



The Effect of Effleurage along with Moisturizing Application on Skin Elasticity

Afrianti Widiarti, Dwi Kurniawati

Physiotherapy Department of Health Polytechnic, Health Ministry Surakarta, Indonesia

Abstract

p-ISSN: 2301-4369 e-ISSN: 2685-7898
<https://doi.org/10.36408/mhjcm.v10i2.900>

Accepted: January 02nd, 2023

Approved: July 17th, 2023

Author Affiliation:

Physiotherapy Department of Health Polytechnic,
Health Ministry Surakarta, Indonesia

Author Correspondence:

Afrianti Widiarti
Letjen Sutoyo Street, Surakarta,
Central Java 57127,
Indonesia

E-mail:

afriwahyu893@gmail.com

Publisher's Note:

dr. Kariadi Hospital stays neutral with regard to
jurisdictional claims in published maps and
institutional affiliations.



Copyright:

© 2023 by the author(s).
Licensee dr. Kariadi Hospital, Semarang, Indonesia. This
article is an open access article distributed under the
terms and conditions of the Creative Commons
Attribution-ShareAlike (CC BY-SA) license
(<https://creativecommons.org/licenses/by-sa/4.0/>).

Background : A decrease in skin elasticity is a problem often complained of, especially by women. Changes in some of the structure and elasticity of the skin occur with age as a result of reduced production of natural oils and skin collagen. There are several ways to increase skin elasticity, including by stimulating collagen. One of them is by using topical skin care such as using a moisturizer that suits skin type. This study intends to determine the effect of effleurage in the application of moisturizer on skin elasticity.

Methods : The research design was a randomized controlled-trial with two groups pre and posttests conducted on 30 students of the Physiotherapy Department Surakarta randomly selected and divided into two groups. The treatment group applied moisturizer to the skin using the effleurage technique, while the control group applied only moisturizer. The groups were intervened for two weeks. Skin elasticity was measured using the EH-900U skin analysis system.

Results : The Pre-Posttests of group one's skin elasticity with the Paired Samples T-Test yielded a p value = 0.013, which means that there is an effect of effleurage in applying moisturizer on skin elasticity. The Pre-Posttests of group two's skin elasticity with the Wilcoxon Test yielded a p value = 0.551, which means that there is no effect of topical moisturizer on skin elasticity. There were significant differences in the treatment and control groups.

Conclusion : The application of moisturizer along with effleurage for skin elasticity is more robust than applying only topical moisturizer.

Keywords : Effleurage, Moisturizer, Skin elasticity

INTRODUCTION

The skin is the largest organ of the body and has a very important role. The skin is the outermost organ and covers the entire surface of the body with an area of approximately 600 m² and a weight between 2700 grams to 3000 grams.¹ The thinnest skin is located on the eyelids while the skin on the soles of the feet is the thickest part with a thickness of up to 0.6 cm.² In addition to its functional role as a protector, the skin is also a "determining factor" of one's appearance in terms of one's aesthetics or beauty.³ The beauty of the skin has a psychosocial role in a person's life, especially women. With this very important role, skin care is absolutely a concern because if the skin has problems, it will have a very big impact on self-confidence and appearance.⁴

One problem that often arises is decreased skin elasticity, namely the skin's ability to stretch and return to its normal state. Skin elasticity in young adults is better than in old adults.⁵ This is related to the thickness of the dermis where the dermis layer is thinning in older people. Several factors cause the skin to lose its elasticity, including: age, genetics, UV exposure, stress and diet.⁶

As people get older, there are changes in some of the structure and elasticity of the skin as a result of reduced production of collagen and the skin's natural oils. This can be exacerbated by exposure to accumulated irritants such as UV exposure, stress and diet. This causes the skin to thicken, dry to sores.⁷ There are several ways to increase skin elasticity, including by stimulating collagen or preventing inflammation that leads to the breakdown of structural proteins in the skin.⁸ One of them is by using topical skin care such as using a moisturizer according to skin type.⁹

The applications of skin moisturizer in the form of lotion is expected to be done properly and correctly to get maximum effect. One of its applications is the massage technique in the form of an effleurage technique.¹⁰ Massage effleurage is able to yield effect to the skin. Massage effleurage has the effect of releasing adhesions and removing small thickenings in the tissue located under the skin so absorption can be improved.¹¹ For that reason, researchers are interested in conducting research studies related to the effect of effleurage in applying moisturizer on skin elasticity.

METHODS

This research is a two groups pre and post test design, involving subjects divided into two groups, and measurements taken before and after treatment administration. The first group as the treatment group applied moisturizer (Kaila hand and body lotion) to the skin of each arm using effleurage technique while the second group as the control group applied topical moisturizer to the skin of each arm.

The research was conducted from August to September 2022 at the Physiotherapy Department, Health Polytechnic, Ministry of Health, Surakarta. The subjects were randomly allocated. The subjects involved female students who meet the criteria. The inclusion criteria were female aged 25–30 years who had no allergies to moisturizers and were willing to participate in the study. The drop out criteria involve having hypersensitivity, and unable to join the program for 3 times in a row. The independent variable is effleurage while the dependent variable is skin elasticity.

Effleurage is a light massage using palms and moisturizing cream applied on the arms starting from the bottom to the top. Skin elasticity is a measure of the skin's ability to stretch and return to its normal shape. The measuring instrument uses the EH-900U skin analysis system.

The total subjects consisting of 30 participants divided into 2 groups. The first group received the effleurage intervention and topical moisturizer to the arm skin for 5 minutes. The second group received only topical lotion to the arm skin. The intervention was carried out 2 times a day for 2 weeks. The skin analysis tool was employed to examine the skin elasticity level. Ethical clearance with number 4288/B.1/KEPK-FKUMS/VI/2022 was obtained from the Health Research Ethics Commission, Faculty of Medicine, University of Muhammadiyah Surakarta.

SPSS was employed to process and analyze research data. The subject characteristics based on age distribution, and skin elasticity values before and after treatment are presented. Normality test was conducted with Shapiro Wilk. The first group's data was normally distributed ($p > 0.05$) so hypothesis analysis used a parametric test, while the second group's data was not normally distributed ($p < 0.05$), so the hypothesis analysis used a non-parametric test. The Paired T-Test was used for analysis of different tests before and after intervention in the first group, while the Wilcoxon Test was used in the second group with.

RESULTS

A total of 30 female graduate students at the Physiotherapy Department of Health Polytechnic of the Health Ministry were recruited and allocated in 2 groups (Diagram 1). The age range of the subjects was 25–30 years. The average age of the first group is 26 years, while that of the control group is 25 year.

The average value of skin elasticity before and after treatment in the first group were 33.8 and 42.87 respectively (Figure 1 and Table 1). The average value of skin elasticity before and after treatment in the second group were 40 and 37 respectively (Figure 2 and Table 1).

Statistical analysis begins with a prerequisite test, namely the data normality test. The number of subjects is

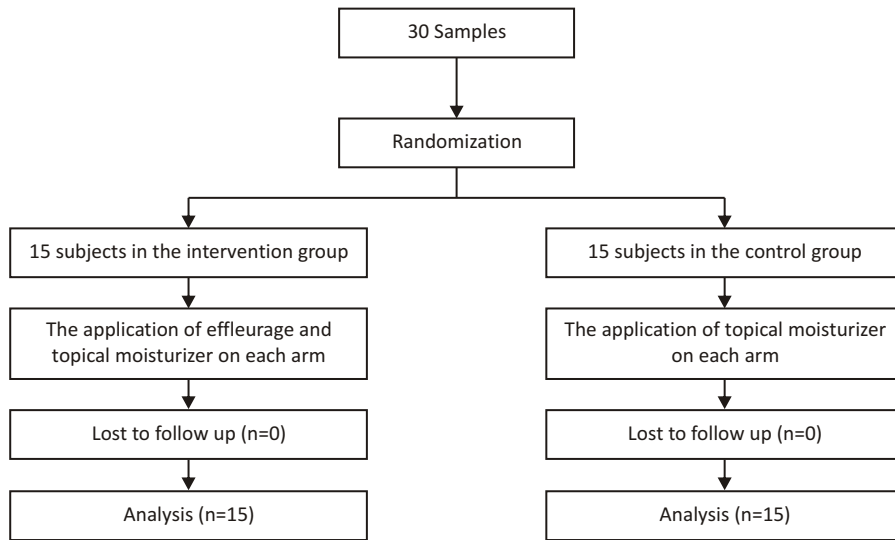


Diagram 1. Consort Diagram

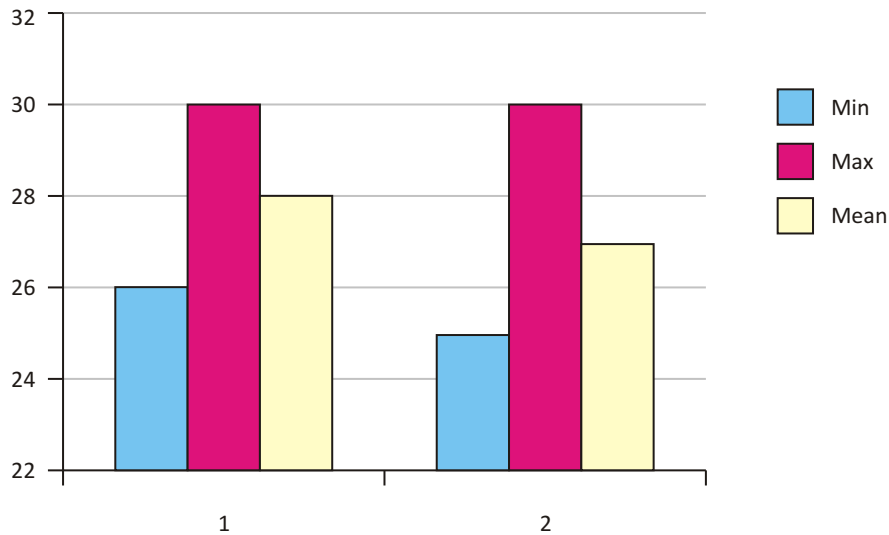


Figure 1. Data distribution of research subjects based on age (1 = intervention group; 2= control group)

30 so Shapiro Wilk was employed for data normality testing. The first group's data was normally distributed ($p > 0.05$), while the second group's data was not normally distributed ($p < 0.05$) (Table 2).

Homogeneity test with Levene's test aims to determine the distribution of research subject data in each group. The results of the homogeneity test with a p value > 0.05 means that the distribution of moisture and elasticity values between the first and second groups is equally distributed (Table 3).

Paired samples t-test of the first group shows $p < 0.05$ which means that there is difference elasticity value between before and after treatment (Table 4).

The Wilcoxon test in the second group shows

$p > 0.05$ which means that there is no different elasticity value between before and after treatment (Table 5).

DISCUSSION

This study found that the group given moisturizing treatment with effleurage showed more significant changes compared to the group that was only given topical moisturizer.

Effleurage on the skin can also increase elasticity so that the skin will look younger. Massage using the effleurage technique can improve texture, wrinkles, and sagging skin. Effleurage is believed to help bring oxygen to the area.¹² Effleurage in the form of a structured series

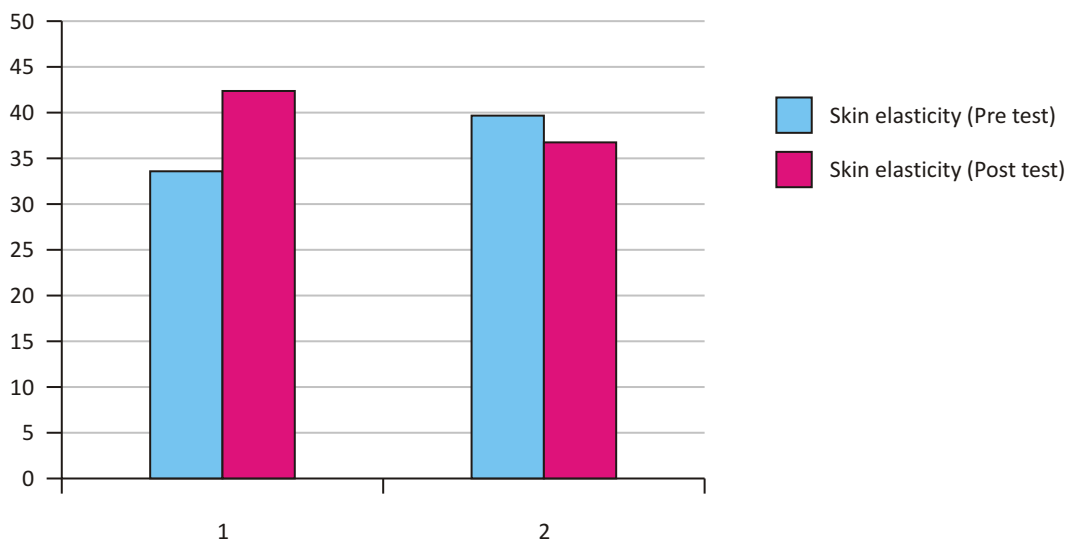


Figure 2. Data distribution of averaged skin elasticity before and after intervention

TABLE 1
Descriptive statistik of pre and posttests

	N	Minimum	Maximum	Mean	Std. Deviation
Group 1					
Pretest	15	25	48	33.80	5.735
Posttest	15	28	64	42.87	10.743
Valid N (listwise)	15				
Group 2					
Pretest	15	31	60	40.07	8.447
Posttest	15	27	61	37.80	7.930
Valid N (listwise)	15				

TABLE 2
Normality test

	Kolmogorov–Smirnov ^a			Shapiro–Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Pretest						
Group 1	.153	15	.200*	.932	15	.294
Group 2	.263	15	.006	.852	15	.019
Posttest						
Group 1	.169	15	.200*	.912	15	.147
Group 2	.191	15	.147	.851	15	.018

TABLE 3
Homogeneity test

Pretest	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
Equal variances assumed	1.953	.173	-2.377	28	.025	-6.267	2.636	-8.67	-.867
Equal variances not assumed	.263	15	-2.377	24.644	.026	-6.267	2.636	-.833	-.833

TABLE 4
Paired samples t-test of the first group

Pair 1	Paired Differences								
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)	
				Lower	Upper				
Pre – Posttest	-9.067	12.314	3.179	-15.886	-2.247	-2.852	14	.013	

TABLE 5
Wilcoxon test of the second group

Posttest – Pretest	
Z	-.597 ^b
Asymp. Sig. (2-tailed)	.551

of touch and/or hand pressure on the soft tissues of the body stimulates sensory receptors and subcutaneous tissue in the skin.¹³ The effleurage massage technique improves local circulation and reduces dryness of the skin.¹⁴

Effleurage technique can promote blood circulation and increase metabolic processes. The effect resulting from massage can help accelerate the absorption of moisturizer into the skin so that it improves skin health and restores facial elasticity.¹⁵

CONCLUSION

Analysis of the research data found that the application of effleurage along with moisturizer improves skin elasticity. For further research, there is a need to control

the activity and several areas of the subject's body. The application of interventions in research subjects is better not only on the skin of the arms but several other parts of the body that are often exposed to sunlight.

REFERENCES

- Alakram, P., & Puckree, T. (2011). Effects of electrical stimulation in early Bells palsy on facial disability index scores. *South African Journal of Physiotherapy*, 67(2). <https://doi.org/10.4102/sajp.v67i2.44>
- Durai, P. C., Thappa, D. M., Kumari, R., & Malathi, M. (2012). Aging in elderly: Chronological versus photoaging. *Indian Journal of Dermatology*, 57(5). <https://doi.org/10.4103/0019-5154.100473>
- Farage, M. A., Miller, K. W., Elsner, P., & Maibach, H. I. (2008). Intrinsic and extrinsic factors in skin ageing: A review. In *International Journal of Cosmetic Science* (Vol. 30, Issue 2). <https://doi.org/10.1111/j.1468-2494.2007.00415.x>
- Fatmawati, & Arifiani, Farizka Puspita. (2017). Efektifitas Masase Efflurage terhadap Pengurangan Sensasi Rasa Nyeri Persalinan pada Ibu Primipara. Effectivity of Effleurage Massage on Reduced Labor Pain Sensation among Primipara Mother. *Journal of Issues in Midwifery*.
- Helfrich, Y. R., Sachs, D. L., & Voorhees, J. J. (2008). Overview of skin aging and photoaging. In *Dermatology Nursing/Dermatology Nurses' Association* (Vol. 20, Issue 3).
- Hwang, K.-A., Yi, B.-R., & Choi, K.-C. (2011). Molecular Mechanisms and In Vivo Mouse Models of Skin Aging

- Associated with Dermal Matrix Alterations . *Laboratory Animal Research*, 27(1). <https://doi.org/10.5625/lar.2011.27.1.1>
7. Kim, M., & Park, H. J. (2016). Molecular Mechanisms of Skin Aging and Rejuvenation. In *Molecular Mechanisms of the Aging Process and Rejuvenation*. <https://doi.org/10.5772/62983>
 8. Pandel, R., Poljšak, B., Godic, A., & Dahmane, R. (2013). Skin Photoaging and the Role of Antioxidants in Its Prevention. *ISRN Dermatology*, 2013. <https://doi.org/10.1155/2013/930164>
 9. Poljšak, B., Dahmane, R. G., & Godić, A. (2012). Intrinsic skin aging: The role of oxidative stress. In *Acta Dermatovenerologica Alpina, Pannonica et Adriatica* (Vol. 21, Issue 2). <https://doi.org/10.2478/V10162-012-0009-0>
 10. Thakur, R., Batheja, P., Kaushik, D., & Michniak, B. (2009). Structural and Biochemical Changes in Aging Skin and Their Impact on Skin Permeability Barrier. In *Skin Aging Handbook*. <https://doi.org/10.1016/B978-0-8155-1584-5.50008-9>
 11. Ari Wibowo, Kurniawan, M. T. A. (2021). *Sport Massage: Pijat Kebugaran Olahraga*. Sport Fitness Massage; Sport Massage (A. Wijayanto (ed.); I). Akademia Pustaka. <https://fik.um.ac.id/wp-content/uploads/2021/10/eBook-Sport-Massage.pdf>
 12. Rattanawiwatpong, P., Wanitphakdeedecha, R., Bumrungrert, A., & Maiprasert, M. (2020). Anti-aging and brightening effects of a topical treatment containing vitamin C, vitamin E, and raspberry leaf cell culture extract: A split-face, randomized controlled trial. *Journal of Cosmetic Dermatology*, 19(3). <https://doi.org/10.1111/jocd.13305>
 13. Amanati, S., Purnomo, D., & Abidin, Z. (2017). Pengaruh Infra Red dan Elektrical Stimulation serta Massage terhadap Kasus Bell's Palsy Dekstra The Effect Of Infra Red And Electrical Stimulation And Massage On Right Bell's Palsy Case. *Jurnal Fisioterapi dan Rehabilitasi*, 1(1), 915. <https://doi.org/10.33660/jfrwhs.v1i1.5>
 14. Khorsand, A., Salari, R., Noras, M. R., Saki, A., Jamali, J., Sharifipour, F., Mirmoosavi, S. J., & Ghazanfari, S. M. (2019). The effect of massage and topical violet oil on the severity of pruritus and dry skin in hemodialysis patients: A randomized controlled trial. *Complementary Therapies in Medicine*, 45(June), 248–253. <https://doi.org/10.1016/j.ctim.2019.06.015>
 15. Kaushik, V., Ganashalingam, Y., Schesny, R., Raab, C., Sengupta, S., & Keck, C. M. (2021). Influence of massage and skin hydration on dermal penetration efficacy of Nile red from petroleum jelly—an unexpected outcome. *Pharmaceutics*, 13(12). <https://doi.org/10.3390/pharmaceutics13122190>