touch (skin) and (b) *Panca Karmendria* consisting of: (1) *Pani Indria* (senses in the upper extremities), (2) *Pada Indria* (senses in the lower extremities), (3) *Garbha Indria* or the senses in digestion (stomach), (4) *Upastha Indria* (senses in the reproductive organs) and (5) *Payu Indria* or the senses in the anus as an excretory organ [4].

The philosophical meaning of the *Janger* song which is related to ergonomics-based ethno-bio-education is: (1) *jangi janger* means that *jangi* = come on, *janger* consists of the words *jang* = place (apply) and *nger* = knowledge, (2) *seng-seng-i seng-seng janger* means that *seng* = tilted, meaning don't tilt when placing or applying knowledge, (3) *seriang ento* means that you are so happy when pursuing knowledge, (4) *rora roti* means that you are so happy like enjoying bread (the most luxurious food at that time), (5) *kelap-kelap, ngalap bunga* means that studying knowledge is like picking flowers, (6) *langsing lanjar, pamulune nyandat gading* means that the illustration of knowledge is like a girl with a slim waist and ivory facial skin like the sandat flower, meaning that knowledge is interesting and sought after by many people so it is symbolized as Goddess Saraswati, (7) *saruang jani majangeran* means that one must be hidden when *mejangeran* (placing or applying knowledge) remembering that in ancient times it was known as *ajawera*, meaning that not just anyone could learn *nger* (knowledge), (8) *seriang ento rora-roti* means that it is reiterated that if one seeks knowledge, one should be as happy as enjoying bread, (9) *aras kijang, jangi janger (2x)* means that the melancholic face of a deer (the most agile and nimble animal) illustrates that the interesting thing about knowledge is that it must be implemented quickly and precisely, as agile as the movements of a deer.

Other *Janger* song lyrics that are interpreted as anticipating intellectual arrogance are: (1) *titiang lacur, rawuh mariki, manarung desa* means that we are poor, coming here to explore new areas, (2) *baan beloge, ngadu pongah majangeran* means that we are stupid, trying to arrogantly apply knowledge, (3) *sampunan banget, meseselan* means that we should not think too much about it or take it to heart and regret it, (4) *janger titiang kalintang kawon* means that the application of knowledge is still very less competitive (*kawon*), and (5) *jangkrangi jangi janger (2x)*, *seriang rora roti* means that the turning of the wheel (*jangkrang*) of life when applying knowledge must be done as happily as possible like enjoying bread.

Managing the Body's Physiological Condition During Activities

Activity is an integral part of everyday life. It is recommended that people work approximately eight hours per day to maintain their physiological health. However, people often forget their body's capabilities, abilities, and limitations, often forcing themselves to work beyond these recommended limits. This can lead to disruptions in the following body systems: (a) the skeletal system, (b) the muscular system, (c) the respiratory system, (d) the cardiovascular system, (e) the digestive system, (f) the nervous system, (g) the hormonal system, and (h) the sensory organs [4].

Managing the body's physiological condition during activity is closely related to all systems within the human body. If any of these systems are disrupted, it can lead to various health problems and a decline in overall health. Physiological conditions during work can be traced through public health indicators, namely: (1) musculoskeletal complaints are complaints in the skeletal muscle system caused by unnatural work positions and attitudes that can be traced using the Nordic Body Map which is basically made with the provisions of muscle groups in the organ, (2) fatigue is a physiological condition reflected in symptoms of psychological changes in the form of slowness of motor activity and respiration, the presence of pain, heaviness in the eyeballs, weakening of motivation, activity and other physical that will affect physical and mental activity, and (3) stress due to learning is a physiopsychological condition caused by: (a) learning conditions that are always under pressure, (b) unclear ways or methods applied in the learning process, (c) daydreaming about mastering the dance as soon as possible, (d) lack of planning in training, (e) trainers who seem unfriendly, (f) training partners who are always disturbing, (g) physical discomfort, such as noise, inadequate ventilation, and inadequate microclimate, and (h) the absence of improvement efforts to overcome these problems. those [1-4].

Managing the physiological condition of the body while working is an action that must be done by a worker, in order to avoid various diseases due to work and the quality of health can be maintained. Some ways that can be done in managing the physiological condition of the body are: (1) do not ignore the body's alarm, namely if you are hungry you must eat, if you are thirsty you must drink, if you are tired you must rest, (2) do stretching or stretching if you are in a state of satis for more than two hours of work, (3) do active rest if it is not possible to take an official break, (4) do short breaks for 3 to 5 minutes. 5 minutes in between activities to give the cardiovascular system (heart and blood vessels) the opportunity to supply oxygen to the tissue parts that are under pressure while working, (5) if a feeling of stiffness or tingling appears in the muscle tissue, do a massage independently on the muscle group so that the blood supply is smoother and the oxygen intake meets the metabolic needs of the muscle tissue, (6) do small songs (humming) or mekidung (spiritual singing) while doing activities, because it will really help the process of fulfilling oxygen in cell metabolism as a result of the smooth respiration process, (7) try to always chat with coworkers if the work being done is monotonous, not too complex, and is already familiar, to avoid boredom and stress due to work, (8) providing nutrition in the form of sweet tea, bitter coffee, snacks, rujak, loloh, green bean porridge, etc. will really help to reduce fatigue and can increase work motivation, and (9) avoid consuming alcohol and smoking while doing activities, because it can interfere with lung function in the respiratory system, brain function in the nervous system nerves, hormone function in the endocrine system, and enzyme function in the digestive system [1-4].

MATERIALS AND METHODS

The quasi-experimental research used a randomized pre- and post-test group design (treatment by subject design), with the diagram in Figure 1.

P ---- RS-----S----(p₀)----O1-----WOP----- (p₁)-----O2

Figure1: Research Design Chart

Description:

P is the population consisting of Janger dancers.

RS is a randomly selected sample.

O1 is the data collected before treatment (Period I).

O2 is the data collected after treatment (Period II).

(p₀) is health management, attitudes toward health management, musculoskeletal complaints, fatigue, and stress due to learning before treatment.

(p1) is health management, attitudes toward health management, musculoskeletal complaints, fatigue, and stress due to learning after treatment.

WOP is the washout period, or the process of eliminating the effects of the treatment, which is given for one week and also serves as an adaptation process.

This quasi-experimental study used a serial control group, not a parallel one, because it refers to the same subject treatment, comparing subjects with themselves. In a treatment-by-subject design, subjects were recorded in two periods: Period I (before treatment), designated as the control group, and Period II (after treatment), designated as the experimental group. Data obtained from these two paired groups were compared before and after treatment, resulting in paired data.

The study subjects were Janger dancers from the Swaradanta Dance Studio in Peliatan Village, Ubud, Gianyar, Bali. The research objectives were: (1) understanding of health management, (2) attitudes toward health management, and (3) health quality, assessed based on indicators of musculoskeletal complaints, fatigue, and stress due to learning. The target population was all dancers from the Swaradanta Dance Studio in Peliatan Traditional Village. The accessible population consisted of 53 dancers who regularly participated in training and performances and met the inclusion criteria. The research sample was dancers who met the inclusion and exclusion criteria selected in determining the sample size and were fully involved in the research.

The research variables are: (1) independent variable: implementation of the philosophical meaning of the Janger dance oriented towards ethno-bio-education based on ergonomics; (2) dependent variables: (a) health governance, (b) caring attitudes towards health governance, and (c) health quality based on indicators of musculoskeletal complaints, fatigue, and (d) stress due to learning; and (3) control variables: social and economic conditions.

The sample selection process was as follows.

1. Inclusion and exclusion criteria were determined for the target population to obtain a reachable population.
2. The number of reachable population members who met the inclusion and exclusion criteria was examined, namely 53 individuals.
3. A representative sample of at least 30 individuals was selected for the quasi-experimental study, as this number constitutes a methodologically large sample size.
4. Thirty-two dancers were selected as the research sample to anticipate sample dropout.
5. The sample size of 32 individuals was deemed representative for the experimental study, as 32 of the 53 dancers, representing 60.4% of the reachable population, were selected.

The research procedures were as follows:

1. Identification of problems faced by dancers during training, which refers to the implementation of ergonomics-based ethno-bio-education.
2. Validity was tested using the Pearson Product Moment Correlation test and reliability using the Cronbach Alpha test at a 5% significance level for the questionnaires used: (a) a questionnaire on understanding health management, (b) a questionnaire on attitudes toward health management, (c) a Nordic Body Map questionnaire to record musculoskeletal complaints, (d) a questionnaire on fatigue, and (e) a questionnaire on stress due to learning.
3. The validity and reliability of the questionnaire were determined based on the results of the analysis, namely: (a) the questionnaire on understanding health governance consisting of 30 statement items was declared valid, because the p value < 0.05 was obtained and was declared reliable, because the Cronbach's Alpha value = 0.853 was obtained, (b) the questionnaire on caring attitudes towards health governance

consisting of 30 statement items was also declared valid, because the p value <0.05 was obtained and was declared reliable, because the Cronbach's Alpha value = 0.864 was obtained, (c) the Nordic Body Map questionnaire consisting of 28 statement items was also considered valid, because the p value <0.05 was obtained and was declared reliable because the Cronbach's Alpha value = 0.796 was obtained, (d) the fatigue questionnaire consisting of 30 statement items was also considered valid, because the p value <0.05 was obtained and was declared reliable because the Cronbach's Alpha value = 0.867 was obtained, and (2) the stress questionnaire due to learning consisting of 30 statement items was also assessed Valid, as the p -value was <0.05 , and reliable, as the Cronbach's Alpha value was 0.972.

4. Data collection on the dependent variable was conducted before (Period I) and after treatment (Period II) using a valid and reliable instrument, ensuring the accuracy of the data obtained.
5. Descriptive data analysis was conducted by finding the mean and standard deviation, followed by a normality test using the Kolmogorov-Smirnov test at a significance level of 5%.
6. Normally distributed data were then tested using a parametric test, namely the dependent sample t-test at a significance level of 5%.

The data analysis strategy for before and after treatment was using the dependent sample t-test or paired t-test at a significance level of 5% ($\alpha = 0.05$). The results of the analysis are used to make decisions related to differences in understanding of health governance, attitudes of concern for health governance, and health quality between before and after the implementation of the ethno-bio-education-oriented Janger dance philosophy based on ergonomics. In this study, the percentage of change between before treatment (Period I) and after treatment (Period II) is used as an answer to the research hypothesis. The use of a quasi-experimental research type with a randomized pre- and post-test group design (treatment by subject design) aims to increase internal validity, because a comparison is made between the subject's condition and himself. In this study, the subjects were involved as a control group whose data were collected before treatment, then involved as an experimental group whose data were collected after treatment.

RESULTS

The results of descriptive analysis of data on understanding of health governance and caring attitudes as well as health quality seen from indicators of musculoskeletal complaints, fatigue, and stress due to learning can be seen in Table 1.

Table 1: Descriptive Analysis Results

Variable	Before Treatment (Period I)		After Treatment (Period II)		Description
	Mean	SD	Mean	SD	
Understanding of health governance	78.56	2.015	91.63	2.166	Increase 16.64%
Attitude of concern towards health governance	78.16	1.743	91.25	1.934	Increase 16.75%
Musculoskeletal complaints	50.19	1.786	38.84	1.629	Decrease 22.61%
Fatigue	60.28	1.464	49.38	1.338	Decrease 18.08%
Stress due to learning	63.09	2.263	52.00	2.828	Decrease 16.79%

Based on the analysis in Table 1, it can be stated that community understanding of health governance increased by 16.64% and their caring attitude increased by 16.75% between before and after empowerment (training and mentoring). In line with this increase, there was a 22.61% decrease in musculoskeletal complaints, accompanied by an 18.08% decrease in fatigue and a 16.79% decrease in learning-related stress between before and after implementation.

The results of the difference test to determine the effectiveness of implementing the philosophical meaning of the ergonomics-based ethno-bio-education-oriented Janger dance on understanding of health governance, caring attitudes, and health quality as measured by indicators of musculoskeletal complaints, fatigue, and learning-related stress are shown in Table 2.

Table 2: Results of Differential Tests on Understanding and Concern for Health Governance and Health Quality with Indicators of Musculoskeletal Complaints Fatigue and Stress Due to Learning

Variabel	t value	p value	Decision
Understanding of health governance (PI : PII)	25.923	0.0001	Significant
Attitude of concern towards health governance (PI : PII)	28.546	0.0001	Significant
Musculoskeletal complaints (PI : PII)	32.187	0.0001	Significant
Fatigue (PI : PII)	29.817	0.0001	Significant
Stress due to learning (PI : PII)	17.791	0.0001	Significant

Based on the results of the hypothesis test in Table 2, it can be stated that public understanding of health governance has increased significantly with a t value = 25.923 and a p value = 0.0001 ($p < 0.05$) and their caring attitude has also increased significantly with a t value = 28.546 and a p value = 0.0001 ($p < 0.05$). In line with the increase in public understanding and caring attitude towards health governance, it was accompanied by a significant decrease in musculoskeletal complaints with a t value = 32.187 and a p value = 0.0001 ($p < 0.05$), fatigue also decreased significantly with a t value = 29.817 and a p value = 0.0001 ($p < 0.05$), and stress due to learning also decreased significantly with a t value = 17.791 and a p value = 0.0001 ($p < 0.05$).

DISCUSSION

Understanding of health governance and caring attitudes towards health are closely related to improving health quality as measured by indicators of musculoskeletal complaints, fatigue, and stress due to learning. In this case, the increase in understanding and caring attitudes towards health apparently has implications for reducing musculoskeletal complaints, fatigue, and stress due to learning. This is stated because it is in line with a significant increase in understanding of health governance by 16.64% and caring attitudes towards health by 16.75% ($p < 0.05$), followed by a significant decrease in: (a) musculoskeletal complaints by 22.61%, (b) fatigue by 18.08%, and stress due to learning by 16.79%. These findings are in synergy with research: (1) Zheng, et al., [26] reported that: the results showed that the prevalence of occupational stress, cumulative fatigue, and musculoskeletal disorders was 50.4%, 47%, and 72.3%, respectively. Cumulative fatigue was also associated with an increased risk of having WMSDs (OR = 3.207, $p < 0.001$). According to our findings, occupational factors, such as long working years, overtime work, and personal lifestyle, are highly related to the occurrence of occupational stress, cumulative fatigue, and musculoskeletal disorders for IT industry workers. (2) Fan, et al [27] reported that: the prevalence of WMSDs within the 12 months prior to the study was 73.23%, with the highest prevalence in the neck, shoulders, ankles and feet. Furthermore, a correlation was observed between fatigue, stress and WMSDs. Fatigue and job role were the strongest predictors of WMSDs, with an OR range of 2.211–3.413. (3) Khoshakhlagh, et al. [28] reports that: through depersonalization, job stress had the most significant impact on musculoskeletal symptoms (coefficient = 0.053). Furthermore, the results showed that post-traumatic stress disorders (PTSD) can affect musculoskeletal symptoms through ten paths, again through depersonalization, PTSD had the most significant impact on musculoskeletal symptoms (coefficient = 0.141).

The findings in this study are that there is an increase in health quality seen from a decrease in musculoskeletal complaints by 22.61% ($p < 0.05$) as an implication of an increase in understanding by 16.64% and a 16.75% increase in public concern for health. The synergy of the philosophical meaning of the Janger dance with the management of musculoskeletal complaints can be explained that the very energetic movements in Janger dance training and performances have the potential to overcome musculoskeletal complaints caused by daily activities, because the muscles used for activities in static work positions (isometric contractions) result in an increase in muscle tone [1-4]. The increase in muscle tone can apparently be overcome through the use of

Janger dance in managing health, because the dance is equivalent to stretching movements used to overcome musculoskeletal complaints. These findings are in synergy with the results of research: (1) Arnita et.al. [8] which states that improving ergonomically oriented work mechanisms reduces musculoskeletal complaints of ceremonial device makers by 44.45%, (2) Apriantini et al [29] states that there is a significant difference in musculoskeletal complaints, where the complaints are 22.28% lighter in the experimental group with loads supported according to ergonomic principles compared to the control group with loads supported exceeding the workers' capacity (not ergonomic), (3) Sutajaya et al. [14] states that community empowerment through ergo-entrepreneurship training can significantly improve health quality ($p < 0.05$) seen from the decrease in musculoskeletal complaints of sculptors by 24.25%, (4) Sutajaya et al. [13] stated that training and implementation of local wisdom nyangling oriented towards Socio-Cultural Ergonomics improved the quality of public health as seen from a decrease in musculoskeletal complaints by 24.5%, and (5) Sutajaya & Citrawathi [30] stated that biotanggul oriented towards socio-cultural ergonomics improved the quality of health as seen from a decrease in musculoskeletal complaints by 21.9%.

The findings of this study are that there is an increase in health quality seen from a decrease in fatigue by 18.08% ($p < 0.05$) as an implication of an increase in understanding by 16.64% and a 16.75% increase in public concern for health. The synergy of the philosophical meaning of the Janger dance with fatigue management can be explained that the accumulation of lactic acid as the main cause of fatigue can be overcome through dance movements and Janger songs. Movements in the Janger dance can apparently hydrolyze lactic acid buildup in several local muscles caused by static conditions during activities dominated by static (isometric) muscle contractions. Janger songs also play a role in overcoming fatigue, because through the song the abdominal respiration mechanism can be trained which is very possible to inspire (input) more oxygen into the respiratory system. The entry of more oxygen will be able to overcome the oxygen debt that occurs during activities with anaerobic conditions. These findings are in synergy with the findings: (1) Sutajaya & Citrawathi [30] stated that socio-cultural ergonomic-oriented biotanggules improve health quality as seen from a 21.5% decrease in fatigue, (2) Devi et al. [31] which states that providing snacks and active breaks reduces the fatigue of workers making *gipang* snacks by 27.27%, (3) Apriantini et al. [29] states that there is a significant difference in the fatigue of porters (laborers) in Badung market, where the fatigue is 15.16% lighter in the experimental group with loads supported according to ergonomic principles compared to the control group with loads supported exceeding the workers' capacity (not ergonomic), (4) Sutajaya et al. [14] stated that community empowerment through ergo-entrepreneurship training can significantly improve health quality ($p < 0.05$) as seen from a 20.73% decrease in sculptor fatigue, and (5) Devi et al. [32] states that community empowerment through Ergo-entrepreneurship reduces the fatigue of workers making *sengait* snacks by 24.62%.

Another finding is an increase in health quality as seen from a 16.79% decrease in learning stress ($p < 0.05$) as an implication of a 16.64% increase in understanding and a 16.75% increase in community concern for health. The synergy of the philosophical meaning of the Janger dance with the management of learning stress can be explained based on the concept of ergonomics which emphasizes that an activity carried out with feelings of joy and happiness accompanied by dynamic movements will be able to increase the production of the happiness hormone in the form of endogenous morphine and will suppress the production of the hormone cortisol as a cause of stress [4]. This statement is very relevant to the utilization of the philosophical meaning of the ethno-bio-education-oriented Janger dance based on ergonomics, because in reality the Janger dance is danced and sung in a very happy mood. This joy is what stimulates the production of endogenous morphine (endorphin) in the human body as one of the hormones of happiness and natural healing hormones. Dopamine is a chemical compound in the brain (neurotransmitter) that has a crucial role in regulating emotions, motivation, and body movements which also functions to overcome stress. Dopamine is produced by the brain (neurotransmitter) continuously, especially when the reward system is activated. Its production increases rapidly when humans feel pleasure, high motivation, goals are achieved, eat delicious food, listen to music, exercise, or during social interactions which are often associated with stress management efforts. This condition is in synergy with the findings: (1) Sutajaya & Citrawathi [30] which states that socio-cultural ergonomic oriented biotanggul improves the quality of health as seen from a decrease in public stress by 28.4%, (2) Arnita et.al. [8] which states that improving ergonomically oriented work mechanisms reduces

work-related stress in ceremonial device makers by 29.90%, (3) Sutajaya et al. [13] states that training and implementation of Socio-Cultural Ergonomic oriented local wisdom nyangling improves the quality of public health as seen from a decrease in work-related stress by 28.8%, and (4) Arnita et al. [33] which states that the implementation of participatory ergo-entrepreneurship reduces work-related stress in ceremonial device makers by 26.88%.

CONCLUSION

Based on the results of the research and discussion, it can be concluded that: (1) the implementation of the philosophical meaning of the Janger dance oriented towards ethno-bio education based on ergonomics increases public understanding of health governance by 16.64%, (2) the implementation of the philosophical meaning of the Janger dance oriented towards ethno-bio education based on ergonomics increases public concern for health governance by 16.75%, (3) the implementation of the philosophical meaning of the *Janger* dance oriented towards ethno-bio education based on ergonomics can improve the quality of health as seen from a decrease in musculoskeletal complaints by 22.61%, a decrease in fatigue by 18.08% and stress due to learning by 16.79%.

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