



## Sport Massage for Lower Back Pain (Study of Treatment Model Development for Sports Health)

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### ABSTRACT

### ARTICLE INFO

**The purpose of the study.** The purpose of this research is to create a model of the Sports Massage program by application, specifically for sufferers of Lower Back Pain. the novelty of this product is: the sports massage program model is usually only given to athletes for recovery, but this time the sports massage is made specifically for the treatment of lower back pain sufferers.

**Materials and methods.** This research method uses the Research and Development method, with a Flow Chart consisting of 7 stages, to produce a product that has been tested and is suitable for use, starting from: (1) Finding ideas (2) Making planning manuscript designs (3) Making initial product models (3) Revision of product I (4) Prototype production (5) Small group trials (6) Revision II (7) Large group trials (8) Revision III (9) Product refinement and producing final products.

**Results.** The results showed that there was effectiveness in using the digital sports massage model as evidenced by the data showing that there were 9 samples in the good category and 1 sample in the very good category. While in the treatment of massage not based on the application, there were 3 samples with the sufficient category. And the development of this digital sports massage model has the advantage of video content and books can also be downloaded so that people with lower back pain can do it for free in various places even at home.

**Conclusions.** From the research that has been done, it can be seen that sufferers of lower back pain need a solution for handling massage that makes it easier for sufferers to do so, so the development of this digital sports massage model has good effectiveness in use.

**Keywords:** Sports massage; Lower back pain; digital.



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### INTRODUCTION

The prevalence of LBP (Lower Back Pain) in the world varies greatly each year, with an estimated figure of around 15 - 45%. The prevalence of LBP in Indonesia is still not known with certainty. But based on Hasil Riset Kesehatan Dasar (Riskesdas) in 2013, it was explained that musculoskeletal diseases which included complaints of joints/ rheumatism/ gout based on the diagnosis of health workers, had a prevalence of 11.9%,

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while the prevalence of musculoskeletal diseases based on symptoms reached 24.7%. Meanwhile, in the 2018 Riskesdas, data related to musculoskeletal disease only includes joint disease, where the prevalence of joint disease based on a doctor's diagnosis in people aged  $\geq 15$  years in Indonesia reaches 7.30%. Some of the results of previous epidemiological studies also show that the prevalence of LBP by age group is still quite high in both developing and developed countries. (Riset Kesehatan Dasar (Riskesdas: 2013). Likewise, what happened to the students of the Faculty of Sports Science who were full of sports activities and high physical activity? The number of practical courses, 85% of which are sports that must be mastered by students, can damage their bodies or their physical components at various points. This damage can take the form of dislocations, injuries, collisions with hard objects, lacerations, broken bones, and even pain in several points of the body.

The focus of this problem is a pain in the lower back which is called "Lower Back Pain". Based on a preliminary survey conducted on February 4 2023 for students of the Faculty of Sports Science, it was found that complaints occurred on the left and right shoulder (35%), followed by the upper neck (42.14%) and lower back (72.62%), participants experienced visual fatigue with symptoms of headaches (12.55%), sore eyes (18%) and dry eyes (10.34%). This shows that the back is one of the influential parts of the body and can cause problems.

During the long lectures, physical activity in sports was carried out up to 6-8 hours/day, the wrong motion position was also a factor in the occurrence of LBP. Prolonged pressure causes pressure and poor blood circulation in the waist. From the results of the analysis of learning duration, most students feel pain in LBP due to fatigue and focus on the waist for a long time. The long duration of practical lectures in FIK students during lectures appears on the torso because this part is a support for the entire human body.

Sports Massage is a series of special massage techniques/methods intended for the needs of an athlete or athlete. how to massage by using the hands to massage the muscles of the body. The Sports Massage manipulation technique is specifically



designed to prioritize the smooth circulation and fluids in the body when the scrubbing, massaging, and beating of the skin and muscles are carried out correctly.

The solution offered for this problem is the need for special treatment for sufferers of lower back pain by providing sports injury therapy massage techniques, physiologically the massage technique is given to destroy myogenesis or deposits of burning residue found in the muscles causing hardening of muscle fibers, to improve blood circulation and deliver burnt remnants that have been destroyed or to help reduce the inflammatory process, provide space for the two joints that experience joint displacement errors to be returned to their normal position without friction between the two joints, return the joints to their position/reposition useful for returning the position of the two joints to normal attachment to the joint after obtaining space from pulling/traction without experiencing friction between the two joints so that the ROM in the moving joints can be normal and not stiff thereby reducing lower back pain. Some of the development models that will be carried out: 1) Applications that can be used for lower back pain massage therapy, 2) Depth of massage given, 3) Treatment movement ability, 4) Massage method.

Based on the problems and background above, the researcher is interested in researching developing a dental sports massage program model for sufferers of lower back pain.

## MATERIALS AND METHODS

### *Study participants*

10 samples' assessment data on the effectiveness of the massage model.

### *Study Organization*

The method in this study was carried out in 7 stages, for product design development the model was quoted from Sadiman which has the following steps: 1. Idea, conduct preliminary research and information gathering (literature review, subject observation, preparation of the main issue report), 2. Manuscript writing, planning in the form of a manuscript (defining skills, formulating objectives, determining the order of teaching, and small-scale trials, 3. Evaluation, developing initial product forms (absorption of training materials, preparation of manuals, and evaluation tools), 4. Revision, Carry out initial field tests immediately revised (using 6-12 subjects), 5. Production, production of the main product (according to the suggestions of experts and experts from the initial field test results), 6. Trials, Conduct main field trials (with



35-100 subjects. 7. Production of the final product, the final result of "Sports Massage for Sufferers of Lower Back Pain (Study of Development of Treatment Models for Sports Health).

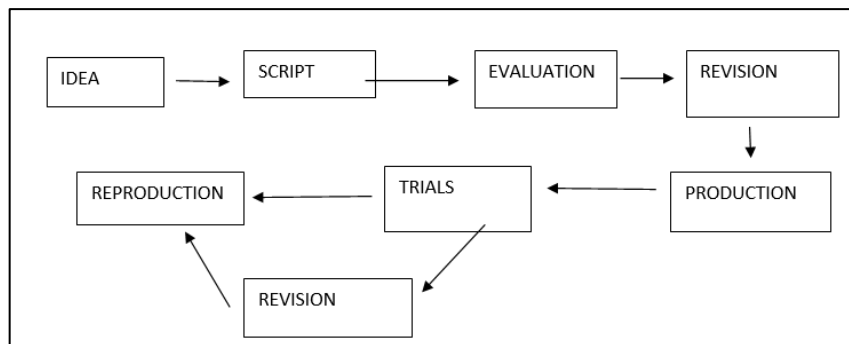


Figure 1. Development model with Flowchart

Source: Sadiman, Arief. S. *Media Education Definition, Development, and Utilization* (Jakarta: Pustekom Dikbud, 2003).

### Test and measurement procedures

Instruments for measuring research variables were adapted and self-compiled based on the variables translated into research indicators. The research instruments consisted of (1) a needs analysis instrument, (2) martial arts expert validation instrument, 3) a motion expert validation instrument, and (4) a trial instrument.

## RESULTS AND DISCUSSION

Massage is a series of special massage techniques/methods intended for the needs of an athlete or athlete. how to massage by using the hands to massage the muscles of the body. Massage techniques include efflurage, petrissage, tapotement, walken, vibration, skin-rolling. The Sports Massage manipulation technique is specifically designed to prioritize the smooth circulation and fluids in the body when the scrubbing, massaging, and beating of the skin and muscles are carried out correctly. returning the joint to its position/repositioning is useful for returning the position of the two joints towards normal attachment to the joint after obtaining space resulting from pulling/traction without experiencing friction between the two joints so that the ROM in the joints can move normally and not be stiff thereby reducing lower back pain.



Figure 2a. Vibration



Figure 2b. Tapotement

Some of the development models that will be carried out: Applications that can be used for lower back pain massage therapy, the depth of the massage given, treatment movement abilities, and massage methods. Assessment data from 10 samples before getting the massage development model for lower back pain is shown in Table 1.1, while the 10 samples' assessment data on the effectiveness of the massage model with 6 techniques is shown in Table 1 and 2.

Table 1. Assessment Data On The Effectiveness Of The Massage Model

No	Effleurage	Petrissage	Tapotement	Walken	Vibration	Skin Rolling	Total	Value	x 100%	Categories	Meaning
1	6	6	5	6	4	4	31	0.62	62	Good	Passed
2	5	3	4	5	4	4	25	0.46	46	Sufficient	not pass
3	6	4	5	5	5	4	29	0.48	48	Sufficient	Passed
4	6	5	4	5	5	6	31	0.62	62	Good	Passed
5	6	5	5	6	4	5	31	0.62	62	Good	Passed
6	6	5	6	4	5	5	31	0.62	62	Good	Passed
7	5	6	6	6	4	5	32	0.65	65	Good	Passed
8	6	6	5	5	6	6	34	0.70	70	Good	Passed
9	6	5	6	5	6	6	34	0.70	70	Good	Passed
10	5	5	4	5	5	6	30	0.59	59	Sufficient	Passed
Student Totals							308				

Table 2. Assessment Data On The Effectiveness Of The Massage Model

No	Effleurage	Petrissage	Tapotement	Walken	Vibration	Skin Rolling	Total	Value	x 100%	Categories	Meaning
1	6	7	7	6	7	6	39	0.72	72	Good	Passed
2	7	7	8	8	8	8	45	0.80	80	Very Good	Passed
3	6	7	8	7	8	6	42	0.78	78	Good	Passed
4	6	7	6	7	8	6	40	0.75	75	Good	Passed
5	7	6	6	7	8	7	41	0.76	76	Good	Passed
6	7	6	6	8	7	7	41	0.76	76	Good	Passed
7	7	6	7	6	8	8	42	0.78	78	Good	Passed
8	8	7	7	6	7	8	42	0.78	78	Good	Passed
9	6	6	8	6	7	7	40	0.75	75	Good	Passed
10	8	6	6	7	7	7	41	0.76	76	Good	Passed
Student Totals							413				

To prove the significance of the difference between sports massage and lower back pain, it is necessary to be tested statistically with a correlated (related) t-test. The formula used is the following:

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2} - 2r\left(\frac{s_1}{\sqrt{n_1}}\right)\left(\frac{s_2}{\sqrt{n_2}}\right)}}$$

Description:

X1: Average subject 1 (sports massage)

X2: Average subject 2 (lower back pain)

s1: Standard deviation of subject 1 (sports massage)

s2: Standard deviation of subject 2 (lower back pain)

s21: Variance of subject 1

s22: Variance of subject 2

r: Correlation between data of two groups

Equation 1. Statistically With A Correlated (Related) T-Test. The Formula.

Table 3. The Model's Performance Values are Correlated

No	X1	X2
1	31	39
2	25	45
3	29	42
4	31	40
5	31	41
6	31	41
7	32	42
8	34	42
9	34	40
10	30	41
$\sum X$	308	413
$\bar{X}$	30.8	41.3
S	2.37	1.39
$s^2$	5.6	1.93
r	1	1

In this research, the hypothesis is formulated as follows:

$H_0$ : lower back pain is smaller or the same as sports massage

$H_a$ : lower back pain is better than sports massage

$$H_0: \mu_1 \leq \mu_2$$

$$H_a: \mu_1 > \mu_2$$

Testing with t-test correlated right side test. Using the right-hand test because the alternative hypothesis ( $H_a$ ) reads "better".

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2} - 2r\left(\frac{s_1}{\sqrt{n_1}}\right)\left(\frac{s_2}{\sqrt{n_2}}\right)}}$$

$$t = \frac{20,9 - 24,2}{\sqrt{\frac{5,6}{10} + \frac{1,93}{10} - 2,1\left(\frac{2,37}{\sqrt{10}}\right)\left(\frac{1,39}{\sqrt{10}}\right)}}$$

$$t = -10$$

To make a decision, whether the comparison is significant or not, then the calculated t value needs to be compared with the t table price with dk  $n-2 = 8$ . Based on the attachment table II in the values in the t distribution, if dk = 88, for the first test party with an error level of 5%, then the price of t table = 1.86. If the calculated t price

falls in the acceptance area of  $H_a$ , then  $H_a$  which states that model digital sport massage is better than conventional massage. Based on the calculations, it turns out that t count 10 falls in the area of acceptance of  $H_a$  or rejection of  $H_o$ . Thus it can be concluded that there is a significant difference (can be generalized) in the effectiveness of the development of sports massage to overcome low back pain.

The development of a digital sports massage model for sufferers of lower back pain is the development of 6 massage techniques namely efflurage, petrissage, tapotement, walken, vibration, skin-rolling which is carried out using a digital program model. This product is in the form of an application that can be accessed and operated via a smartphone (Android) and laptop/pc but has the disadvantage that it is not yet available for access via iOS and content such as videos, instructional guides and books can be accessed if connected to the internet and the advantages of this are video content and books can also be downloaded.

## DISCUSSION

In this study, the concept of developing the massage method became a digital sports massage model for sufferers of lower back pain. From the research results it is known that the treatment using the message method is directly known from 10 samples, 3 of which are adequate and one sample is not passed. Whereas in the results of research conducted on the treatment of digital sport massage model development for sufferers of lower back pain from 6 massage techniques it is known that there is one sample in the very good category and 9 other samples in the good category. A total of 10 samples were passed. It can be seen that there is a change in the effectiveness of the massage model into an application-based digital model. And from the results of these data it can be concluded that there is a level of effectiveness in developing digital sports massage models for sufferers of lower back pain. This is because using a digital sports massage model can make it easier for sufferers of lower back pain to access it. This application also provides content such as videos, instructional guides and books that can be accessed if connected to the internet and





the advantage of this is that video content, books can also be downloaded so that people with lower back pain can do it for free in various places and even even at home.

## CONCLUSION

From the research that has been done, it can be seen that people with lower back pain need a solution for handling massage that makes it easier for sufferers to do it, so the development of this digital sport massage model has good effectiveness of use which is known from the data which shows when using the non-digital massage method there are 3 sufficient categories whereas after using the digital sport massage model one sample was in the very good category and the other 9 samples were in the good category.

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## APPENDIX

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