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Abstract

Exercise is one way to prevent the spread of the COVID-19 virus. Aerobic exercise is a very popular choice for many people. Therefore, this study aims to develop exercise in maintaining and improving aerobic health. One of the most popular aerobic sports is gymnastics. In addition, with the development of aerobic exercise, it is also hoped that people will be more interested in exercising. Research and development methods are used in this study to produce and test the developed product's effectiveness. In carrying out this research, we innovated the product of the COVID-19 healthy exercise movement in preventing the spread of COVID-19 based on technology presented in a video and disseminated on digital media platforms. From the effectiveness test results, it was found that this COVID-19 healthy exercise product was feasible and effective to use to prevent the spread of the COVID-19 virus. This research implies that the exercise developed can be used by everyone to help maintain the body's immunity.

Introduction

Currently, the spread of the COVID-19 virus in various regions in Indonesia is still in a condition that tends to increase (Widiyani, 2020a). Although, currently, we are in the era of the new normal policy, namely conditions that allow people to carry out normal activities as before the COVID-19 pandemic while still complying with the Health protocol recommended by the government (Nuraini, 2020). Referring to the proposal by Dr. Slamet Budiarto (Deputy Chairman II of the Indonesian Doctors Association), there are three causes for the number of positive coronas in Indonesia, namely:

1. Late handling of patients due to a chaotic referral system,
2. The delay in checking the results of the swab test of patients suspected of being exposed to the COVID-19 virus,
3. The number of ventilators is minimal compared to the number of patients exposed to the COVID-19 virus.

The three factors causing the increasing number of people exposed to the COVID-19 virus are causes from a medical point of view. There are other factors (Yunita, 2020), such as:

1. Having an unhealthy lifestyle, such as maintaining cleanliness and not doing sports,
2. There are still crowds of residents, who do not maintain distance between communities,
3. There are still people who do not heed the government's appeal to prevent the spread of COVID-19, such as not wearing masks.

Everyone, both the government and the general public, should be aware of these factors in supporting the increased spread of COVID-19. One of the efforts to prevent the spread of COVID-19 is to maintain the safety of our bodies so that they are not susceptible to viruses (Pane, 2020). There are many ways to maintain our body's immunity to be stable, one of which is by exercising (Zahrotunnimah, 2020) and paying attention to a healthy lifestyle, and maintaining cleanliness. Therefore, with this condition, everyone must be more independent in their respective traditional houses to continue maintaining health, of course, by exercising regularly.

Sports intended to be done at home are sports that aim to maintain health, improve body fitness so that a person's immune condition in exercising can be better, and of course, can ward off the COVID-19 virus (Wang & He, 2020). This situation is in line with the proposal by Dr. Michael Triangto, SpKO, which is the health of the sport of Slim and Health Sports Therapy, he said that "At this time, the most important goal is for the health of our bodies and for that we must focus on the health of our bodies." Besides that, Dr. Michael added that two types of exercise could be done amid the coronavirus pandemic: aerobic and anaerobic. Aerobic exercise aims to maintain and improve the health of our body, and anaerobic exercise serves to maintain our fitness. The exercise carried out must be adjusted to the respective capacities with light and moderate intensity (Warburton et al., 2019). Based on this brief explanation, researchers are interested in developing sports in the form of aerobics responsible for maintaining and improving body health, as has come before—one of the most popular sports, aerobic and gymnastics. Therefore, apart from being satisfied, aerobic exercise is expected to make people more interested in exercising because they see that aerobic exercise is very popular among the public.

Problem Statement

Aerobic exercise is a complete fitness or physical health exercise because it includes several exercises and joys that can express all feelings by laughing, rocking, jumping, stretching, and combined with folk dances, traditional dances, and contemporary dances (Yang & Chen, 2018). Gymnastics is also an interesting option to do at home (Zendrato, 2020). One of them is doing Zumba exercises, such as following video tutorials or even with friends at their respective homes via video conferencing. The aerobic exercise instructor still provides movements that make the body sweat so that the body becomes fitter. Aerobic exercise can also relieve symptoms of depression and anxiety disorders faced during the COVID-19 pandemic (Jemni, 2017).

The government has made various efforts in the form of policies to suppress the spread of COVID-19. Starting from social distancing policies, physical distancing to Large-Scale Social Restrictions (PSBB), which have been implemented in several big cities such as Jakarta, Bogor, Bandung, and others (Zahrotunnimah, 2020). Then the policies and appeals from the government have passed. Until recently, several new policies were launched by

the governments. One of them is the existence of the "Era New Normal" (Kilincer, 2021; Widiyani, 2020b). The purpose of this era is that during the current pandemic, the community has been allowed to carry out activities as usual before this pandemic (Buana, 2020). However, in reality, there is still a great deal of worry when doing activities such as school children, working parents, selling, and other activities that have the character of meeting many people.

According to Wiku Adisasmita, as Chair of the Expert Team for the Task Force for the Acceleration of COVID-19 Handling, new normal is a behavior change to continue carrying out normal activities but implementing health protocols to prevent COVID-19 transmission (www.kompas.com). The main principle of the new normal itself is that it can adapt to life patterns (Atilgan & Tukul, 2021; Kibici, 2021; Marpa, 2021 ; Praghlapati, 2020; Xhelili et al., 2021). Wiku states that "socially, we will experience a new normal form, or we have to adapt to our activities and work, and of course we have to reduce physical contact with other people and avoid crowds, and work and study from home."

Several factors cause the spread of the coronavirus, one of which is not maintaining the body's condition to stay healthy and fit. Of course, a healthy and fit body condition will ward off viruses that enter the body (Hughes et al., 2020). A person is infected with a disease caused by viruses because a person's body cannot ward off the virus with his body's immune system. No exception is the COVID-19 virus or also known as the coronavirus (Hebebcı, 2021; Kibici & Sarıkaya, 2021; Yunita, 2020). Until now, what happened if we saw the data was not in line with expectations? With this new normal era, we are expected to achieve normal conditions as conducive as before. Nevertheless, it turns out that the spread of the coronavirus is still increasing (Widiyani, 2020a). Therefore, there is a need for innovation in ways to prevent the spread of COVID-19. Apart from everyone having to follow the health protocol recommended by the government, everyone must also maintain and improve their health status, one of which is by exercising.

The innovation that we will describe is about preventing the spread of COVID-19 by exercising to maintain health by increasing body immunity. This innovation will be very suitable to be carried out in each home, namely 'Healthy Gymnastics COVID-19' for a healthy life against the spread of coronavirus. This exercise will be recorded in a video and uploaded on YouTube and other supporting media to socialize the results of this research, with a special movement created to prevent the spread of COVID-19. COVID-19 healthy gymnastics will be developed in collaboration with gymnastics instructors, who, of course, already have a professional license and are members of the Indonesian Aerobics and Fitness Instructors Association (ASIAFI).

Method

The research design used in this study is research and development. This design is called research-based development. Research and development is an industry-based development model in which research findings are used to design new products and procedures, which are then systematically field-tested, evaluated, and refined until the research findings meet certain criteria of effectiveness, quality, or certain standards) (Gall, Gall, & Borg, 2006). This study uses the R & D method because the final results will produce a product for

developing healthy COVID-19 gymnastics movements in helping people maintain their immunity by maintaining and improving their health status through the aerobic exercise that will be developed. The design of this study is a research design for the development of an aerobic exercise movement that is identical to the prevention of the spread of COVID-19, as well as to determine the results of the implementation of the development of the COVID-19 healthy exercise movement.

The measuring instrument used must be a standard with two requirements, namely valid and reliable (Kimberlin & Winterstein, 2008). Research instruments are tools or facilities used by researchers in collecting data so that their work is easier to process (Birmingham & Wilkinson, 2003). A research instrument is a tool when the researcher uses a method. The instrument in this study is an indicator filled by expert judgment to determine the subject's ability in the variable to be measured (Kirkebøen, 2009). The data were collected using a video recorder which was then observed and assessed. In this research, the expert judgment must be someone competent and professional in their field. This study uses three expert judgments. The purpose of using three expert judgments is that the data obtained is objective (Gall et al., 2006). The subjects in this study were the gymnastics community in Bandung to become a sample in doing COVID-19 healthy gymnastics.

The following are the criteria for expert judgment who will be involved in this research.

1. At least one year of experience as a professional instructor.
2. Understand the study of basic theories and concepts about proper and correct exercise techniques, especially in the current pandemic conditions, which have previously been discussed with other experts.
3. A biomechanical expert or expert examiner in the field of sports is an expert in the field of sports whose function is to assess whether the COVID-19 healthy exercise movement is worthy of being tested or revised again. So that later its existence will match the needs of the sports field.

Results

This exercise is intended to help keep the body healthy and, of course, maintain the body's immunity so that it is not susceptible to viruses, especially the COVID-19 virus. This exercise is done to decrease the problems that occur on a global scale, namely the COVID-19 virus pandemic that has occurred in all countries, including Indonesia. Therefore, researchers took the initiative to try to help the research field in suppressing the spread of the COVID-19 virus.

From information gathering, problem analysis to developing a special movement for "COVID-19 Healthy Gymnastics", which was carried out in this research. The following steps and data have been obtained:

1. Information gathering

In this step, information gathering is part of the initial analysis of this research. In this step, the information becomes the starting material which will be the next step in carrying out research. The information collected results from preliminary observations related to the need for and development of special gymnastics during the COVID-19 pandemic.

2. Analysis of the developed innovations

In this analysis, we focus on what will be developed in this COVID-19 gymnastics movement. at this stage

of the analysis, there will be other characteristics and functional movements for everyone. Of course, the innovations made are taking into account health protocols in preventing the spread of the COVID-19 virus.

3. Research Implementation

The research developed in helping to overcome the spread of the COVID-19 virus is by developing a special movement, "Healthy Gymnastics COVID-19". In the implementation of the research that has been carried out, namely by starting with the initial analysis of the problems that are happening, especially in preventing the spread of the COVID-19 virus, then proceed to the preparation of research proposals, submission of research proposals, initial field observations, analysis and synthesis, fixation of product concepts, validation tools to the tool development process.

In carrying out this research, we conducted a small group test that is still possible during the current COVID-19 pandemic because, if it is tested on a large group or with a larger number of subjects, there is still concern about the possibility of COVID-19 transmission. Then there is still limited time available. However, it does not mean that this research is not representative because the steps in the research have been taken thoroughly.

The test used to measure the validation of the development of COVID-19 gymnastics uses an assessment questionnaire that measures several assessment criteria and indicators according to those developed by the researcher. This test is assessed directly by the experts by providing a scale of scores between 1 - 10 on several aspects being assessed, which are divided by assessment criteria and indicators. The results of the expert judgment are given in Table 1.

Table 1. Expert Validation Value Results

Aspect	Assessment Criteria and Indicators	Expert Judgment			Average Value
		E1	E2	E3	
Aspects of Originality	Work of researchers	9	10	9	9.3
	Has a distinguishing feature compared to similar and existing sports models (originality)	9	9	10	9.3
Aspects of innovation excellence	Has an edge in terms of quality of innovative work.	8	10	8.5	8.8
	Having an innovation that suits your needs during a pandemic	9	8.5	10	9.2
Useful Aspects	Has high utility for a wide audience in supporting the prevention of the spread of COVID-19	9.5	9	9	9.2
Economic Aspects	Has a positive impact from the implementation of COVID-19 healthy exercise	9	8.5	10	9.2

	Has commercialization potential and market affordability	10	9	9	9
Security Aspects	Have a good level of security while doing healthy COVID-19 exercise anywhere	8.5	9	9	8.8
Comfort aspect	have a level of comfort in providing healthy COVID-19 exercises	8.5	10	10	9.5
Supporting Data Completeness Aspect	Has a description of the manual for giving the COVID-19 healthy exercise movement	9	10	8	9
	Total Score	89.5	93	92.5	91.3

Seeing the results of the expert validation assessment obtained with the results for Expert 1 giving a total score of 89.5 which means in the good category, Expert 2 gives a total score of 93, which means that the category is very good, Expert 3 gives a total score of 93 which means that the category is very good (see Table 2). Overall, this result is very satisfying because seeing the average assessment score of the three experts is 91.3, which means that it is in the very good category. It means that according to the views of experts, doing healthy exercise COVID-19 is effectively used by people who do it to maintain the body's immunity to stay healthy and fit.

Table 2. Norm of Score

Respondent	Score	Category
Expert 1	89.5	Good
Expert 2	93	Very Good
Expert 3	92.5	Very Good
Mean	91.3	Very Good

After that, this COVID-19 healthy exercise was tried out in small groups measured during the pre-test and post-test. This treatment is given after ten meetings to see the results of the condition of a person's fitness level (Bompa, 2012). The following are the measurement results of the implementation of the COVID-19 healthy exercise during the pre-test and post-test using the SPSS (Statistical Package for the Social Science) program to calculate and analyze the results of measuring mastery of basic passing techniques:

Hypothesis:

H0: There is no difference in the average level of fitness before and after the implementation of COVID-19 healthy exercise

H1: There is a difference in the average level of fitness before and after the implementation of COVID-19 healthy exercise

Decision-making:

- If the value of Sig (p) < 0.05, then Ho is rejected = H1 is accepted
- If the value of Sig (p) > 0.05, then Ho is accepted = H1 is rejected

The research data (see Table 3) found that the average pre-test result with a mean = 1.77 was smaller than the average post-test mean = 2.98. In this calculation, there was an increase of 1.21. Thus, the implementation of the COVID-19 healthy exercise is effectively used to maintain the body's immunity to stay healthy and fit.

Table 3. The Results of the Implementation of COVID-19 Healthy Gymnastics

		Paired Samples Statistics			
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre-test	1.77	40	.630	.105
	Post-test	2.98	40	.462	.047

Then based on the results of the effectiveness test using the t-test (see Table 4), from the difference in the results of the pre-test and post-test implementation of the COVID-19 healthy exercise, the sig results were obtained. = 0.000, smaller than the significance level (p) = 0.05, then the hypothesis H0 is rejected. So it can be concluded that there is a significant difference in the average health and fitness level before (pre-test) and after (post-test) the implementation of COVID-19 healthy exercise.

Table 4. Test Results of the Effectiveness of the Application of COVID-19 Healthy Gymnastics with the t-test

		Paired Samples Test					t	df	Sig. (2-tailed)
		Paired Differences			95% Confidence Interval of the Difference				
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper			
Pair 1	Pre-test – Post-test	-.875	.606	.114	-1.127	-.617	-8.546	39	.000

Discussion

The condition of the spread of the coronavirus or COVID-19 currently tends to continue to increase in various regions in Indonesia (Widiyani, 2020a). Although currently it is in the new normal period, activities are currently running back to normal as before the COVID-19 pandemic because they must follow the health protocol implemented by the government (Nuraini, 2020). One of the efforts to prevent the spread of COVID-19 is to maintain our body's immunity so that it is not easily exposed to the virus (Pane, 2020). There are many ways to maintain our body's stability, one of which is by exercising regularly (Zahrotunnimah, 2020), of course, apart from maintaining a healthy lifestyle and maintaining cleanliness. Therefore, with this condition, everyone must be more independent in their own homes to continue to maintain health, one of which is, of course, by exercising regularly.

Sports meant to be done at home are sports that aim to maintain health to improve body fitness so that one's

body immunity in exercising can be better, and of course, can ward off the COVID-19 virus (Wang & He, 2020). This result is in line with what was expressed by Dr. Michael Triangto, SpKO, a sports health practitioner of Slim and Health Sports Therapy. He emphasized that "At this time, the most important goal is for the health of our bodies and for that we must focus on a healthy body we." Besides that, dr. Michael added that two types of exercise could be done during the coronavirus pandemic: aerobic and anaerobic. Aerobic exercise aims to maintain and improve the health of our bodies, and anaerobic exercise aims at maintaining our fitness. The exercise carried out must be adjusted to the respective capacities with light and moderate intensity (Warburton et al., 2019).

Aerobic exercise is a complete fitness or physical health exercise because it includes several exercises and joys that can express all feelings by laughing, rocking, jumping, stretching, and combined with folk dances, traditional dances, and contemporary dances (Yang & Chen, 2018). Gymnastics is also an interesting option to do at home (Zendrato, 2020). One of them is doing Zumba exercises, such as following video tutorials or even with friends at their respective homes via video conferencing. The aerobic exercise instructor still provides movements that make the body sweat so that the body becomes fitter. Aerobic exercise can also relieve symptoms of depression and anxiety disorders faced during the COVID-19 pandemic (Jemni, 2017).

To develop aerobic exercise whose purpose is to maintain and improve body health, as previously mentioned. One of the most popular aerobic sports is gymnastics. Therefore, apart from achieving its goals, the development of aerobic exercise is expected to make people more interested in exercising because they see that aerobic exercise is very popular among the public. The aerobic exercise developed is synonymous with the efforts to prevent COVID-19, namely "COVID-19 Healthy Gymnastics".

By doing the healthy COVID-19 exercise movement, of course, will help maintain the body's immunity to ward off viruses that attack the body, especially the COVID-19 virus. Below are the analyses by the research team in developing healthy COVID-19 exercise.

The Urgency of Exercising

During the current pandemic, many people do not exercise in their homes. This situation is evidenced by the survey that has been conducted. Participation in sports has declined considerably during the current pandemic (Schnitzer et al., 2020). If you look at one of the functions of exercise, it is very important in keeping the body healthy and, of course, at the same time increasing a person's health status.

Regular exercise is a good way to maintain health, fitness, and endurance, especially during the COVID-19 pandemic. This result was conveyed by a sports medicine specialist, Dr. Grace Joselini Corlesa, who said, "doing moderate-intensity sports activities has a positive effect on increasing stamina and immunity. Furthermore, when exercising, it is advisable not to do it for too long, just within 30 to 60 minutes. Dr. Gracia also added that "Based on the J shape data, if a person does not exercise, they will be at risk of being infected with the coronavirus, but if our exercise is moderate in intensity, the risk of being infected with the virus is

lower, but if exercise is done with the heavy intensity it causes the curve to rise, then the risk of being infected with the virus will also be higher." Therefore it is advisable to keep doing sports at home. Even if you have to exercise outside the home, your body condition must be in a fit state, use a mask and bring a replacement mask of at least 1-2 pcs.

As said by Hughes that, "Exercise makes an important contribution to physical, psychological and emotional well-being." This statement means that this sport is very important, especially during the lockdown or stay at home. Apart from maintaining physical health, exercise will also affect a person's psychology and emotion, which incidentally will experience burnout when always having to be at home. Therefore, we are working to develop sports, especially gymnastics, during the current pandemic so that people can maintain their health and do not experience burnout when they have to spend more time at home.

Sports Innovations

Innovation in the world of sports is a must-have (Furley & Memmert, 2018; Ringuet-Riot et al., 2014; Svensson & Hambrick, 2019). Innovation in the field of technology is currently in the spotlight in the development of sports (Ringuet-Riot et al., 2014), especially in order to obtain a significant improvement for the development of the world of sports (Eagleman, 2013). The types of sports are certainly different and have their characteristics. The majority of sports should be done in a place that has ample space, both indoors and outdoors (Adiono et al., 2018). This requirement can be one of the obstacles for people not to exercise when they have to stay at home. Innovation is needed so that sports can be done, especially at home, due to the current state of the COVID-19 pandemic (Grix et al., 2020; Yeo, 2020). Therefore, we are innovating to develop special gymnastic movements during the current pandemic so that people can maintain their health and not experience boredom when they have to spend more time at home.

The innovations developed by the researchers certainly include optimizing the use of technology that can support the COVID-19 healthy exercise that all Indonesian people can carry out. With the COVID-19 healthy exercise designed and intended at home, the public can participate and carry out this healthy exercise. The innovation carried out lies in a movement focused on the movement to prevent the spread of the COVID-19 virus. Then we also designed to lead directly to the community through live YouTube combined with a teleconference application to interact with the community directly, even though virtually.

The Role of Technology in Sports

Technology has become a part of everyday life needed by everyone today, which is also included in the field of sports (Kos et al., 2018). Convenience and effectiveness are central to the role of technology (Hadi, 2017; Hebebcı, Bertiz, & Alan, 2020). The use of science and technology in sports from year to year in various developed countries has experienced significant changes and improvements, for example, if we want to improve health and fitness, we do not have to train it only by exercising together with instructors/trainers continuously. In developing gymnastics, movements carried out, of course, cannot be separated from technology. With a touch

of technology, COVID-19 healthy exercise is published on internet platforms, especially YouTube and other platforms, when the final process of developing this gymnastics movement is complete.

The technology that exists today is a very dynamic scientific development, so that in all scientific studies, it is required to follow the flow of globalization in the use of technology that simultaneously continues to develop (Sycheva et al., 2020). In addition, the technology developed in the COVID-19 healthy exercise research is currently an effort by researchers to try to develop the role of technology in sports to prevent the spread of the coronavirus (Wu et al., 2020). In addition, this is done to reach people in other areas to access the results of research on the development of the COVID-19 healthy gymnastics movement. Of course, with the results of this study, researchers hope to contribute to the prevention of the COVID-19 virus. In addition, this exercise is expected to be a sustainable program that can continue to contribute to society through technology, especially on the internet platform.

Conclusion

Several analyses on the COVID-19 healthy gymnastics focused on innovating special gymnastics movements during the current pandemic so that people maintain health and do not experience burnout when they have to spend more time at home. Then the optimization of the technology used is adjusted to current needs, namely by following technological developments, for effective and efficient use. Based on this analysis, researchers are confident that the development of the developed COVID-19 gymnastics will have an impact and, of course, contribute to preventing the spread of COVID-19.

Recommendations

From the research results that we developed, there are some limitations, especially in terms of the use of technology that cannot reach all areas, especially in terms of networks that must be connected to technological devices that become media in optimizing the implementation of healthy health gymnastics COVID-19. Therefore, the researcher recommends, especially in further research, developing a sports media platform that can be done at home without having to be connected to the network (offline).

Notes

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