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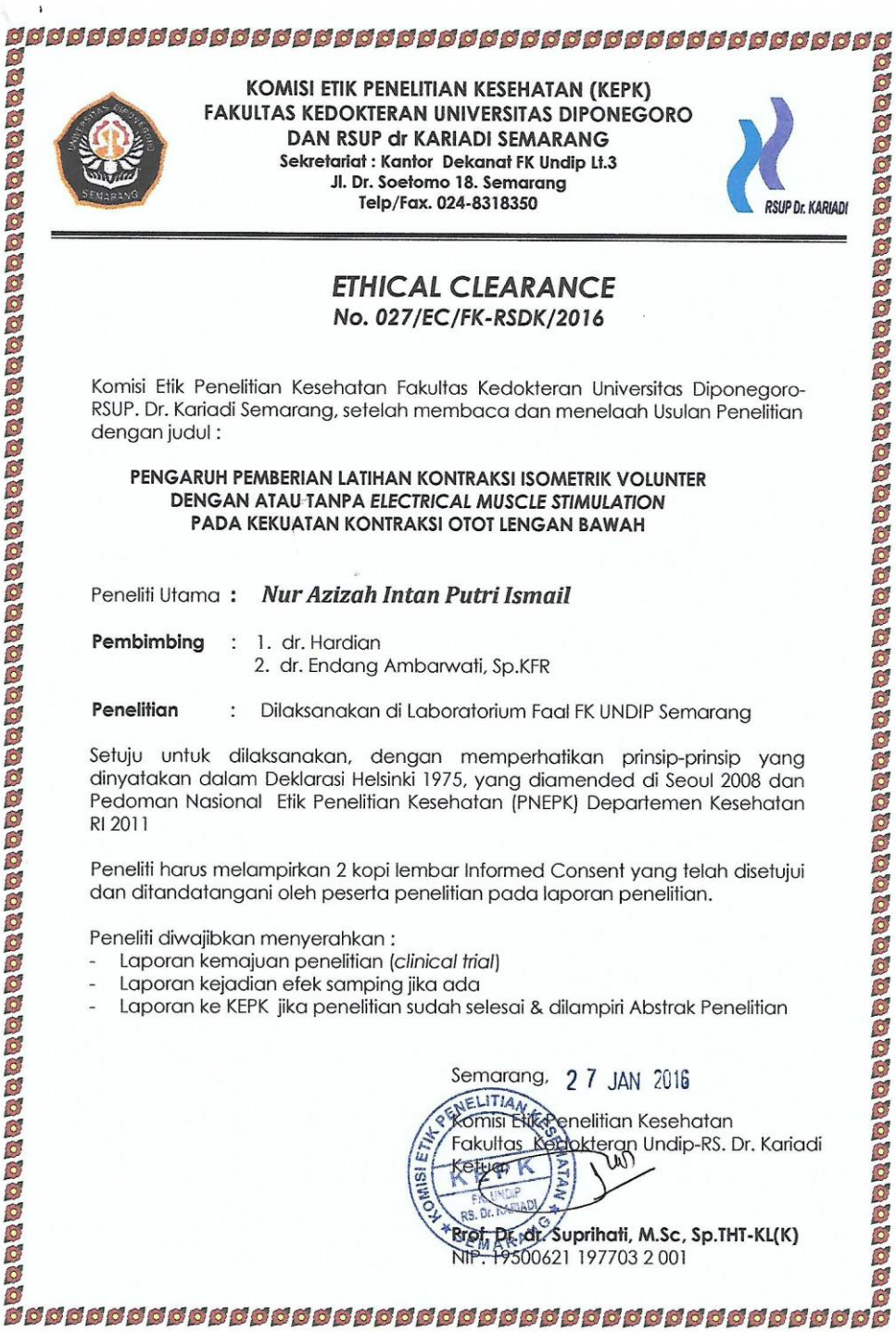
Lampiran 1. *Ethical clearance*



KOMISI ETIK PENELITIAN KESEHATAN (KEPK)
FAKULTAS KEDOKTERAN UNIVERSITAS DIPONEGORO
DAN RSUP dr KARIADI SEMARANG
Sekretariat : Kantor Dekanat FK Undip Lt.3
Jl. Dr. Soetomo 18. Semarang
Telp/Fax. 024-8318350

RSUP Dr. KARIADI

ETHICAL CLEARANCE
No. 027/EC/FK-RSDK/2016

Komisi Etik Penelitian Kesehatan Fakultas Kedokteran Universitas Diponegoro-RSUP. Dr. Kariadi Semarang, setelah membaca dan menelaah Usulan Penelitian dengan judul :

PENGARUH PEMBERIAN LATIHAN KONTRAKSI ISOMETRIK VOLUNTER DENGAN ATAU TANPA *ELECTRICAL MUSCLE STIMULATION* PADA KEKUATAN KONTRAKSI OTOT LENGAN BAWAH

Peneliti Utama : ***Nur Azizah Intan Putri Ismail***

Pembimbing : 1. dr. Hardian
2. dr. Endang Ambarwati, Sp.KFR

Penelitian : Dilaksanakan di Laboratorium Faal FK UNDIP Semarang

Setuju untuk dilaksanakan, dengan memperhatikan prinsip-prinsip yang dinyatakan dalam Deklarasi Helsinki 1975, yang diamended di Seoul 2008 dan Pedoman Nasional Etik Penelitian Kesehatan (PNEPK) Departemen Kesehatan RI 2011

Peneliti harus melampirkan 2 kopi lembar Informed Consent yang telah disetujui dan ditandatangani oleh peserta penelitian pada laporan penelitian.

Peneliti diwajibkan menyerahkan :
- Laporan kemajuan penelitian (*clinical trial*)
- Laporan kejadian efek samping jika ada
- Laporan ke KEPK jika penelitian sudah selesai & dilampiri Abstrak Penelitian

Semarang, 27 JAN 2016
Komisi Etik Penelitian Kesehatan
Fakultas Kedokteran Undip-RS. Dr. Kariadi
Ketua

Prof. Dr. dr. Suprihati, M.Sc, Sp.THT-KL(K)
NIP. 19500621 197703 2 001

Lampiran 2. Surat izin penelitian

KEMENTERIAN RISET, TEKNOLOGI DAN PENDIDIKAN TINGGI
UNIVERSITAS DIPONEGORO
FAKULTAS KEDOKTERAN
Jl. Prof. H. Soedarto, SH – Tembalang – Semarang Telepon 024-76928010, Fax. 024-76928011
Email : dean_fmdu@undip.ac.id

Nomor : 368 /UN7.3.4/D1/PP/2016 12 JAN 2016
Lampiran : 2 (dua) bendel
Perihal : Permohonan ijin penelitian

Yth. Dekan Fakultas Kedokteran
Universitas Diponegoro
Semarang

Bersama ini kami hadapkan mahasiswa Program Studi Pendidikan Dokter Fakultas Kedokteran Universitas Diponegoro Semarang :

Nama/ NIM : 1. Nur Azizah Intan Putri Ismail / 22010112110049
2. Nadia Delima Andini / 22010112130122
Semester : VIII (delapan)

Mohon diijinkan melakukan penelitian dengan subjek mahasiswa Fakultas Kedokteran Undip, dalam rangka penyusunan Karya Tulis Ilmiah mahasiswa. Terlampir proposal mahasiswa yang bersangkutan.

Judul KTI : 1. Pengaruh Pemberian Latihan Kontraksi Isometrik Volunter dengan atau tanpa *Electrical Muscle Stimulation* pada Kekuatan Kontraksi Otot Lengan Bawah
2. Pengaruh Pemberian Latihan Kontraksi Isometrik Volunter dengan atau tanpa *Electrical Muscle Stimulation* pada Kekuatan Kontraksi Otot Bahu
Pembimbing : 1. Dr. dr. Hardian
2. dr. Endang Ambarwati Sp. KFR

Atas perhatian dan kerjasamanya diucapkan terima kasih.

a.n Dekan
Pembantu Dekan I

Dr. dr. Dwi Pudjonarko, M.Kes.,Sp.S(K)
NIP. 196607201995121001

Tembusan :
1. Pembantu Dekan III
2. Ketua Prodi Pendidikan Dokter
3. Ketua Tim Karya Tulis Ilmiah
4. Pembimbing
5. Mahasiswa Yang Bersangkutan

Lampiran 3. *Informed consent*

JUDUL PENELITIAN : Pengaruh Latihan Kontraksi Isometrik Volunter Dengan atau Tanpa *ElectricalMuscle Stimulation* pada Kekuatan Kontraksi Otot Lengan Bawah.

INSTANSI PELAKSANA : Bagian Fisiologi FK Undip - Mahasiswa Program Studi Strata-1 Kedokteran Umum Fakultas Kedokteran Universitas Diponegoro

PERSETUJUAN SETELAH PENJELASAN

(*INFORMED CONSENT)*

Yth, …….

Perkenalkan nama saya Nur Azizah Intan Putri Ismail. Saya adalah mahasiswi Program Studi Strata-1 Kedokteran Umum Fakultas Kedokteran Universitas Diponegoro. Guna mendapatkan gelar Sarjana Kedokteran maka salah satu syarat yang ditetapkan kepada saya adalah menyusun sebuah karya tulis ilmiah. Penelitian yang akan saya lakukan berjudul "Pengaruh Latihan Kontraksi Isometrik Volunter Dengan atau Tanpa *Electrical Muscle Stimulation* pada Kekuatan Kontraksi Otot Lengan Bawah".

Tujuan penelitian ini adalah untuk membuktikan manfaat latihan kombinasi kontraksi isometrik volunter dan *Electrical Muscle Stimulation* (EMS) terhadap kekuatan otot lengan bawah. Dalam penelitian ini saya akan memberikan latihan

kombinasi kontraksi isometrik volunter dan EMS atau latihan kontraksi isometrik volunter saja pada otot lengan bawah yang akan dilakukan dalam waktu 10-20 menit persesi dalam 3 kali seminggu selama 4 minggu. Subyek diminta untuk tidak mengonsumsi suplemen (vitamin, kreatin, kafein, *whey protein*, ataupun steroid) dan tidak melakukan olahraga apapun selain latihan yang diberikan selama penelitian karena akan mempengaruhi kekuatan kontraksi otot yang merupakan variabel penelitian.

Penelitian ini diharapkan dapat bermanfaat dengan memberikan informasi kepada masyarakat, memberi pengetahuan baru, dan menjadi acuan bagi penelitian selanjutnya tentang manfaat latihan kontraksi isometrik volunter dan EMS pada kekuatan kontraksi otot lengan bawah.

Penelitian yang saya lakukan ini bersifat sukarela dan tidak ada unsur paksaan. Partisipasi Anda dalam penelitian ini juga tidak akan digunakan dalam hal-hal yang merugikan Anda dalam bentuk apapun. Data yang didapatkan dari penelitian ini akan dijamin kerahasiaannya, yaitu identitas subyek penelitian tidak akan dicantumkan dan data tersebut hanya akan saya gunakan untuk kepentingan penelitian, pendidikan, dan ilmu pengetahuan.

Penanggung jawab penelitian adalah:

Nur Azizah Intan Putri Ismail
Bagian Ilmu Faal FK Undip
Jl. Prof. H. Soedarto, SH, Tembalang, Semarang
Telepon 024-76928010 ext 7771
HP. 083825300393

Sudah mendengar dan memahami penjelasan penelitian, dengan ini saya menyatakan

SETUJU / TIDAK SETUJU

untuk ikut sebagai subyek/sampel penelitian ini.

Semarang,…….2016

Saksi,	Yang membuat pernyataan,
Nama Terang :	Nama Terang :
Alamat :	Alamat :

Lampiran 4. Hasil analisis statistik

Means (Karakteristik Non EMS)

Report

	Umur	Berat badan	Tinggi badan	IMT
Mean	21,33	66,9500	1,6950	23,3981
Std. Deviation	,516	14,24553	,05857	5,45454
Median	21,00	62,0000	1,6900	21,6184
Minimum	21	58,00	1,61	20,05
Maximum	22	95,70	1,78	34,31

Means (Karakteristik EMS)

Report

	Umur	Berat badan	Tinggi badan	IMT
Mean	21,50	62,2833	1,7100	21,1598
Std. Deviation	,548	11,78820	,08000	3,22729
Median	21,50	65,8500	1,7450	21,1501
Minimum	21	41,00	1,57	16,63
Maximum	22	75,00	1,78	24,77

Explore (Uji normalitas karakteristik)

Descriptives

			Statistic	Std. Error
Umur	Mean		21,42	,149
	95% Confidence Interval for Mean	Lower Bound	21,09	
		Upper Bound	21,74	
	5% Trimmed Mean		21,41	
	Median		21,00	
	Variance		,265	
	Std. Deviation		,515	
	Minimum		21	

	Maximum		22	
	Range		1	
	Interquartile Range		1	
	Skewness		,388	,637
	Kurtosis		-2,263	1,232
	Mean		64,6167	3,66682
	95% Confidence Interval for Mean	Lower Bound	56,5460	
		Upper Bound	72,6873	
	5% Trimmed Mean		64,2019	
	Median		63,5000	
Berat badan	Variance		161,347	
	Std. Deviation		12,70224	
	Minimum		41,00	
	Maximum		95,70	
	Range		54,70	
	Interquartile Range		9,30	
	Skewness		,921	,637
	Kurtosis		3,598	1,232
	Mean		1,7025	,01943
	95% Confidence Interval for Mean	Lower Bound	1,6597	
		Upper Bound	1,7453	
	5% Trimmed Mean		1,7056	
	Median		1,7200	
Tinggi badan	Variance		,005	
	Std. Deviation		,06730	
	Minimum		1,57	
	Maximum		1,78	
	Range		,21	
	Interquartile Range		,10	
	Skewness		-,702	,637
	Kurtosis		-,365	1,232
	Mean		22,2789	1,27881
	95% Confidence Interval for Mean	Lower Bound	19,4643	
		Upper Bound	25,0936	
IMT	5% Trimmed Mean		21,9239	
	Median		21,4020	
	Variance		19,624	
	Std. Deviation		4,42992	

	Minimum	16,63	
	Maximum	34,31	
	Range	17,68	
	Interquartile Range	3,96	
	Skewness	1,902	,637
	Kurtosis	5,085	1,232

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Umur	,374	12	,000	,640	12	,000
Berat badan	,228	12	,084	,877	12	,079
Tinggi badan	,159	12	,200*	,925	12	,335
IMT	,222	12	,105	,824	12	,018

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Mann-Whitney Test (Umur)

Ranks

Kelompok		N	Mean Rank	Sum of Ranks
Umur	non EMS	6	6,00	36,00
	EMS	6	7,00	42,00
	Total	12		

Test Statistics[a]

	Umur
Mann-Whitney U	15,000
Wilcoxon W	36,000
Z	-,561
Asymp. Sig. (2-tailed)	,575
Exact Sig. [2*(1-tailed Sig.)]	,699[b]

a. Grouping Variable: Kelompok

b. Not corrected for ties.

T-Test (Tinggi Badan)

Group Statistics

Kelompok		N	Mean	Std. Deviation	Std. Error Mean
Tinggi badan	non EMS	6	1,6950	,05857	,02391
	EMS	6	1,7100	,08000	,03266

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means	
		F	Sig.	t	df
Tinggi badan	Equal variances assumed	,780	,398	-,371	10
	Equal variances not assumed			-,371	9,163

Independent Samples Test

		t-test for Equality of Means		
		Sig. (2-tailed)	Mean Difference	Std. Error Difference
Tinggi badan	Equal variances assumed	,719	-,01500	,04048
	Equal variances not assumed	,719	-,01500	,04048

Independent Samples Test

		t-test for Equality of Means	
		95% Confidence Interval of the Difference	
		Lower	Upper
Tinggi badan	Equal variances assumed	-,10519	,07519
	Equal variances not assumed	-,10632	,07632

T-Test (Berat Badan)

Group Statistics

	Kelompok	N	Mean	Std. Deviation	Std. Error Mean
Berat badan	non EMS	6	66,9500	14,24553	5,81571
	EMS	6	62,2833	11,78820	4,81251

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means	
		F	Sig.	t	df
Berat badan	Equal variances assumed	,047	,833	,618	10
	Equal variances not assumed			,618	9,662

Independent Samples Test

		t-test for Equality of Means		
		Sig. (2-tailed)	Mean Difference	Std. Error Difference
Berat badan	Equal variances assumed	,550	4,66667	7,54869
	Equal variances not assumed	,551	4,66667	7,54869

Independent Samples Test

		t-test for Equality of Means	
		95% Confidence Interval of the Difference	
		Lower	Upper
Berat badan	Equal variances assumed	-12,15287	21,48620
	Equal variances not assumed	-12,23303	21,56637

Mann-Whitney Test (IMT)

Ranks

Kelompok		N	Mean Rank	Sum of Ranks
IMT	non EMS	6	7,00	42,00
	EMS	6	6,00	36,00
	Total	12		

Test Statistics[a]

	IMT
Mann-Whitney U	15,000
Wilcoxon W	36,000
Z	-,480
Asymp. Sig. (2-tailed)	,631
Exact Sig. [2*(1-tailed Sig.)]	,699[b]

a. Grouping Variable: Kelompok
b. Not corrected for ties.

Explore (Uji normalitas data EMS)

Descriptives

			Statistic	Std. Error
Rerata kekuatan otot kanan pre latihan	Mean		30,7222	2,37489
	95% Confidence Interval for Mean	Lower Bound	24,6174	
		Upper Bound	36,8271	
	5% Trimmed Mean		30,8395	
	Median		32,1667	
	Variance		33,841	
	Std. Deviation		5,81728	
	Minimum		22,00	
	Maximum		37,33	
	Range		15,33	
	Interquartile Range		10,83	
	Skewness		-,630	,845
	Kurtosis		-,924	1,741
Rerata kekuatan otot kanan post latihan	Mean		38,5556	2,68420
	95% Confidence Interval for Mean	Lower Bound	31,6556	
		Upper Bound	45,4555	
	5% Trimmed Mean		38,5062	
	Median		38,6667	
	Variance		43,230	
	Std. Deviation		6,57492	
	Minimum		29,00	

	Maximum		49,00	
	Range		20,00	
	Interquartile Range		9,00	
	Skewness		,257	,845
	Kurtosis		1,378	1,741
Rerata kekuatan otot kiri pre latihan	Mean		29,0000	2,09231
	95% Confidence Interval for Mean	Lower Bound	23,6215	
		Upper Bound	34,3785	
	5% Trimmed Mean		29,0926	
	Median		28,6667	
	Variance		26,267	
	Std. Deviation		5,12510	
	Minimum		20,67	
	Maximum		35,67	
	Range		15,00	
	Interquartile Range		7,50	
	Skewness		-,529	,845
	Kurtosis		,837	1,741
Rerata kekuatan otot kiri post latihan	Mean		33,9444	2,40742
	95% Confidence Interval for Mean	Lower Bound	27,7560	
		Upper Bound	40,1329	
	5% Trimmed Mean		34,0309	
	Median		33,6667	
	Variance		34,774	
	Std. Deviation		5,89695	
	Minimum		24,67	
	Maximum		41,67	
	Range		17,00	
	Interquartile Range		9,25	
	Skewness		-,393	,845
	Kurtosis		,333	1,741

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk	
	Statistic	df	Sig.	Statistic	df
Rerata kekuatan otot kanan pre latihan	,208	6	,200*	,942	6
Rerata kekuatan otot kanan post latihan	,207	6	,200*	,969	6
Rerata kekuatan otot kiri pre latihan	,231	6	,200*	,959	6
Rerata kekuatan otot kiri post latihan	,183	6	,200*	,978	6

Tests of Normality

	Shapiro-Wilk[a]
	Sig.
Rerata kekuatan otot kanan pre latihan	,677
Rerata kekuatan otot kanan post latihan	,887
Rerata kekuatan otot kiri pre latihan	,815
Rerata kekuatan otot kiri post latihan	,939

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

T-Test (pre-post EMS)

Paired Samples Statistics

		Mean	N	Std. Deviation
Pair 1	Rerata kekuatan otot kanan pre latihan	30,7222	6	5,81728
	Rerata kekuatan otot kanan post latihan	38,5556	6	6,57492
Pair 2	Rerata kekuatan otot kiri pre latihan	29,0000	6	5,12510
	Rerata kekuatan otot kiri post latihan	33,9444	6	5,89695

Paired Samples Statistics

		Std. Error Mean
Pair 1	Rerata kekuatan otot kanan pre latihan	2,37489
	Rerata kekuatan otot kanan post latihan	2,68420
Pair 2	Rerata kekuatan otot kiri pre latihan	2,09231
	Rerata kekuatan otot kiri post latihan	2,40742

Paired Samples Correlations

		N
Pair 1	Rerata kekuatan otot kanan pre latihan & Rerata kekuatan otot kanan post latihan	6
Pair 2	Rerata kekuatan otot kiri pre latihan & Rerata kekuatan otot kiri post latihan	6

Paired Samples Correlations

		Correlation
Pair 1	Rerata kekuatan otot kanan pre latihan & Rerata kekuatan otot kanan post latihan	,937
Pair 2	Rerata kekuatan otot kiri pre latihan & Rerata kekuatan otot kiri post latihan	,998

Paired Samples Correlations

		Sig.
Pair 1	Rerata kekuatan otot kanan pre latihan & Rerata kekuatan otot kanan post latihan	,006
Pair 2	Rerata kekuatan otot kiri pre latihan & Rerata kekuatan otot kiri post latihan	,000

Paired Samples Test

		Paired Differences
		Mean
Pair 1	Rerata kekuatan otot kanan pre latihan - Rerata kekuatan otot kanan post latihan	-7,83333
Pair 2	Rerata kekuatan otot kiri pre latihan - Rerata kekuatan otot kiri post latihan	-4,94444

Paired Samples Test

		Paired Differences
		Std. Deviation
Pair 1	Rerata kekuatan otot kanan pre latihan - Rerata kekuatan otot kanan post latihan	2,32618
Pair 2	Rerata kekuatan otot kiri pre latihan - Rerata kekuatan otot kiri post latihan	,85418

Paired Samples Test

		Paired Differences
		Std. Error Mean
Pair 1	Rerata kekuatan otot kanan pre latihan - Rerata kekuatan otot kanan post latihan	,94966
Pair 2	Rerata kekuatan otot kiri pre latihan - Rerata kekuatan otot kiri post latihan	,34872

Paired Samples Test

		Paired Differences	
		95% Confidence Interval of the Difference	
		Lower	
Pair 1	Rerata kekuatan otot kanan pre latihan - Rerata kekuatan otot kanan post latihan	-10,27451	
Pair 2	Rerata kekuatan otot kiri pre latihan - Rerata kekuatan otot kiri post latihan	-5,84086	

Paired Samples Test

		Paired Differences	
		95% Confidence Interval of the Difference	
		Upper	
Pair 1	Rerata kekuatan otot kanan pre latihan - Rerata kekuatan otot kanan post latihan	-5,39216	
Pair 2	Rerata kekuatan otot kiri pre latihan - Rerata kekuatan otot kiri post latihan	-4,04803	

Paired Samples Test

		t
Pair 1	Rerata kekuatan otot kanan pre latihan - Rerata kekuatan otot kanan post latihan	-8,249
Pair 2	Rerata kekuatan otot kiri pre latihan - Rerata kekuatan otot kiri post latihan	-14,179

Paired Samples Test

		df
Pair 1	Rerata kekuatan otot kanan pre latihan - Rerata kekuatan otot kanan post latihan	5
Pair 2	Rerata kekuatan otot kiri pre latihan - Rerata kekuatan otot kiri post latihan	5

Paired Samples Test

		Sig. (2-tailed)
Pair 1	Rerata kekuatan otot kanan pre latihan - Rerata kekuatan otot kanan post latihan	,000
Pair 2	Rerata kekuatan otot kiri pre latihan - Rerata kekuatan otot kiri post latihan	,000

Explore (Uji normalitas non EMS)

Descriptives

			Statistic	Std. Error
Rerata kekuatan otot kanan pre latihan	Mean		37,0000	2,96148
	95% Confidence Interval for Mean	Lower Bound	29,3873	
		Upper Bound	44,6127	
	5% Trimmed Mean		36,7037	
	Median		35,5000	
	Variance		52,622	
	Std. Deviation		7,25412	
	Minimum		30,00	
	Maximum		49,33	
	Range		19,33	
	Interquartile Range		11,08	
	Skewness		1,031	,845
	Kurtosis		,553	1,741
Rerata kekuatan otot kiri pre latihan	Mean		32,4444	1,48241
	95% Confidence Interval for Mean	Lower Bound	28,6338	
		Upper Bound	36,2551	
	5% Trimmed Mean		32,2160	
	Median		31,3333	
	Variance		13,185	

	Std. Deviation		3,63114	
	Minimum		29,67	
	Maximum		39,33	
	Range		9,67	
	Interquartile Range		4,67	
	Skewness		1,765	,845
	Kurtosis		3,282	1,741
	Mean		40,2222	2,26023
	95% Confidence Interval for Mean	Lower Bound	34,4121	
		Upper Bound	46,0323	
	5% Trimmed Mean		39,9691	
	Median		38,5000	
Rerata kekuatan otot kanan post latihan	Variance		30,652	
	Std. Deviation		5,53641	
	Minimum		35,33	
	Maximum		49,67	
	Range		14,33	
	Interquartile Range		9,08	
	Skewness		1,123	,845
	Kurtosis		,529	1,741
	Mean		35,8333	1,41879
	95% Confidence Interval for Mean	Lower Bound	32,1862	
		Upper Bound	39,4804	
	5% Trimmed Mean		35,6296	
	Median		34,6667	
Rerata kekuatan otot kiri post latihan	Variance		12,078	
	Std. Deviation		3,47531	
	Minimum		33,00	
	Maximum		42,33	
	Range		9,33	
	Interquartile Range		4,58	
	Skewness		1,659	,845
	Kurtosis		2,839	1,741

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk	
	Statistic	df	Sig.	Statistic	df
Rerata kekuatan otot kanan pre latihan	,240	6	,200*	,893	6
Rerata kekuatan otot kiri pre latihan	,273	6	,185	,794	6
Rerata kekuatan otot kanan post latihan	,240	6	,200*	,878	6
Rerata kekuatan otot kiri post latihan	,239	6	,200*	,816	6

Tests of Normality

	Shapiro-Wilk[a]
	Sig.
Rerata kekuatan otot kanan pre latihan	,335
Rerata kekuatan otot kiri pre latihan	,052
Rerata kekuatan otot kanan post latihan	,259
Rerata kekuatan otot kiri post latihan	,081

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

T-Test (pre-post non EMS)

Paired Samples Statistics

		Mean	N	Std. Deviation
Pair 1	Rerata kekuatan otot kanan pre latihan	37,0000	6	7,25412
	Rerata kekuatan otot kanan post latihan	40,2222	6	5,53641
Pair 2	Rerata kekuatan otot kiri pre latihan	32,4444	6	3,63114
	Rerata kekuatan otot kiri post latihan	35,8333	6	3,47531

Paired Samples Statistics

		Std. Error Mean
Pair 1	Rerata kekuatan otot kanan pre latihan	2,96148
	Rerata kekuatan otot kanan post latihan	2,26023
Pair 2	Rerata kekuatan otot kiri pre latihan	1,48241
	Rerata kekuatan otot kiri post latihan	1,41879

Paired Samples Correlations

		N
Pair 1	Rerata kekuatan otot kanan pre latihan & Rerata kekuatan otot kanan post latihan	6
Pair 2	Rerata kekuatan otot kiri pre latihan & Rerata kekuatan otot kiri post latihan	6

Paired Samples Correlations

		Correlation
Pair 1	Rerata kekuatan otot kanan pre latihan & Rerata kekuatan otot kanan post latihan	,977
Pair 2	Rerata kekuatan otot kiri pre latihan & Rerata kekuatan otot kiri post latihan	,995

Paired Samples Correlations

		Sig.
Pair 1	Rerata kekuatan otot kanan pre latihan & Rerata kekuatan otot kanan post latihan	,001
Pair 2	Rerata kekuatan otot kiri pre latihan & Rerata kekuatan otot kiri post latihan	,000

Paired Samples Test

		Paired Differences
		Mean
Pair 1	Rerata kekuatan otot kanan pre latihan - Rerata kekuatan otot kanan post latihan	-3,22222
Pair 2	Rerata kekuatan otot kiri pre latihan - Rerata kekuatan otot kiri post latihan	-3,38889

Paired Samples Test

		Paired Differences
		Std. Deviation
Pair 1	Rerata kekuatan otot kanan pre latihan - Rerata kekuatan otot kanan post latihan	2,18751
Pair 2	Rerata kekuatan otot kiri pre latihan - Rerata kekuatan otot kiri post latihan	,38968

Paired Samples Test

		Paired Differences
		Std. Error Mean
Pair 1	Rerata kekuatan otot kanan pre latihan - Rerata kekuatan otot kanan post latihan	,89305
Pair 2	Rerata kekuatan otot kiri pre latihan - Rerata kekuatan otot kiri post latihan	,15909

Paired Samples Test

		Paired Differences	
		95% Confidence Interval of the Difference	
		Lower	
Pair 1	Rerata kekuatan otot kanan pre latihan - Rerata kekuatan otot kanan post latihan	-5,51787	
Pair 2	Rerata kekuatan otot kiri pre latihan - Rerata kekuatan otot kiri post latihan	-3,79783	

Paired Samples Test

		Paired Differences	
		95% Confidence Interval of the Difference	
		Upper	
Pair 1	Rerata kekuatan otot kanan pre latihan - Rerata kekuatan otot kanan post latihan	-,92657	
Pair 2	Rerata kekuatan otot kiri pre latihan - Rerata kekuatan otot kiri post latihan	-2,97994	

Paired Samples Test

		t
Pair 1	Rerata kekuatan otot kanan pre latihan - Rerata kekuatan otot kanan post latihan	-3,608
Pair 2	Rerata kekuatan otot kiri pre latihan - Rerata kekuatan otot kiri post latihan	-21,302

Paired Samples Test

		df
Pair 1	Rerata kekuatan otot kanan pre latihan - Rerata kekuatan otot kanan post latihan	5
Pair 2	Rerata kekuatan otot kiri pre latihan - Rerata kekuatan otot kiri post latihan	5

Paired Samples Test

		Sig. (2-tailed)
Pair 1	Rerata kekuatan otot kanan pre latihan - Rerata kekuatan otot kanan post latihan	,015
Pair 2	Rerata kekuatan otot kiri pre latihan - Rerata kekuatan otot kiri post latihan	,000

Means (Kelompok non EMS)

Report

	Rerata kekuatan otot kanan pre latihan	Rerata kekuatan otot kanan post latihan	Rerata kekuatan otot kiri pre latihan	Rerata kekuatan otot kiri post latihan	deltaka
Mean	37,0000	40,2222	32,4444	35,8333	3,2222
Std. Deviation	7,25412	5,53641	3,63114	3,47531	2,18751
Median	35,5000	38,5000	31,3333	34,6667	3,1667
Minimum	30,00	35,33	29,67	33,00	,33
Maximum	49,33	49,67	39,33	42,33	6,67

Report

	deltaki
Mean	3,3889
Std. Deviation	,38968
Median	3,3333
Minimum	3,00
Maximum	4,00

Means (Kelompok EMS)

Report

	Rerata kekuatan otot kanan pre latihan	Rerata kekuatan otot kanan post latihan	Rerata kekuatan otot kiri pre latihan	Rerata kekuatan otot kiri post latihan	deltaka
Mean	30,7222	38,5556	29,0000	33,9444	7,8333
Std. Deviation	5,81728	6,57492	5,12510	5,89695	2,32618
Median	32,1667	38,6667	28,6667	33,6667	6,8333
Minimum	22,00	29,00	20,67	24,67	5,67
Maximum	37,33	49,00	35,67	41,67	11,67

Report

	deltaki
Mean	4,9444
Std. Deviation	,85418
Median	5,0000
Minimum	4,00
Maximum	6,00

Explore (normalitas data EMS dan non EMS)

Descriptives

			Statistic	Std. Error
Rerata kekuatan otot kanan pre latihan	Mean		33,8611	2,04225
	95% Confidence Interval for Mean	Lower Bound	29,3661	
		Upper Bound	38,3561	
	5% Trimmed Mean		33,6605	
	Median		32,6667	
	Variance		50,050	
	Std. Deviation		7,07458	
	Minimum		22,00	
	Maximum		49,33	
	Range		27,33	
	Interquartile Range		8,00	
	Skewness		,549	,637
	Kurtosis		1,251	1,232
Rerata kekuatan otot kiri pre latihan	Mean		30,7222	1,32817
	95% Confidence Interval for Mean	Lower Bound	27,7989	

		Upper Bound	33,6455	
	5% Trimmed Mean		30,8025	
	Median		30,1667	
	Variance		21,168	
	Std. Deviation		4,60091	
	Minimum		20,67	
	Maximum		39,33	
	Range		18,67	
	Interquartile Range		4,75	
	Skewness		-,329	,637
	Kurtosis		1,785	1,232
Rerata kekuatan otot kanan post latihan	Mean		39,3889	1,69165
	95% Confidence Interval for Mean	Lower Bound	35,6656	
		Upper Bound	43,1122	
	5% Trimmed Mean		39,3951	
	Median		38,6667	
	Variance		34,340	
	Std. Deviation		5,86004	
	Minimum		29,00	
	Maximum		49,67	
	Range		20,67	
	Interquartile Range		7,17	
	Skewness		,391	,637
	Kurtosis		,285	1,232
Rerata kekuatan otot kiri post latihan	Mean		34,8889	1,36227
	95% Confidence Interval for Mean	Lower Bound	31,8906	
		Upper Bound	37,8872	
	5% Trimmed Mean		35,0432	
	Median		34,3333	
	Variance		22,269	
	Std. Deviation		4,71904	
	Minimum		24,67	
	Maximum		42,33	
	Range		17,67	
	Interquartile Range		5,42	
	Skewness		-,371	,637
	Kurtosis		1,184	1,232
deltaka	Mean		5,5278	,93245
	95% Confidence Interval for Mean	Lower Bound	3,4755	

		Upper Bound	7,5801	
	5% Trimmed Mean		5,4753	
	Median		6,0000	
	Variance		10,434	
	Std. Deviation		3,23009	
	Minimum		,33	
	Maximum		11,67	
	Range		11,33	
	Interquartile Range		3,83	
	Skewness		,268	,637
	Kurtosis		-,069	1,232
	Mean		4,1667	,29729
	95% Confidence Interval for Mean	Lower Bound	3,5123	
		Upper Bound	4,8210	
	5% Trimmed Mean		4,1296	
	Median		4,0000	
deltaki	Variance		1,061	
	Std. Deviation		1,02986	
	Minimum		3,00	
	Maximum		6,00	
	Range		3,00	
	Interquartile Range		1,83	
	Skewness		,677	,637
	Kurtosis		-,810	1,232

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk	
	Statistic	df	Sig.	Statistic	df
Rerata kekuatan otot kanan pre latihan	,132	12	,200*	,965	12
Rerata kekuatan otot kiri pre latihan	,170	12	,200*	,949	12
Rerata kekuatan otot kanan post latihan	,164	12	,200*	,941	12
Rerata kekuatan otot kiri post latihan	,164	12	,200*	,945	12
Deltaka	,158	12	,200*	,973	12
Deltaki	,231	12	,077	,900	12

Tests of Normality

	Shapiro-Wilk[a]
	Sig.
Rerata kekuatan otot kanan pre latihan	,846
Rerata kekuatan otot kiri pre latihan	,619
Rerata kekuatan otot kanan post latihan	,514
Rerata kekuatan otot kiri post latihan	,561
Deltaka	,941
Deltaki	,160

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

T-Test (pre kanan EMS dan non EMS)

Group Statistics

	Kelompok	N	Mean	Std. Deviation
Rerata kekuatan otot kanan pre latihan	non EMS	6	37,0000	7,25412
	EMS	6	30,7222	5,81728

Group Statistics

	Kelompok	Std. Error Mean
Rerata kekuatan otot kanan pre latihan	non EMS	2,96148
	EMS	2,37489

Independent Samples Test

		Levene's Test for Equality of Variances
		F
Rerata kekuatan otot kanan pre latihan	Equal variances assumed	,306
	Equal variances not assumed	

Independent Samples Test

		Levene's Test for Equality of Variances	t-test for Equality of Means
		Sig.	t
Rerata kekuatan otot kanan pre latihan	Equal variances assumed	,592	1,654
	Equal variances not assumed		1,654

Independent Samples Test

		t-test for Equality of Means	
		df	Sig. (2-tailed)
Rerata kekuatan otot kanan pre latihan	Equal variances assumed	10	,129
	Equal variances not assumed	9,549	,131

Independent Samples Test

		t-test for Equality of Means
		Mean Difference
Rerata kekuatan otot kanan pre latihan	Equal variances assumed	6,27778
	Equal variances not assumed	6,27778

Independent Samples Test

		t-test for Equality of Means
		Std. Error Difference
Rerata kekuatan otot kanan pre latihan	Equal variances assumed	3,79612
	Equal variances not assumed	3,79612

Independent Samples Test

		t-test for Equality of Means
		95% Confidence Interval of the Difference
		Lower
Rerata kekuatan otot kanan pre latihan	Equal variances assumed	-2,18049
	Equal variances not assumed	-2,23491

Independent Samples Test

		t-test for Equality of Means
		95% Confidence Interval of the Difference
		Upper
Rerata kekuatan otot kanan pre latihan	Equal variances assumed	14,73605
	Equal variances not assumed	14,79046

T-Test (pre kiri EMS dan non EMS)

Group Statistics

	Kelompok	N	Mean	Std. Deviation
Rerata kekuatan otot kiri pre latihan	non EMS	6	32,4444	3,63114
	EMS	6	29,0000	5,12510

Group Statistics

	Kelompok	Std. Error Mean
Rerata kekuatan otot kiri pre latihan	non EMS	1,48241
	EMS	2,09231

Independent Samples Test

		Levene's Test for Equality of Variances	
		F	Sig.
Rerata kekuatan otot kiri pre latihan	Equal variances assumed	,529	,484
	Equal variances not assumed		

Independent Samples Test

		t-test for Equality of Means	
		t	df
Rerata kekuatan otot kiri pre latihan	Equal variances assumed	1,343	10
	Equal variances not assumed	1,343	9,009

Independent Samples Test

		t-test for Equality of Means	
		Sig. (2-tailed)	Mean Difference
Rerata kekuatan otot kiri pre latihan	Equal variances assumed	,209	3,44444
	Equal variances not assumed	,212	3,44444

Independent Samples Test

		t-test for Equality of Means		
		Std. Error Difference	95% Confidence Interval of the Difference	
			Lower	
Rerata kekuatan otot kiri pre latihan	Equal variances assumed	2,56424	-2,26903	
	Equal variances not assumed	2,56424	-2,35533	

Independent Samples Test

		t-test for Equality of Means
		95% Confidence Interval of the Difference
		Upper
Rerata kekuatan otot kiri pre latihan	Equal variances assumed	9,15792
	Equal variances not assumed	9,24422

T-Test (post kanan EMS dan non EMS)

Group Statistics

	Kelompok	N	Mean	Std. Deviation
Rerata kekuatan otot kanan post latihan	non EMS	6	40,2222	5,53641
	EMS	6	38,5556	6,57492

Group Statistics

	Kelompok	Std. Error Mean
Rerata kekuatan otot kanan post latihan	non EMS	2,26023
	EMS	2,68420

Independent Samples Test

		Levene's Test for Equality of Variances
		F
Rerata kekuatan otot kanan post latihan	Equal variances assumed	,010
	Equal variances not assumed	

Independent Samples Test

		Levene's Test for Equality of Variances	t-test for Equality of Means
		Sig.	t
Rerata kekuatan otot kanan post latihan	Equal variances assumed	,921	,475
	Equal variances not assumed		,475

Independent Samples Test

		t-test for Equality of Means	
		df	Sig. (2-tailed)
Rerata kekuatan otot kanan post latihan	Equal variances assumed	10	,645
	Equal variances not assumed	9,718	,645

Independent Samples Test

		t-test for Equality of Means
		Mean Difference
Rerata kekuatan otot kanan post latihan	Equal variances assumed	1,66667
	Equal variances not assumed	1,66667

Independent Samples Test

		t-test for Equality of Means
		Std. Error Difference
Rerata kekuatan otot kanan post latihan	Equal variances assumed	3,50907
	Equal variances not assumed	3,50907

Independent Samples Test

		t-test for Equality of Means
		95% Confidence Interval of the Difference
		Lower
Rerata kekuatan otot kanan post latihan	Equal variances assumed	-6,15203
	Equal variances not assumed	-6,18286

Independent Samples Test

		t-test for Equality of Means
		95% Confidence Interval of the Difference
		Upper
Rerata kekuatan otot kanan post latihan	Equal variances assumed	9,48536
	Equal variances not assumed	9,51619

T-Test (post kiri EMS dan non EMS)

Group Statistics

	Kelompok	N	Mean	Std. Deviation
Rerata kekuatan otot kiri post latihan	non EMS	6	35,8333	3,47531
	EMS	6	33,9444	5,89695

Group Statistics

	Kelompok	Std. Error Mean
Rerata kekuatan otot kiri post latihan	non EMS	1,41879
	EMS	2,40742

Independent Samples Test

		Levene's Test for Equality of Variances	
		F	Sig.
Rerata kekuatan otot kiri post latihan	Equal variances assumed	1,369	,269
	Equal variances not assumed		

Independent Samples Test

		t-test for Equality of Means	
		t	Df
Rerata kekuatan otot kiri post latihan	Equal variances assumed	,676	10
	Equal variances not assumed	,676	8,099

Independent Samples Test

		t-test for Equality of Means	
		Sig. (2-tailed)	Mean Difference
Rerata kekuatan otot kiri post latihan	Equal variances assumed	,514	1,88889
	Equal variances not assumed	,518	1,88889

Independent Samples Test

		t-test for Equality of Means	
		Std. Error Difference	95% Confidence Interval of the Difference
			Lower
Rerata kekuatan otot kiri post latihan	Equal variances assumed	2,79439	-4,33741
	Equal variances not assumed	2,79439	-4,54127

Independent Samples Test

		t-test for Equality of Means
		95% Confidence Interval of the Difference
		Upper
Rerata kekuatan otot kiri post latihan	Equal variances assumed	8,11519
	Equal variances not assumed	8,31904

T-Test (delta kanan EMS dan non EMS)

Group Statistics

	Kelompok	N	Mean	Std. Deviation	Std. Error Mean
deltaka	non EMS	6	3,2222	2,18751	,89305
	EMS	6	7,8333	2,32618	,94966

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means	
		F	Sig.	T	df
deltaka	Equal variances assumed	,221	,648	-3,537	10
	Equal variances not assumed			-3,537	9,962

Independent Samples Test

		t-test for Equality of Means		
		Sig. (2-tailed)	Mean Difference	Std. Error Difference
deltaka	Equal variances assumed	,005	-4,61111	1,30360
	Equal variances not assumed	,005	-4,61111	1,30360

Independent Samples Test

		t-test for Equality of Means	
		95% Confidence Interval of the Difference	
		Lower	Upper
deltaka	Equal variances assumed	-7,51572	-1,70650
	Equal variances not assumed	-7,51721	-1,70502

T-Test (delta kiri EMS dan non EMS)

Group Statistics

	Kelompok	N	Mean	Std. Deviation	Std. Error Mean
deltaki	non EMS	6	3,3889	,38968	,15909
	EMS	6	4,9444	,85418	,34872

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means	
		F	Sig.	T	df
deltaki	Equal variances assumed	7,247	,023	-4,058	10
	Equal variances not assumed			-4,058	6,995

Independent Samples Test

		t-test for Equality of Means		
		Sig. (2-tailed)	Mean Difference	Std. Error Difference
deltaki	Equal variances assumed	,002	-1,55556	,38329
	Equal variances not assumed	,005	-1,55556	,38329

Independent Samples Test

		t-test for Equality of Means	
		95% Confidence Interval of the Difference	
		Lower	Upper
deltaki	Equal variances assumed	-2,40959	-,70153
	Equal variances not assumed	-2,46204	-,64908

Lampiran 5. Dokumentasi penelitian

Gambar 19. Subjek melakukan latihan kombinasi EMS dengan isometrik

Gambar 20. *Hand gripper* untuk latihan isometrik dan latihan kombinasi EMS

Lampiran 6. Biodata mahasiswa

Identitas

Nama	: Nur Azizah Intan Putri Ismail
NIM	: 22010112110049
Tempat/tanggal lahir	: Tasikmalaya/7 Maret 1994
Jenis Kelamin	: Perempuan
Alamat	: Jalan Tamansari Gobras nomor 47.A Rahayu I Tasikmalaya, Jawa Barat
Nomor HP	: 089681899142
Email	: nurazizahintan@rocketmail.com

Riwayat Pendidikan Formal

1. SD	: SD Al-Muttaqin Tasikmalaya	Lulus tahun 2006
2. SMP	: SMP Al-Muttaqin Tasikmalaya	Lulus tahun 2009
3. SMA	: SMAN 1 Tasikmalaya	Lulus tahun 2012
4. S1	: Pendidikan Dokter FK Undip	Masuk tahun 2012

Keanggotaan Organisasi

1. Staff Bidang KESMA Himpunan Mahasiswa KU Undip	Tahun 2013-2014
2. Staff Ahli EKUIN Himpunan Mahasiswa KU Undip	Tahun 2014-2015
3. Pengurus Mahasiswa Pecinta Alam Medica	Tahun 2014-2016