

## DAFTAR PUSTAKA

- Bateman, Heather. Dictionary of Sport and Exercise Science, London: A & C Black Publisher Ltd, 2006
- Bompa, Tudor. Periodization, Theory and Methodologi of Taining, HK Rewards, 2009
- Brown, Lee. *Training for Speed, Agility and Quickness* Human Kinetik, 2006
- Brown, Lee. Training for Speed, Agility and Quickness, Library of Congres Cataloging-in-Publication Data, 2005
- Delavier, Frederic *Strength Training Anatomy*, Paris: Guide des Mouvements de Musculation, 2006
- <http://belajartaekwondo.com/sejarah-berdirinya-taekwondo/>
- <http://www.taekwondo-indonesia.com/profil-PBTI.php>
- <https://dhaenkpedro.wordpress.com/keseimbangan-balance/>
- <http://www.valetkd.com/kicks/>
- Ikpil Kang, Namjung Song. *The Explanation Official Taekwondo Poomsae* Seoul,2008
- Kaihena, Simon. Diklat Pedoman Peserta Ujian Kenaikan Tingkat Sabuk/DAN Taekwondo Indonesia, Jakarta : Panitia Kenaikan Tingkat/Dan. 1996
- Lee, Kyong Myong. *Taekwondo Technique & Training*. New York. 1996
- Meehan, Willian. *Kids, Sport and Concussion*, California: Praeger, 2011
- Soon, Park Hae. *Teknik Gerak Dasar Taekwondo*. Seoul.
- Sukardi, Metodologi Penelitian Pendidikan, Yogyakarta: PT. Bumi Aksara,2003
- Supardi, Aplikasi Statistika Dalam Penelitian Konsep Statistika yang lebih Konferensif, Jakarta:Change Publication.
- Susiono, Ricky. *The Secret Power of Mind and Body Unification*, Jakarta: Garuda Indonesia Perkasa, 2012
- Tangkudung, James. *Kepelatihan Olahraga*. Jakarta : Cerdas Jaya. 2012
- Verkhoshansky, Yuri. *Special Training A Particular Manual of Coching*, Moscow, 2006
- Widiastuti, *Tes dan Pengukuran Olahraga*. Jakarta : PT. Bumi Timur Jaya. 2011

### Daya Ledak Otot Tungkai

No.	X	Y	X <sup>2</sup>	Y <sup>2</sup>	XY
1	2.15	2.22	4.6225	4.9284	4.773
2	2.45	2.25	6.0025	5.0625	5.5125
3	1.95	1.89	3.8025	3.5721	3.6855
4	1.81	1.84	3.2761	3.3856	3.3304
5	1.91	1.77	3.6481	3.1329	3.3807
6	1.6	1.68	2.56	2.8224	2.688
7	2.15	2.03	4.6225	4.1209	4.3645
8	2.1	2.14	4.41	4.5796	4.494
9	1.87	2.03	3.4969	4.1209	3.7961
10	2.32	2.46	5.3824	6.0516	5.7072
11	1.79	1.68	3.2041	2.8224	3.0072
12	2.07	2.08	4.2849	4.3264	4.3056
13	1.94	2.19	3.7636	4.7961	4.2486
14	1.83	1.73	3.3489	2.9929	3.1659
15	1.73	1.61	2.9929	2.5921	2.7853
16	1.44	1.56	2.0736	2.4336	2.2464
17	1.58	1.54	2.4964	2.3716	2.4332
18	2.31	2.25	5.3361	5.0625	5.1975
19	2.26	2.18	5.1076	4.7524	4.9268
20	1.75	1.6	3.0625	2.56	2.8
Jumlah	39.01	38.73	77.4941	76.4869	76.8484

Keterangan : X = Tes pertama

Y = Tes kedua

Diketahui :  $\sum X = 39,01$        $\sum Y = 38,73$

$\sum X^2 = 77,494$        $\sum Y^2 = 76,487$

$\sum XY = 76,848$        $n = 20$

Maka :

$$\begin{aligned}
 r &= \frac{n \cdot \Sigma XY - (\Sigma X)(\Sigma Y)}{\sqrt{\{n \cdot \Sigma X^2 - (\Sigma X)^2\} \{n \cdot \Sigma Y^2 - (\Sigma Y)^2\}}} \\
 &= \frac{20 \cdot 76,484 - (39,01)(38,73)}{\sqrt{\{20 \cdot 77,494 - (39,01)^2\} \{20 \cdot 76,487 - (38,73)^2\}}} \\
 &= \frac{1536,968 - 1510,8573}{\sqrt{\{1549,882 - 1521,7801\} \{1529,738 - 1500,0129\}}} \\
 &= \frac{26,1107}{\sqrt{28,102 \cdot 29,725}} \\
 &= \frac{26,1107}{28,90} \\
 &= 0,903
 \end{aligned}$$

Dari data tersebut diperoleh  $r_{\text{hitung}} = \mathbf{0,903}$  sedangkan  $r_{\text{tabel}}$  untuk  $n= 20$  dan  $\alpha= 0,05$  adalah  $\mathbf{0,4444}$  berarti  $r_{\text{hitung}} > r_{\text{tabel}}$  ,berarti data tersebut **reliebel**

## Keseimbangan

## Butir No. 1

No.	X	Y	X <sup>2</sup>	Y <sup>2</sup>	XY
1	11	12	121	144	132
2	27	25	729	625	675
3	7	8	49	64	56
4	7	11	49	121	77
5	8	4	64	16	32
6	8	13	64	169	104
7	5	27	25	729	135
8	12	20	144	400	240
9	7	16	49	256	112
10	17	18	289	324	306
11	16	18	256	324	288
12	17	18	289	324	306
13	4	20	16	400	80
14	15	21	225	441	315
15	4	12	16	144	48
16	6	2	36	4	12
17	5	21	25	441	105
18	13	18	169	324	234
19	28	30	784	900	840
20	4	8	16	64	32
Jumlah	221	322	3415	6214	4129

Keterangan : X = Tes pertama

Y = Tes kedua

Diketahui :  $\sum X = 221$                        $\sum Y = 322$

$\sum X^2 = 3415$                        $\sum Y^2 = 6214$

$\sum XY = 4219$                        $n = 20$

Maka :

$$\begin{aligned}
 r &= \frac{n \cdot \Sigma XY - (\Sigma X)(\Sigma Y)}{\sqrt{\{n \cdot \Sigma X^2 - (\Sigma X)^2\} \{n \cdot \Sigma Y^2 - (\Sigma Y)^2\}}} \\
 &= \frac{20 \cdot 4219 - (221)(322)}{\sqrt{\{20 \cdot 3415 - (221)^2\} \{20 \cdot 6214 - (322)^2\}}} \\
 &= \frac{82580 - 71162}{\sqrt{\{68300 - 48841\} \{124280 - 103684\}}} \\
 &= \frac{11418}{\sqrt{19459 \cdot 20596}} \\
 &= \frac{11418}{20019,43} \\
 &= 0,570
 \end{aligned}$$

Dari data tersebut diperoleh  $r_{hitung} = \mathbf{0,570}$  sedangkan  $r_{tabel}$  untuk  $n= 20$  dan  $\alpha= 0,05$  adalah  $\mathbf{0,4444}$  berarti  $r_{hitung} > r_{tabel}$  ,berarti data tersebut **reliable**

Keterampilan *Yeoup Chagi*

## Butir No. 1

No.	X	Y	X <sup>2</sup>	Y <sup>2</sup>	XY
1	1.37	1.46	1.8769	2.1316	2.0002
2	1.42	1.53	2.0164	2.3409	2.1726
3	1.23	1.42	1.5129	2.0164	1.7466
4	1.14	1.31	1.2996	1.7161	1.4934
5	1.31	1.32	1.7161	1.7424	1.7292
6	1.46	1.42	2.1316	2.0164	2.0732
7	1.55	1.74	2.4025	3.0276	2.697
8	1.45	1.7	2.1025	2.89	2.465
9	1.48	1.49	2.1904	2.2201	2.2052
10	1.58	1.64	2.4964	2.6896	2.5912
11	1.34	1.45	1.7956	2.1025	1.943
12	1.48	1.72	2.1904	2.9584	2.5456
13	1.3	1.63	1.69	2.6569	2.119
14	1.38	1.44	1.9044	2.0736	1.9872
15	1.38	1.39	1.9044	1.9321	1.9182
16	1.27	1.29	1.6129	1.6641	1.6383
17	1.47	1.42	2.1609	2.0164	2.0874
18	1.35	1.66	1.8225	2.7556	2.241
19	1.37	1.43	1.8769	2.0449	1.9591
20	1.3	1.38	1.69	1.9044	1.794
Jumlah	27.63	29.84	38.3933	44.9	41.4064

Keterangan : X = Tes pertama

Y = Tes kedua

Diketahui :  $\sum X = 27,63$        $\sum Y = 29,84$

$\sum X^2 = 38,393$        $\sum Y^2 = 44,9$

$\sum XY = 41,406$        $n = 20$

Maka :

$$\begin{aligned}
 r &= \frac{n \cdot \Sigma XY - (\Sigma X)(\Sigma Y)}{\sqrt{\{n \cdot \Sigma X^2 - (\Sigma X)^2\} \{n \cdot \Sigma Y^2 - (\Sigma Y)^2\}}} \\
 &= \frac{20 \cdot 41,406 - (27,63)(29,84)}{\sqrt{\{20 \cdot 38,393 - (27,63)^2\} \{20 \cdot 44,9 - (29,84)^2\}}} \\
 &= \frac{828,128 - 824,4792}{\sqrt{\{767,866 - 763,4169\} \{898 - 890,4256\}}} \\
 &= \frac{3,6488}{\sqrt{4,4491 \cdot 7,5744}} \\
 &= \frac{3,6488}{5,81} \\
 &= 0,629
 \end{aligned}$$

Dari data tersebut diperoleh  $r_{\text{hitung}} = \mathbf{0,629}$  sedangkan  $r_{\text{tabel}}$  untuk  $n= 20$  dan  $\alpha= 0,05$  adalah  $\mathbf{0,4444}$  berarti  $r_{\text{hitung}} > r_{\text{tabel}}$  ,berarti data tersebut **reliebel**

## Lampiran 1

Daftar hasil Daya Ledak Otot Tungkai ( $X_1$ ),  
Keseimbangan ( $X_2$ ), Tendangan Yeoup Chagi ( $Y$ )

No.	Daya Ledak Otot Tungkai ( $X_1$ )	Keseimbangan ( $X_2$ )	Tendangan Yeoup Chagi ( $Y$ )
1	2.22	12	1.46
2	2.25	25	1.53
3	1.89	8	1.42
4	1.84	11	1.31
5	1.77	4	1.32
6	1.68	13	1.42
7	2.03	27	1.74
8	2.14	20	1.7
9	2.03	16	1.49
10	2.46	18	1.64
11	1.68	18	1.45
12	2.08	18	1.72
13	2.19	20	1.63
14	1.73	21	1.44
15	1.61	12	1.39
16	1.56	2	1.29
17	1.54	21	1.42
18	2.25	18	1.66
19	2.18	30	1.43
20	1.6	8	1.38



Daftar hasil Daya Ledak Otot Tungkai ( $X_1$ ), Keseimbangan ( $X_2$ ),  
dan Tendangan Yeoup Chagi (Y)

No.	$X_1$	$X_2$	Y	$X_1^2$	$X_2^2$	$Y^2$	$X_1Y$	$X_2Y$	$X_1X_2$
1	2.2	12	1.46	4.9284	144	2.1316	3.2412	17.52	26.64
2	2.3	25	1.53	5.0625	625	2.3409	3.4425	38.25	56.25
3	1.9	8	1.42	3.5721	64	2.0164	2.6838	11.36	15.12
4	1.8	11	1.31	3.3856	121	1.7161	2.4104	14.41	20.24
5	1.8	4	1.32	3.1329	16	1.7424	2.3364	5.28	7.08
6	1.7	13	1.42	2.8224	169	2.0164	2.3856	18.46	21.84
7	2.0	27	1.74	4.1209	729	3.0276	3.5322	46.98	54.81
8	2.1	20	1.7	4.5796	400	2.89	3.638	34	42.8
9	2.0	16	1.49	4.1209	256	2.2201	3.0247	23.84	32.48
10	2.5	18	1.64	6.0516	324	2.6896	4.0344	29.52	44.28
11	1.7	18	1.45	2.8224	324	2.1025	2.436	26.1	30.24
12	2.1	18	1.72	4.3264	324	2.9584	3.5776	30.96	37.44
13	2.2	20	1.63	4.7961	400	2.6569	3.5697	32.6	43.8
14	1.7	21	1.44	2.9929	441	2.0736	2.4912	30.24	36.33
15	1.6	12	1.39	2.5921	144	1.9321	2.2379	16.68	19.32
16	1.6	2	1.29	2.4336	4	1.6641	2.0124	2.58	3.12
17	1.5	21	1.42	2.3716	441	2.0164	2.1868	29.82	32.34
18	2.3	18	1.66	5.0625	324	2.7556	3.735	29.88	40.5
19	2.2	30	1.43	4.7524	900	2.0449	3.1174	42.9	65.4
20	1.6	8	1.38	2.56	64	1.9044	2.208	11.04	12.8
Total	38.7	322	29.8	76.4869	6214	44.9	58.3012	492.42	642.83

## A. Menghitung Rata-rata dan Simpangan Baku

### a. Variable Daya Ledak Otot Tungkai ( $X_1$ )

$$\begin{aligned} \text{Rata-rata } (\bar{X}_1) &= \frac{\sum X_1}{N} \\ &= \frac{38.73}{20} \\ &= 1.94 \end{aligned}$$

$$\begin{aligned} \text{Varians } (S^2) &= \frac{\sum (X_1 - \bar{X}_1)^2}{n-1} \\ &= \frac{1.49}{19} \\ &= 0.08 \end{aligned}$$

$$\begin{aligned} \text{Simpangan Baku } (S) &= \sqrt{S^2} \\ &= \sqrt{0.08} \\ &= 0.28 \end{aligned}$$

Langkah – langkah perhitungan distribusi frekuensi

1. Variabel Daya Ledak Otot Tungkai ( $X_1$ )

$$\text{Rentang (R)} = \text{data terbesar} - \text{dasar terkecil}$$

$$= 2.46 - 1.54$$

$$= 0.9$$

$$\text{Banyak Kelas (K)} = 1 + (3.3) \log n$$

$$= 1 + (3.3) \log 20$$

$$= 1 + (3,3) 1.301$$

$$= 5.29 = 5$$

$$\text{Panjang Kelas (PK)} = \frac{R}{K}$$

$$= \frac{0.92}{5}$$

$$= 0.184$$

b. Variabel Keseimbangan ( $X_2$ )

$$\begin{aligned}\text{Rata-rata } (\bar{X}_2) &= \frac{\Sigma X_2}{N} \\ &= \frac{322}{20} \\ &= 16.10\end{aligned}$$

$$\begin{aligned}\text{Varians } (S^2) &= \frac{\Sigma(X_2 - \bar{X}_2)^2}{n-1} \\ &= \frac{1029.80}{19} \\ &= 54.20\end{aligned}$$

$$\begin{aligned}\text{Simpangan Baku } (S) &= \sqrt{S^2} \\ &= \sqrt{54.20} \\ &= 7.36\end{aligned}$$

2. Tes Keseimbangan ( $X_2$ )

$$\begin{aligned}\text{Rentang (R)} &= \text{data terbesar} - \text{dasar terkecil} \\ &= 30 - 2 \\ &= 28\end{aligned}$$

$$\begin{aligned}\text{Banyak Kelas (K)} &= 1 + (3.3) \log n \\ &= 1 + (3.3) \log 20 \\ &= 1 + (3,3) 1.301 \\ &= 1 + 4.2934 \\ &= 5.2934 = 5\end{aligned}$$

$$\begin{aligned}\text{Panjang Kelas (PK)} &= \frac{R}{K} \\ &= \frac{28}{5} \\ &= 5.6\end{aligned}$$

c. Variabel keterampilan *Yeoup Chagi* (Y) produk

$$\begin{aligned}\text{Rata-rata } (\bar{Y}) &= \frac{\Sigma Y}{N} \\ &= \frac{29.84}{20} \\ &= 1.49\end{aligned}$$

$$\begin{aligned}\text{Varians } (S^2) &= \frac{\Sigma(Y-\bar{Y})^2}{n-1} \\ &= \frac{0.38}{19} \\ &= 0.02\end{aligned}$$

$$\begin{aligned}\text{Simpangan Baku } (S) &= \sqrt{S^2} \\ &= \sqrt{0.02} \\ &= 0.14\end{aligned}$$

d. Variabel keterampilan *Yeoup Chagi* (Y) proses

$$\begin{aligned}\text{Rata-rata } (\bar{Y}) &= \frac{\Sigma Y}{N} \\ &= \frac{75}{20} \\ &= 3.75\end{aligned}$$

$$\begin{aligned}\text{Varians } (S^2) &= \frac{\Sigma(Y-\bar{Y})^2}{n-1} \\ &= \frac{15.75}{19} \\ &= 0.83\end{aligned}$$

$$\begin{aligned}\text{Simpangan Baku } (S) &= \sqrt{S^2} \\ &= \sqrt{0.83} \\ &= 0.91\end{aligned}$$

### 3. Tes Kecepatan Tendangan *Yeoup Chagi* (Y)

$$\begin{aligned}\text{Rentang (R)} &= \text{data terbesar} - \text{dasar terkecil} \\ &= 65.65 - 33.24 \\ &= 32\end{aligned}$$

$$\begin{aligned}\text{Banyak Kelas (K)} &= 1 + (3.3) \log n \\ &= 1 + (3.3) \log 20 \\ &= 1 + (3.3) 1.301 \\ &= 1 + 4.2934 \\ &= 5.2934 = 5\end{aligned}$$

$$\begin{aligned}\text{Panjang Kelas (PK)} &= \frac{R}{K} \\ &= \frac{32}{5} \\ &= 6.482371\end{aligned}$$



Data mentah yang diubah menjadi data Tskor

No.	Daya Ledak Otot Tungkai		Keseimbangan		Tendangan Yeoup Chagi (Produk)		Tendangan Yeoup Chagi (Proses)		Tendangan Yeoup Chagi
	Data	T Skor	Data	T Skor	Data	T Skor	Data	T Skor	T skor
1	2.22	60.14	12	44.43	1.46	47.73	4	52.75	50.24
2	2.25	61.21	25	62.09	1.53	52.69	4	52.75	52.72
3	1.89	48.34	8	39.00	1.42	44.90	3	41.76	43.33
4	1.84	46.55	11	43.07	1.31	37.11	3	41.76	39.44
5	1.77	44.05	4	33.56	1.32	37.82	3	41.76	39.79
6	1.68	40.83	13	45.79	1.42	44.90	3	41.76	43.33
7	2.03	53.34	27	64.81	1.74	67.57	5	63.73	65.65
8	2.14	57.28	20	55.30	1.7	64.73	5	63.73	64.23
9	2.03	53.34	16	49.86	1.49	49.86	4	52.75	51.30
10	2.46	68.72	18	52.58	1.64	60.48	5	63.73	62.11
11	1.68	40.83	18	52.58	1.45	47.03	4	52.75	49.89
12	2.08	55.13	18	52.58	1.72	66.15	5	63.73	64.94
13	2.19	59.06	20	55.30	1.63	59.77	4	52.75	56.26
14	1.73	42.62	21	56.66	1.44	46.32	4	52.75	49.53
15	1.61	38.33	12	44.43	1.39	42.78	3	41.76	42.27
16	1.56	36.54	2	30.85	1.29	35.69	2	30.78	33.24
17	1.54	35.82	21	56.66	1.42	44.90	3	41.76	43.33
18	2.25	61.21	18	52.58	1.66	61.90	5	63.73	62.81
19	2.18	58.71	30	68.88	1.43	45.61	3	41.76	43.69
20	1.6	37.97	8	39.00	1.38	42.07	3	41.76	41.91

**Data persiapan regresi dan kolerasi**

<b>No.</b>	<b>Y</b>	<b>X<sub>1</sub></b>	<b>X<sub>2</sub></b>	<b>Y<sup>2</sup></b>	<b>X<sub>1</sub><sup>2</sup></b>	<b>X<sub>2</sub><sup>2</sup></b>	<b>X<sub>1</sub>Y</b>	<b>X<sub>2</sub>Y</b>	<b>X<sub>1</sub>X<sub>2</sub></b>
1	47.73	60.14	44.43	2278.48	3616.39	1974.11	2870.52	2120.84	2671.91
2	52.69	61.21	62.09	2776.40	3746.54	3855.04	3225.20	3271.57	3800.41
3	44.90	48.34	39.00	2016.03	2336.51	1520.82	2170.36	1751.00	1885.05
4	37.11	46.55	43.07	1377.07	2166.87	1855.25	1727.41	1598.38	2005.02
5	37.82	44.05	33.56	1430.14	1940.13	1126.57	1665.73	1269.31	1478.41
6	44.90	40.83	45.79	2016.03	1667.01	2096.65	1833.23	2055.95	1869.53
7	67.57	53.34	64.81	4565.15	2845.48	4199.77	3604.17	4378.65	3456.93
8	64.73	57.28	55.30	4190.32	3280.54	3057.81	3707.63	3579.55	3167.22
9	49.86	53.34	49.86	2485.85	2845.48	2486.44	2659.60	2486.14	2659.91
10	60.48	68.72	52.58	3658.18	4722.09	2764.74	4156.23	3180.24	3613.22
11	47.03	40.83	52.58	2211.36	1667.01	2764.74	1919.99	2472.62	2146.82
12	66.15	55.13	52.58	4375.72	3039.40	2764.74	3646.86	3478.18	2898.82
13	59.77	59.06	55.30	3573.00	3488.53	3057.81	3530.51	3305.38	3266.07
14	46.32	42.62	56.66	2145.25	1816.18	3209.87	1973.87	2624.11	2414.48
15	42.78	38.33	44.43	1829.73	1468.90	1974.11	1639.41	1900.55	1702.87
16	35.69	36.54	30.85	1273.94	1335.06	951.58	1304.14	1101.03	1127.13
17	44.90	35.82	56.66	2016.03	1283.31	3209.87	1608.48	2543.86	2029.60
18	61.90	61.21	52.58	3831.54	3746.54	2764.74	3788.80	3254.72	3218.42
19	45.61	58.71	68.88	2080.14	3446.42	4744.53	2677.50	3141.54	4043.72
20	42.07	37.97	39.00	1769.64	1441.62	1520.82	1597.23	1640.52	1480.69
<b>Jumlah</b>	1000	1000	1000	51900	51900	51900	51306.866	51154.129	50936.203
<b>Rata-rata</b>	50.00	50.00	50.00						

Menghitung rata- rata dan simpangan baku T-skor

1. Daya Ledak Otot Tungkai

Diketahui :

$$\sum X_1 = 1000$$

$$\sum X_1^2 = 51900$$

$$\begin{aligned} \text{a. Rata-rata } (\bar{X}_1) &= \frac{\sum X_1}{N} \\ &= \frac{1000}{20} \\ &= 50 \end{aligned}$$

b. Simpangan baku

$$\begin{aligned} &= \sqrt{\frac{n \sum X_1^2 - (\sum X_1)^2}{n(n-1)}} \\ &= \sqrt{\frac{20 \cdot 51900 - (1000)^2}{20(20-1)}} \\ &= \sqrt{\frac{1038000 - 1000000}{380}} \\ &= \sqrt{100.00} = 10.00 \end{aligned}$$

## 2. Keseimbangan

Diketahui :

$$\sum X_2 = 1000$$

$$\sum X_2^2 = 51900$$

$$\begin{aligned} \text{a. Rata-rata } (\bar{X}_2) &= \frac{\sum X_2}{N} \\ &= \frac{1000}{20} \\ &= 50 \end{aligned}$$

b. Simpangan baku

$$\begin{aligned} &= \sqrt{\frac{n \sum X_2^2 - (\sum X_2)^2}{n(n-1)}} \\ &= \sqrt{\frac{20 \cdot 51900 - (1000)^2}{20(20-1)}} \\ &= \sqrt{\frac{1038000 - 1000000}{380}} \\ &= \sqrt{100.00} = 10.00 \end{aligned}$$

## 3. Yeoup chagi

Diketahui :

$$\sum X_2 = 1000$$

$$\sum X_2^2 = 51900$$

$$\begin{aligned} \text{a. Rata-rata } (\bar{Y}) &= \frac{\sum X^2}{n} \\ &= \frac{1000}{20} \\ &= 50 \end{aligned}$$

$$\begin{aligned} \text{b. Simpangan baku} &= \sqrt{\frac{n \sum Y^2 - (\sum Y)^2}{n(n-1)}} \\ &= \sqrt{\frac{20 \cdot 51900 - (1000)^2}{20(20-1)}} \\ &= \sqrt{\frac{1038000 - 1000000}{380}} \\ &= \sqrt{100.00} \\ &= 10.00 \end{aligned}$$

Perhitungan persamaan Regresi

### 1. Regresi Y atas $X_1$

Diketahui

$$\begin{aligned} n &= 20 \\ \sum X &= 1000 \\ \sum X^2 &= 51825,2 \\ \sum Y &= 1000 \\ \sum Y^2 &= 51825,2 \\ \sum XY &= 51323,486 \end{aligned}$$

Dimasukkan kedalam rumus

$$\begin{aligned} a &= \frac{(\sum Y)(\sum X^2) - (\sum X)(\sum XY)}{n \sum X^2 - (\sum X)^2} \\ &= \frac{1000 \cdot 51825,2 - 1000 \cdot 51323,49}{20 \cdot 51825,2 - 1000^2} \\ &= \frac{51825198,82 - 51323486,44}{1036503,976 - 1000000} \\ &= \frac{501712,3792}{36503,97642} \end{aligned}$$

$$= 13,744$$

$$\begin{aligned} b &= \frac{n \sum XY - (\sum X)(\sum Y)}{n \sum X^2 - (\sum X)^2} \\ &= \frac{20 \cdot 51323,5 - 1000 \cdot 1000}{20 \cdot 51825,5 - 1000^2} \\ &= \frac{102646,729 - 1000000}{1036503,976 - 1000000} \\ &= \frac{26469.729}{36503,97642} \end{aligned}$$

$$= 0,72512$$

Jadi persamaannya adalah:

$$\hat{Y} = 13,74 + 0,725 X_1$$

## 2. Regresi Y atas X<sub>2</sub>

Diketahui

$$\begin{aligned} n &= 20 \\ \sum X &= 1000 \\ \sum X^2 &= 51825,2 \\ \sum Y &= 1000 \\ \sum Y^2 &= 51825,2 \\ \sum XY &= 51102,956 \end{aligned}$$

Dimasukkan kedalam rumus

$$\begin{aligned} a &= \frac{(\sum Y)(\sum X^2) - (\sum X)(\sum XY)}{n \sum X^2 - (\sum X)^2} \\ &= \frac{1000 \cdot 51825,2 - 1000 \cdot 51102,956}{20 \cdot 51825,2 - 1000^2} \\ &= \frac{51825198,2 - 51102956}{1036503,976 - 1000000} \\ &= \frac{722242,8188}{36503,97642} \\ &= 19,7853 \end{aligned}$$

$$\begin{aligned} b &= \frac{n \sum XY - (\sum X)(\sum Y)}{n \sum X^2 - (\sum X)^2} \\ &= \frac{20 \cdot 51103 - 1000 \cdot 1000}{20 \cdot 51825,2 - 1000^2} \\ &= \frac{1022059,12 - 1000000}{1036503,976 - 1000000} \end{aligned}$$

$$= \frac{22059,120}{36503,97642}$$

$$= 0,60429$$

Jadi persamaannya adalah:

$$\hat{Y} = 19,79 + 0,604 X_2$$

### 3. Regresi ganda Y atas $X_1$ dan $X_2$

Diketahui

$$\sum X_1^2 = 1900,00$$

$$\sum X_2^2 = 1900,00$$

$$\sum X_1 y = 1323,49$$

$$\sum X_2 y = 1102,96$$

$$\sum X_1 X_2 = 936,20$$

$$\begin{aligned} b_1 &= \frac{(\sum X_1 y \times \sum X_2^2) - (\sum X_1 X_2 \times \sum X_2 y)}{(\sum X_1^2 \times \sum X_2^2) - (\sum X_1 X_2)^2} \\ &= \frac{(1323,49 \times 1900,00) - (936,20 \times 1102,96)}{(1900,00 \times 1900,00) - (936,20)^2} \\ &= \frac{2514624,24 - 1032590,51}{3610000,00 - 876475,70} \\ &= \frac{1482003,73}{2733524,30} \\ &= 0,542 \end{aligned}$$

$$b_2 = \frac{(\sum X_2 y \times \sum X_1^2) - (\sum X_1 X_2 \times \sum X_1 y)}{(\sum X_1^2 \times \sum X_2^2) - (\sum X_1 X_2)^2}$$



$$\begin{aligned}
&= \frac{(1102,96 \cdot 1900,00) - (936,20 \cdot 1323,49)}{(1900,00 \cdot 1900,00) - (936,20)^2} \\
&= \frac{2095616,40 - 1239051,73}{3610000,00 - 876475,70} \\
&= \frac{856564,68}{2733524,30} \\
&= 0,313
\end{aligned}$$

$$a = \bar{Y} - b_1 \bar{X}_1 - b_2 \bar{X}_2$$

diketahui :

$$\bar{Y} = 50$$

$$\bar{X}_1 = 50$$

$$\bar{X}_2 = 50$$

$$= 50 - (0,542 \cdot 50) - (0,313 \cdot 50)$$

$$= 50 - 27,10848 - 15,6678$$

$$= 7,224$$

Jadi Persamaan Regresi adalah :

$$\hat{Y} = a + b_1 X_1 + b_2 X_2$$

$$= 7,244 + 0,542 X_1 + 0,313 X_2$$

Mencari koefisien korelasi dan uji keberartian koefisien kolerasi

### 1. Perhitungan koefisien korelasi $r_{y_1}$

Diketahui :

$$\begin{aligned} n &= 20 \\ \sum X &= 1000 \\ \sum X^2 &= 51825.2 \\ \sum Y &= 1000 \\ \sum XY^2 &= 51825.2 \\ \sum XY &= 51323.49 \end{aligned}$$

Dimasukan dalam rumus :

$$\begin{aligned} r_{xy} &= \frac{n \sum XY - (\sum X)(\sum Y)}{\sqrt{\{n \sum X^2 - (\sum X)^2\} \{n \cdot \sum Y^2 - (\sum Y)^2\}}} \\ r_{xy} &= \frac{20 \cdot 51323.5 - (1000) \cdot (1000)}{\sqrt{\{20 \cdot 51825.2 - 1000^2\} \{20 \cdot 51825.2 - 1000^2\}}} \\ &= \frac{1026469.729 - 1000000}{\sqrt{36503.97642 \cdot 36503.97642}} \\ &= \frac{26469.72884}{36503.976} \\ &= 0,725 \end{aligned}$$

Uji koefisien determinasi

$$\begin{aligned} KD &= r_{y_1}^2 \times 100\% \\ &= 0,725 \times 100\% \\ &= 0,526 \times 100\% = 52.58\% \end{aligned}$$

## 2. Keberartian koefisien kolerasi $r_{y_1}$

Menghitung uji signifikansi koefisien kolerasi menggunakan uji-t, yaitu

dengan rumus :

$$\begin{aligned}
 t_h &= \frac{r\sqrt{n-2}}{\sqrt{1-r^2}} \\
 &= \frac{0,725\sqrt{18}}{\sqrt{1-0,526}} \\
 &= \frac{0,725 \cdot 4,24}{\sqrt{0,474}} \\
 &= \frac{3,076}{0,689} \\
 &= 4,47
 \end{aligned}$$

Kesimpulan :

$T_{\text{tabel}}$  pada taraf signifikansi 0,05 dengan dk  $(n-2)=(20-2)=18$  sebesar 1,73

Kriteria pengujian :

$H_0$  : ditolak jika  $t_{\text{hitung}} > t_{\text{tabel}}$  .

$H_0$  : diterima jika  $t_{\text{hitung}} < t_{\text{tabel}}$  .

Dari hasil pengujian :

$t_{\text{hitung}} (4,47) > t_{\text{tabel}} (1,73)$ , maka terdapat hubungan yang signifikan antara variable  $X_1$  dengan variable Y

### 3. Perhitungan koefisien kolerasi $r_{y_2}$

Diketahui :

$$\begin{aligned} n &= 20 \\ \sum X &= 1000 \\ \sum X^2 &= 51825.2 \\ \sum Y &= 1000 \\ \sum XY^2 &= 51825.2 \\ \sum XY &= 51102.96 \end{aligned}$$

Dimasukan dalam rumus :

$$\begin{aligned} r_{xy} &= \frac{n \sum XY - (\sum X)(\sum Y)}{\sqrt{\{n \sum X^2 - (\sum X)^2\} \{n \cdot \sum Y^2 - (\sum Y)^2\}}} \\ &= \frac{20 \cdot 51103 - (1000) \cdot (1000)}{\sqrt{\{20 \cdot 51825.2 - 1000^2\} \{20 \cdot 51825.2 - 1000^2\}}} \\ &= \frac{1022059.12 - 100000}{\sqrt{36503.97642 \cdot 36503.97642}} \\ &= \frac{22059.12005}{386503.976} \\ &= 0,604 \end{aligned}$$

Uji koefisien determinasi

$$\begin{aligned} KD &= r_{y_1}^2 \times 100\% \\ &= 0,604 \times 100\% \\ &= 0,365 \times 100\% \\ &= 36,52\% \end{aligned}$$

#### 4. Keberartian koefisien kolerasi $r_{y_1}$

Menghitung uji signifikansi koefisien kolerasi menggunakan uji-t, yaitu

dengan rumus :

$$\begin{aligned}
 t_h &= \frac{r\sqrt{n-2}}{\sqrt{1-r^2}} \\
 &= \frac{0.604\sqrt{18}}{\sqrt{1-0,365}} \\
 &= \frac{0,607 \cdot 4,24}{\sqrt{0,634}} \\
 &= \frac{2,564}{0,794} \\
 &= 3,22
 \end{aligned}$$

Kesimpulan :

$T_{\text{tabel}}$  pada taraf signifikansi 0,05 dengan dk  $(n-2)=(20-2)=18$  sebesar 1,73

Kriteria pengujian :

$H_0$  : ditolak jika  $t_{\text{hitung}} > t_{\text{tabel}}$  .

$H_0$  : diterima jika  $t_{\text{hitung}} < t_{\text{tabel}}$  .

Dari hasil pengujian :

$t_{\text{hitung}} (3,22) > t_{\text{tabel}} (1,73)$ , maka terdapat hubungan yang signifikan antara variable  $X_2$  dengan variable Y

### 5. Perhitungan koefisien korelasi $r_{21}$

Diketahui :

$$n = 20$$

$$\sum X_1 = 1000$$

$$\sum X_1^2 = 51900$$

$$\sum X_2 = 1000$$

$$\sum X_2^2 = 51900$$

$$\sum X_1 X_2 = 50936,20$$

Dimasukan dalam rumus :

$$\begin{aligned} r_{XY} &= \frac{n \sum X_1 X_2 - (\sum X_1)(\sum X_2)}{\sqrt{\{n \sum X_1^2 - (\sum X_1)^2\} \{n \sum X_2^2 - (\sum X_2)^2\}}} \\ &= \frac{20 \cdot 50936,20 - (1000)(1000)}{\sqrt{\{20 \cdot 51900 - (1000)^2\} \{20 \cdot 51900 - (1000)^2\}}} \\ &= \frac{1018724,056 - 1000000}{\sqrt{38000 \cdot 38000}} \\ &= \frac{18724,0562}{38000.000} \\ &= 0,493 \end{aligned}$$

## 6. Uji signifikansi koefisien kolerasi ganda

### 1. Uji kolerasi

Diketahui :

$$r_{y1} = 0,711$$

$$r_{y2} = 0,592$$

$$r_{21} = 0,493$$

dimasukan dalam rumus :

$$\begin{aligned}
 r_{y12} &= \sqrt{\frac{r_{y1}^2 + r_{y2}^2 - 2r_{y1} \cdot r_{y2} \cdot r_{21}}{1 - r_{21}^2}} \\
 &= \sqrt{\frac{0,711^2 + 0,592^2 - 2 \cdot 0,711 \cdot 0,592 \cdot 0,493}{1 - 0,493^2}} \\
 &= \sqrt{\frac{0,505 \cdot 0,351 - 0,415}{1 - 0,243}} \\
 &= \sqrt{\frac{0,856 - 0,415}{0,757}} \\
 &= \sqrt{\frac{0,441}{0,757}} \\
 &= \sqrt{0,582}
 \end{aligned}$$

$$= 0,763$$

## 2. Uji signifikasi koefisien regresi ganda

$$F_h = \frac{R^2/2}{(1-R^2)/n-3} = \frac{0,582/2}{1-0,582/17}$$

$$\frac{0.291}{0.025} = 11,859$$

Diketahui  $f_{hitung}$  sebesar 11,859, sedangkan  $F_{tabel}$  pada taraf signifikansi 0,05 dengan  $dk_{1/17}$  sebesar 4,45, maka  $F_{hitung} > F_{tabel}$  berarti  $H_0$  ditolak dan dinyatakan terdapat hubungan antara  $X_1$  dan  $X_2$  secara bersama-sama terhadap  $Y$ .

## 3. Koefisien determinasi

$$KD = R_{y.12}^2 \times 100\%$$

$$= 0,582 \times 100\% = 58,25\%$$









Foto Pelaksanaan Tes Daya Ledak Otot Tungkai (*Standing BroadJump*)  
Sumber : Foto Penelitian



Foto Pelaksanaan Tes Keseimbangan (*Standing Strok Test*)  
Sumber : Peneliti



Foto Pelaksanaan Tes *Yeoup Chagi*  
Sumber : Peneliti



Foto Anggota Klub Taekwondo Universitas Negeri Jakarta Setelah  
Melakukan Penelitian  
Sumber : Peneliti