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Silvia Fauziah Nasution
Department of Sport Science, Faculty of Sport Science, Yogyakarta State University, Indonesia

Rina Yuniana
Department of Sport Science, Faculty of Sport Science, Yogyakarta State University, Indonesia

Nisaul Mu'minah
Department of Sport Science, Faculty of Sport Science, Yogyakarta State University, Indonesia

Triyas Krismantoro
Department of Sport Science, Faculty of Sport Science, Yogyakarta State University, Indonesia

Corresponding Author:
Silvia Fauziah Nasution
Department of Sport Science, Faculty of Sport Science, Yogyakarta State University, Indonesia

Design of relaxation gymnastics using chair assistants for the elderly at UPT social services for the deaf and elderly in Pematang Siantar

Silvia Fauziah Nasution, Rina Yuniana, Nisaul Mu'minah and Triyas Krismantoro

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Abstract
The purpose of this study was to produce a relaxation exercise design using a chair aid creating a relaxed atmosphere in carrying out physical activities to maintain physical condition during the current pandemic. This study uses the concept of ergonomics to design exercise. This research was conducted at the UPT Social Services for the Deaf and Speech Impaired in Pematang Siantar. The number of samples in this study amounted to 10 elderly people. By using research methods namely development research or Research and Development (R&D). The sample was given a questionnaire sheet in which there were questions about their physical needs. The method used in this study includes several stages, namely: (1) needs analysis stage, (2) product development stage, (3) product validation stage and (4) product trial stage. The results of expert validation in the design of relaxation exercises using chair aids show that this exercise design is feasible for elderly people in wheelchairs and not in wheelchairs to continue physical activity to maintain their physical condition during a pandemic. The validation results obtained a score of 98 from the physiotherapist, the score is included in the "Very Good" category.

Keywords: Research and Development (R&D), relaxation exercise design, elderly

1. Introduction
Sport is a form of planned and structured physical activity that involves repeated bodily movements and is intended to improve physical fitness (Khairuddin, N.D.), (Ambardini RL, 2020) [8]. Exercising are some of the basic needs in everyday life because they can increase one's immune system. Exercise can be started from an early age to old age and can be tried every day. The term sport when viewed from the origin of the word consists of 2 words, namely the word "Sports" and the word "Sports".

From the point of view of sports physiology, sport is an orderly and planned series of exercises that people consciously try to improve their skills functional. Health efforts are always related to preventive-promotive issues (prevention as promotion) which refers to the prevention of something health problems (Nurdiantini I, *et al.* 2012) [5]. The goal is that all citizens want to move for the health of their bodies, especially for the elderly.

Elderly gymnastics is a mild and easy exercise to try, not burdensome for the elderly. According to (Sari, Ethyca dan Halawa, 2018) [10] states that this sports activity will help the body of the elderly to stay fit and fresh, because gymnastics for the elderly can train the bones to stay strong, push the heart to work optimally and help eliminate free radicals that roam the body. (Pangaribuan & Berawi, 2016) [6] Further gymnastics Age triggers a decrease in sympathetic nerve activity and an increase in parasympathetic nerve activity which affects the reduction of the hormones adrenaline, norepinephrine and catecholamines and vasodilation in blood vessels which makes oxygen transport to all parts of the body, especially the brain easy so that it can lower blood pressure and pulse to normal. In this case, it will increase the relaxation of the elderly. In addition, optimal melatonin secretion and the effects of beta endorphins can help increase the fulfillment of sleep needs in the elderly (Prasetyo, 2015) [7].

When carrying out Langan Work Practices (PKL) activities, researchers found that there were many elderly people who could not carry out movement activities so that their physical fitness was not maintained. The absence of infrastructure facilities at UPT Social Service for the Deaf and Speech and Elderly in Pematang Siantar for the elderly has resulted in many elderly people whose daily activities are predominantly sitting.

The results of an interview with one of the elderly at UPT Social Services for the Deaf and Speech and Elderly in Pematang Siantar show that every Friday after breakfast, gymnastics for the elderly is routinely carried out. However, they have never received relaxation exercises. Until I, as a researcher, wanted to create a relaxation exercise design that combines everyday movements that are usually performed by the elderly with musical accompaniment to create a relaxed atmosphere. This exercise can be done by elderly people who are in wheelchairs or without wheels. But beforehand, make sure the chair used is sturdy and safe for the elderly to avoid injury. Based on the background described above, the title raised in this study is to design a relaxation exercise that combines daily movements that are usually performed by the elderly with musical accompaniment to create a relaxed atmosphere. This exercise can be done by elderly people who are in wheelchairs or without wheels. But beforehand, make sure the chair used is sturdy and safe for the elderly to avoid injury.

2. Research Methodology

This research was carried out at UPT Social Services for the Deaf and Speech Impaired in Pematang Siantar, located at Jalan Sisingamangaraja No 68, Bukit Sofa village, Siantar Sitalasari sub-district, Pematang Siantar City. This research is planned to last for 5 months planned from October 2020 to February 2021. The population in this study is the elderly who are at the UPT Social Services for the Deaf and Siantar Elderly Social Services in Pematang Siantar, totalling 29 people. The total number of samples obtained based on screening (selection) in accordance with the characteristics that have been carried out earlier in this study were 10 elderly who were at UPT Social Services for the Deaf and Speech-Elderly in Pematang Siantar.

This research is a type of research or development Research and Development (R&D), (Haryati, 2012) [2]. The instrument in this study was a relaxation exercise design using follow-up ergonomics procedures with subjective or objective assessments. Subjectively, for example, by asking their needs by using a questionnaire and observation sheet. The data analysis technique used in this study uses qualitative data analysis.

3. Research Results and Discussion

3.1 Research Result

a. Data collection: The results of the research interviews stated that 10 respondents or samples only did gymnastics once a week on Friday. Meanwhile, in this pandemic.

Situation, the elderly are shown doing gymnastics and trying to reach their goals, namely practicing 3 to 5 times a week with a practice time of 20 minutes to 30 minutes to get used to the skills of the elderly.

b. Product Planning Stage: At this stage it is the beginning of making research instrument grids and also making relaxation exercise designs according to the needs of the elderly.

c. Product Development Stage: This development stage includes: (1) making names of the movements that have been designed to become gymnastic movements to make it easier for researchers to design a sequence of gymnastic movements. The researcher also searched for and selected several songs to be used in designing the exercise later, (2) after the researcher arranged the sequence of gymnastic movements that matched the name of the movement to be used as audio-visual media, (3) the next stage was the stage of making suitable audio-visual media with product design which at this stage also requires expert validation for the next research stage.

The design of this exercise is similar to exercise in general, but the difference is the use of chairs and the music chosen by the researchers according to the songs of their time, so that when they do the exercises they sing while creating a relaxed atmosphere while doing the design of this exercise. The design of relaxation exercises using the chair aids is as follows:

1. Warm up

The nature of the warm-up movement is easy to do, involving many joints and muscles related to the core movement (Saputra V, *et al.*, 2023) [11]. In order to carry out a warm-up so that the organs of the body and their devices are ready to carry out the exercise and avoid injury. This warm-up is given five to eight minutes, as for the form of warm-up movements, namely:

The first is warm-up movement 1, the purpose of which is to stretch or eliminate stiffness in joints and muscles, while the form of movement is exemplified in Figure 1.

Picture 1: Warming Movement 1

Warm-up movement 2, the goal is to relax the neck muscles and train joint flexibility, the form of the movement is exemplified in Figure 2

Picture 2: Warming Movement 2

Warm-up movement 3, the goal is to relax the shoulders. The form of the movement is exemplified in Figure 3.

Picture 3: Warming Movement 3

Furthermore, warm-up movement 4, the goal is to relax the arm muscles, reduce stiffness in the palms, fingers and shoulder joints. The form of the movement is exemplified in Figure 4.

Picture 4: Warming Movement 4

Warm-up movement 5, the goal is to relax the shoulder and back joint muscles. The form of the movement is exemplified in Figure 5.

Picture 5: Warming Movement 5

2. Core Movement

In the core part of the relaxation exercise design, there are several movement variants. In the transition from the warm-up movement to the core movement, there are transitional movements or transitional movements that are usually carried out for the transition from the warm-up movement to the core movement, including the cool-down core movement (Sari *et al.*, 2017) [10]. Here are the core moves. The first is core movement 1, the goal is to train the leg muscles and upper arm muscles. The form of the movement is exemplified in Figure 6.

Fig 6: Core Movement 1

Next is core movement 2, the goal is to train the arm muscles, leg muscles and relax the shoulder muscles. The form of the movement is exemplified in Figure 7.

Fig 7: Core Movement 2

Then the core movement 4, the goal is to train the arm muscles, leg muscles and relax the shoulder muscles. The form of the movement is exemplified in Figure 8.

Fig 8: Core Movement 4

Core movement 5, the goal is to train the arm muscles, leg muscles and relax the waist and back muscles. The form of the movement is exemplified in Figure 9.

Fig 9: Core Movement 5

The last is core movement 6, the goal is to train the arm and leg muscles, as well as coordination or a combination of movements. The form of the movement is exemplified in Figure 10.

Fig 10: Core Movement 6

3. Cooling Movement (Cool Down)

(Pangaribuan & Berawi, 2016) [6] Cooling can slowly reduce the work of the heart. Where cooling is in the form of relaxation exercises with low intensity followed by stretching the muscles used during the exercise.

In this movement is cool down movement 1, the goal is to relax and reduce leg muscle stiffness. The form of the movement is exemplified in Figure 11.

Fig 11: Cooling Movement 1

Cooling movement 2, the goal is to relax the waist muscles, shoulder joints and hand muscles. Furthermore, the form of movement is exemplified in Figure 12.

Fig 12: Cooling Movement 2

Finally, cool down movement 3, the goal is to train joint flexibility, the goal is to relax the neck muscles and adjust breathing again. The form of the movement is exemplified in Figure 13.

Fig 13: Cooling Movement 3

d. Validation and Testing: The final result of this study is a design exercise using chair aids for the elderly to improve the quality of healthy life so that the elderly remain fit during a pandemic by using chair aids and relaxation exercises which are very comfortable and make the elderly's moods relaxed to be done in every spare time for the elderly.

Almost all respondents stated that: (1) the exercise design using a chair aid is not difficult to do, it can create a feeling of relaxation when doing the exercise, (2) respondents said that the exercise exercise using a chair aid is very safe

because it uses a chair aid when doing it, (3) they also said that the exercise design using a chair aid was also comfortable for them to do and (4) their sitting position when doing this exercise design did not interfere, but instead helped those who could not stand for too long.

e. Physiotherapist Validation Results: The validation results from the physiotherapist (Ftr. Ary Wibowo, Sst.Ft) showed results with a total score of 94 which was in the "Very Good" category. The scale can be seen in the table below**.**

Table 1: Physiotherapist Validation Results

No.	Aspect	Assessment Criteria and Indicators	Weight	Mark	Comment
(1)	(2)	(3)	(4)	(5)	(6)
1	Originality Aspect	Is the work of researchers	10	10	-
		Has a distinguishing feature compared to similar existing sports technologies (originality)	10	10	-
2	Aspects of Innovation Excellence	Have an advantage in terms of the quality of innovative work.	20	18	-
3	Aspects of Usefulness	It has great benefits for the elderly, such as reducing their pain.	20	20	-
4	Security Aspect	Has a level of security in carrying out its movements.	20	20	-
5	Convenience Aspect	Have a level of comfort (Participants can carry out their own without the help of others)	20	20	-
	Total score			98	

4. Research Discussion

In several studies also revealed (Ambardini RL, 2020) [8] that physical activity such as gymnastics in the elderly which is done routinely will improve physical fitness, so that gymnastics can indirectly improve heart function and lower blood pressure and reduce the risk of fat accumulation on the walls of blood vessels so that they will maintain their elasticity. The results of research on relaxation exercise designs using chair aids for the elderly are very helpful to do in every spare time for the elderly to improve the quality of healthy life so that the elderly stay fit during a pandemic which can relax the mood and mind of the elderly. The design of relaxation exercise using chair aids is exercise done while sitting on a chair with the aim of creating a relaxed atmosphere and being able to move as many muscle groups as possible in order to improve physical fitness and improve health for the elderly. So it can be concluded that relaxation exercises using chair aids are gymnastic activities that are carried out withuse a chair by systematically arranged and has the aim to create a relaxed atmosphere in order to improve physical condition (Murbawani *et al.*, 2006) [4].

Almost all respondents stated that: (1) the exercise design using a chair aid is not difficult to do, it can create a feeling of relaxation when doing the exercise, (2) respondents said that the exercise exercise using a chair aid is very safe because it uses a chair aid when doing it, (3) they also said that the exercise design using a chair aid was also comfortable for them to do and (4) their sitting position when doing this exercise design did not interfere, but instead helped those who could not stand for too long. The results showed that as many as 8 samples stated that they were greatly helped by the relaxation exercise design movements and 2 samples stated that they were normal. The results of the study were seen from the samples that used wheelchairs who also said that they had no difficulty in carrying out the relaxation exercise designs and felt very helped by the condition that almost 60% of the activities were carried out in wheelchairs. The results of the exercise trials conducted by the researchers for 2 meetings a week for 2 weeks gave very good responses from the elderly because 10 samples stated that they felt happy and comfortable while doing this relaxation exercise

design. Where is one of the benefits of designing relaxation exercises using chair aids that can help the elderly in improving the function of their organs during a pandemic.

Based on this, the design of relaxation exercises for the elderly using this chair aid which has been validated by physiotherapists and tested on the elderly at UPT Social Services for the Deaf and Elderly Siantar Social Services states that this relaxation exercise design is feasible for the elderly. by using a chair aid and the results of the validation of this exercise design received an assessment with a score of 98 in the "Very Good" category.

4. Conclusion

Based on the results of the discussion and the results of research on the design of relaxation exercises using chair aids at UPT Social Services for the deaf and elderly pematang siantar, it can be concluded that.

1. The design of relaxation exercises using chair aids for the elderly at the UPT Social Services for the Deaf and Siantar Elderly in Pematang Siantar is very appropriate for the elderly to use as a form of daily sports activity to maintain their physical condition.
2. With the formation of a relaxation exercise design using chair aids for the elderly at the UPT Social Services for the Deaf-Mute and Elderly Pematang Siantar it can make it easier to carry out sports activities in the room so as to create a relaxed atmosphere without having to do it in the open field during the pandemic they don't have anxiety, boredom and excess worry.

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