THE BENEFITS OF MASSAGING ON SUBJECTIVE PHYSIOLOGICAL COMPLAINTS IN THE SECOND SEMESTER STUDENTS OF IKOR FIK UNIVERSITAS NEGERI MANADO

Fentje Welliam Langitan
1Department of Health and Recreation Education, Universitas Negeri Manado, Tomohon, 95618, North Sulawesi, Indonesia
*Corresponding author, e-mail: fentjelangitan@unima.ac.id

ABSTRACT

From fact of field observation both physical education teachers and coaches do not understand the importance of the implementation of massage for warming up and cooling down dynamically, in one activity or sport and exercise activities at that time. More than that, athletes who doing massage at rest to go on set or the next round there massage very useful role for the recovery and physical condition, injury prevention. This formulation of the research problem is whether the benefits of massaging on the lack of physiological complaint in the second semester students of IKOR FIK. The method in this study is a quasi experimental design with one group pre text post text only design. Data analysis techniques used for the purpose of testing the hypothesis in this study in the use statistic Wilcoxon signed rank text. Based on data collection and data processing, it can be concluded that massaging can be benefits to the decline of subjective physiological complaints in the second semester students of IKOR FIK Universitas Negeri Manado.
Keywords: massaging, subjective physiological, IKOR.

PENDAHULUAN
INTRODUCTION

Massaging is one of the most effective ways to assist in the athlete coaching process. Massaging is a massage activity with hands on the surface of the body to help facilitate the circulation of blood and fluids [1-4]. Its implementation is by the form of massage, polishing, anxiety and beating on blood surface of skin and muscle correctly. But, massage can cause excitement in the nerve ducts located in the entire body tissue to cause a reaction, resulting in muscle and joint movement, and help the process of metabolism in the body. More than that massage is useful for the maintenance of the body and reduce fatigue simply and naturally in sports.

Massaging is an effort that is used as an active break during exercise in volleyball, basketball and other sports [5-10]. Even massaging is done with the aim of stimulating the body to heat naturally needed for athletes who do not warm up enough in avoiding injury. In the implementation of massaging needs to be considered in particular areas as a massage area so that massage is done really effective and bring a positive effect for the body [11]. Massaging is only performed on certain body parts such as a javelin thrower that allows the thrower not to continue his work due to illness. So massage should only be done in times of need [12]. According to [13] that for the prevention of injury can be done by either massaging the hands of an electric appliance, the strength of water sprays or by the manipulation that is in the massage". The benefits of massaging for body tissue consist of four parts are: first, the benefits of massaging to the neural network; second, the benefits of massaging to skin tissue; third, the benefits of massaging to muscle tissue, and finally, the benefits of massaging to the circulatory system [14].

Furthermore, according to [15] massaging may be used for: a) hygienic massage, b) therapeutic massage (c) massage in joint injury, and massage in the treatment of muscle and tendon injury. Through observations in the reality of both physical education teachers and trainers still do not understand the importance of the implementation of massage as a

substitute for dynamic warning and dynamic calling down, in one activity or sport or exercise activities at that time. More than that at an athlete who is playing a game or a race. Trainers do not perform massage while at rest to enter in the next set or round their role; role is very useful for the recovery of the condition and physical, injury prevention [16]. Based on the above facts, researchers feel interested to examine the benefits of massaging to the lack of subjective physiological complaints in the second semester students of IKOR FIK UNIMA.

This problem is as follows: is there the benefits of massaging to the lack of subjective physiological complaints on the students FIK UNIMA. So the purpose of the study is to find out whether there is a contribution massaging to the lack of physiological complaints in the second

METHODS

The method used in this research is quasi experimental by highlighting the effect of the implementation of massaging to the lack of subjective physiological complaints with the design of one group pre-test post-test only design. The implementation of research in FIK UNIMA and the implementation time is done for 2 months. The population in this study is the second semester students of IKOR FIK UNIMA, while the sample of this study amounted to 15 people taken by random of the existing population..

The experimental method is activities planned and carried out by researchers to collect data that is related to the hypothesis. For a more specific experimental research design (table 1), the authors used a randomized pre-test and post-test control group research model [17, 18].

Table 1. Research design

Group	Pre-test	treatment	Post-Test
TI	01	X	02
T2	01		02

Information:
T1:   The experimental group is given treatment
T2:   Control group that is not given treatment
01ex: Initial test of the experimental group given treatment
01c: Final test of the control group that was not given treatment
X: Treat the experimental group
02ex: Final test of the experimental group given treatment
02c: Final test of the control group that is not given treatment

The instrument in this study was carried out with questionnaire entries or using Nordic Body Map questionnaire [19].

With the implementation as follows: a person is given a 12-minute running treatment on the track, and then data on complaints of muscle aches are collected using Nordic Body Map. After 3 days, the person was told to run for 12 minutes and given a massage and fill in complaints about muscle aches.

Data analysis techniques in this study, namely before being analyzed is a prerequisite test that is by testing normality and homogeneity, using t test based on observations with a significance level $\alpha = 0.05$ single group pattern in equation (1).

$$t = Sd \frac{\overline{X}_1 - \overline{X}_2}{S\sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$$

(1)

Information:
$\overline{X}_2$: The average experimental group
$\overline{X}_1$: Average control group
Sd   : Combined standard deviation value
n1   : Number of sample experimental groups
n2   : Number of sample control groups

According to [20] to test homogeneity the F test used equation (2).

$$F = \frac{varians\ terbesar}{varians\ terkecil}$$

(2)

The test statistic used is the Liliefors test by calculating the Zi, F (zi), and deviation F (zi) -S (zi) values. Where is the value: Zi: Liliefors test; X: Subjective physiological complaints; $\overline{X}$: Average value; and Sd : Standard deviation.

HASIL DAN PEMBAHASAN

RESULTS AND DISCUSSION

The hypothesis tested to the truth in this research is the benefits of massaging to subjective physiological complaints in the second semester students of IKOR FIK UNIMA.
As the acceptance and rejection criteria of the above hypothesis are as follows:
- Accept H0 if T ≥ Tα
- Reject H0 if T < Tα
The test is done with a significant level of 0.01 with degrees of free n: 15, so that the critical value is obtained = 20. The critical value is used as a comparison tool to the value of T, the comparison between T and Tα (critical value) indicates that the observational value of T is smaller of T table is 0 <20 then H0 is rejected and HA is accepted. It means that there is the benefits of massaging physiological sympathy to the second semester students of IKOR FIK UNIMA.
The measurement results on the subjective physiological complaint experiment group of the second semester students of IKOR FIK UNIMA can be seen in table 2.

Table 2. Results of subjective physiological complaints experiment group

No	Pres-test	Post-test
1.	50	58
2.	49	56
3.	46	54
4.	48	58
5.	41	49
6.	47	56

7.	42	51
8.	55	63
9.	43	52
10.	52	62

$\sum$ *Pre-test* $(O_1) = 473$; $= \overline{X}$7,3 Sd = 4,4733; $\sum$ *Post-test* $(O_2) = 559$; $= 55,9$ Sd = 4,5570.

Furthermore, the results of sub$\overline{X}$tive physiological complaints in the control group are showed in table 3.

Table 3. Results of subjective physiological complaints control group

No	Pres-test	Post-test
1.	44	48
2.	43	45
3.	48	51
4.	50	53
5.	49	52
6.	46	48
7.	52	55
8.	44	47
9.	41	44
10.	47	49

$\sum$ *Pre-test* $(O_1) = 464$; $= \overline{X}$,4 Sd = 3,4384; $\sum$ *Post-test* $(O_2) = 492$; $= 49,2$ Sd = 3,5213.

Furthermore, the results of subj$\overline{X}$tive physiological complaints difference both in the pre-test and post-test experimental groups and the difference in subjective physiological complaints both in the pre-test and post-test control groups are showed in table 4.

Tabel 4. Difference in subjective physiological complaints experiment and control group

No	Experiment (X_1)	Control (X_2)
1.	8	4
2.	7	2
3.	8	3
4.	10	3
5.	8	3

6.	9	2
7.	9	3
8.	8	3
9.	9	3
10.	10	2

The results of the analysis of the normality of the data using the liliefors test statistic showed that the samples drawn from both groups, both the experimental group and the control group came from the population with normal distribution (table 4). Likewise in the homogeneity test where the two sample groups showed homogeneous or equal variance, this means that the two sample groups before receiving different treatments have the same initial ability so that if there is or occurs a change solely because of the treatment factor in this case is the treatment with the benefits of massaging.

Based on the results of the data presentation, it can be seen that the conditions before or pre-test and post-test conditions of the two groups showed differences in the numbers obtained in the complaints of objective physiology in the second semester students of IKOR FIK UNIMA (table 5). These results show that the conditions before or pre-test of the two groups did not show significant differences, but the conditions after or post-test the two groups showed a significant difference, where for the post-test scores the experimental group gained more than the acquisition of numbers in the control group [21]. This shows that massaging contribution given for two months with a frequency of three times week training can have a significant effect, especially for increasing subjective physiological complaints in the second semester students of IKOR FIK UNIMA.

Table 5. The results of the difference between pre-test and post-test Experimental group and control group

Experiment (X_1)	Control (X_2)
$n_1 = 10$	$n_2 = 10$
$\sum X_1 = 86$	$\sum X_2 = 28$
$X_1 = 8,6$	$X_2 = 2,8$
$Sd_1 = 0,9661$	$Sd_2 = 0,6324$
$Sd_1^2 = 0,9333$	$Sd_2^2 = 0,9324$

Information :
n: Number of Samples
∑X: Total Value in Both Groups
$\overline{X}$: Average value
Sd: Standard Deviation
Sd2: Nature Standard Deviation (variance)
Liliefors test is one of the normality tests used to test whether the sample comes from a population that is normally distributed (tables 6 and 7).

Table 6. Calculation of group normality test experiment

Xi	Zi	F(zi)	S(zi)	F(zi)-S(zi)
41	1,41	0,0792	0,1	0,0207
42	-1,18	0,119	0,2	0,081
43	-0,96	0,1685	0,3	0,1315
46	-0,29	0,3859	0,4	0,0141
47	-0,07	0,4721	0,5	0,0279
48	-0,16	0,5636	0,6	0,0464
49	0,38	0,648	0,7	0,052
50	0,6	0,7257	0,8	0,0743
52	1,05	0,8931	0,9	0,0069
55	1,72	0,9573	1	0,0427

The all of results are showed that strengthened by the results of the calculation of the t-test statistical analysis, where the results of tob = 7.17> ttab = 2.110 so that Ho is rejected and accepts Ha which states that the average subjective physiological complaints in the second semester students of IKOR FIK UNIMA in the experimental group were given by contribution massaging has a greater increase than the average subjective physiological complaints in the second semester students of IKOR FIK UNIMA in the control group [22].
This study shows that there is the benefits of the contribution of massaging to subjective physiological complaints in the second semester students of IKOR FIK UNIMA.

Table 7. Group Normality Testing Control

Xi	Zi	F(zi)	S(zi)	F(zi)-S(zi)
41	-1,57	0,0582	0,1	0,0418
43	-0,98	0,1635	0,2	0,0365
44	-0,69	0,2451	0,3	0,1549
44	-0,69	0,2451	0,4	0,1549
46	-0,11	0,4562	0,5	0,0438
47	0,17	0,5675	0,6	0,0325
48	0,46	0,6772	0,7	0,0228
49	0,75	0,7734	0,8	0,0266
50	1,07	0,8577	0,9	0,0423
52	1,62	0,9474	1	0,0526

CONCLUSION

Based on the results of research that has been proven testing of data based on the variables measured, it can be concluded that there is the benefits of massaging on subjective physiological complaints in the second semester students of IKOR FIK UNIMA.

REFERENCES

1. Delaxtrat A, Calleja-González J, Hippocrate A and Clarke N D 2013 *J. Sports Sci.* **31** 1 11-19

2. Cheatham S W and Kolber M J 2018 *Hum. Kinetics J.* **27** 2 165-169

3. Kargarfard M, Lam E T C, Shariat A, Shaw I, Shaw B S and Tamrin S B M 2016 *J. Sports Sci.* **34** 10 959-965

4. Joseph L H, Hancharoenkul B, Sitilertpisan P, Pirunsan U and Paungmali A 2018 *Asian J. Sports Med.* **In Press**

5. Subbiah S 2018 *Inter. J. Curr Trends Sci Tech.* **8** 1 20386-20389

6. Zadkhosh S M, Ariaee E and Zandi H G 2018 *J. Phy. Edu. Health Sport* **5** 1 6-13

7. Więcek M, Szymura J, Maciejczyk M, Szyguła Z, Cempla J and Borkowski M 2018 *Int. J.Occup. Med. Environ. Health* **31** 5 1-8

8. Moran R N, Hauth J M and Rabena R 2018 **30** 1-5

9. Giovanelli N, Vaccari F, Floreani M, Rejc E, Copetti J, Garra M, Biasutti L and Lazzer S 2018 *Hum. Kinetics J.* **0** 0 1-23

10. Taskin M, Budak H, Taskin M, Bozoglu, Mustafa S and Taskin H 2018 *Ovid. Univ. Annals, Ser. Phy. Edu. Sport Sci. Mov. Health* **18** 2 160-165

11. *Shmeleva S V, Yunusov F A, Morozov Y U S, Seselkin A I and Zavalishina S Y U 2018 Prensa Med Argent* **104** *2 doi: 10.4172/0032-745X.1000281*

12. Langitan F W 2012 Makalah perkuliahan sport massage FIK Unima Tondano

13. Hardianto W 1993 Cedera Olahraga. Penerbit Buku Kedokteran Jakarta

14. Jung C H 2000 Masase olahraga untuk masyarakat umum Penerbit Universitas Negeri Malang

15. Rahim A S 1988 Masase olahraga: Teori metode dan praktek Jakarta

16. Waters-Banker C, Dupont-Versteegden E E, Kitzman P H and Butterfield T A 2014 J. Athl. Train. **49** 2 266-273

17. Wijaya I R 2000 Statistika non parametrik Penerbit Alfabeta Bandung

18. Notoadmodjo S 2002 Metodologi Penelitian Kesehatan Jakarta Rineka Cipta

19. Mautang T 2002 Efektifitas dan efisiensi kinerja serta keluhan subyektif pegawai Negeri Sipil Kantor Bupati Minahasa FIK UNIMA.

20. Sudjana 1986 Metode statistik Bandung Tarsito

21. Leier C H, Schultz H P and Wang L P 2018 Patent No.: US 9,968,505 B2

22. Mohamadyari S, Shojaedin S S and Barati A H 2018 *J. Gorgan Univ. Med. Sci.* **20** 1 Pe77-Pe81

28