

Lampiran 1

Data hasil tes Daya Ledak Otot Tungkai (X_1), Kecepatan Berlari (X_2), dan Jarak Lompatan

No	Nama	X_1	X_2	Y
1	SeptianPamungkas	42	6,91	3,36
2	Bobby Victores	40	6,17	3,20
3	Febri	48	6,66	3,18
4	Muhamad Surya	34	5,60	2,35
5	M. AfandyDwi P	43	6,62	2,80
6	Eka Ramadhan	41	7,24	2,60
7	Rafli Lukman	47	6,36	2,70
8	Dian Prakoso	50	6,43	3,15
9	Adi Frasetiya	43	6,06	2,86
10	Agus Maulana	44	6,96	2,70
11	Fajar Widianto	47	7,15	3,20
12	M. Ikhsan	50	6,25	3,75
13	Muhamad Fauzian	46	6,99	2,95
14	Andriyansah	39	5,98	2,90
15	Yusuf Bahtiar	40	6,34	3,18

Lampiran 2

Data Mentah hasil tes Daya Ledak Otot Tungkai (X1),Kecepatan Berlari (X2), dan Jarak Lompatan (Y)

No.	X ₁	X ₂	Y	X ₁ ²	X ₂ ²	Y ²
1	42	6,91	3,36	1764	47,74	11,29
2	40	6,17	3,2	1600	38,06	10,24
3	48	6,66	3,18	2304	44,35	10,11
4	34	5,60	2,35	1156	31,36	5,52
5	43	6,62	2,8	1849	43,82	7,84
6	41	7,24	2,6	1681	52,41	6,76
7	47	6,36	2,7	2209	40,44	7,29
8	50	6,43	3,15	2500	41,34	9,92
9	43	6,06	2,86	1849	36,72	8,18
10	44	6,96	2,7	1936	48,44	7,29
11	47	7,15	3,2	2209	51,12	10,24
12	50	6,25	3,75	2500	42,51	14,06
13	39	5,98	2,95	1521	35,76	8,70
14	46	6,99	2,9	2116	48,86	8,41
15	40	6,34	3,18	1600	40,19	10,11
Jumlah	654	97,99	44,88	28794	643,12	135,97

Lampiran 3

Data Persiapan untuk Persiapan Regresi dan Korelasi

No.	X ₁	X ₂	Y	X ₁ ²	X ₂ ²	Y ²	X ₁ Y	X ₂ Y	X ₁ X ₂
1	42	6,91	3,36	1764	47,74	11,29	141,12	23,21	290,22
2	40	6,17	3,2	1600	38,06	10,24	128	19,74	246,8
3	48	6,66	3,18	2304	44,35	10,11	152,64	21,17	246,8
4	34	5,60	2,35	1156	31,36	5,52	79,9	13,16	190,4
5	43	6,62	2,8	1849	43,82	7,84	120,4	18,53	284,66
6	41	7,24	2,6	1681	52,41	6,76	106,6	18,82	296,84
7	47	6,36	2,7	2209	40,44	7,29	126,9	17,17	298,92
8	50	6,43	3,15	2500	41,34	9,92	157,5	20,25	321,5
9	43	6,06	2,86	1849	36,72	8,18	122,98	17,33	260,58
10	44	6,96	2,7	1936	48,44	7,29	118,8	18,79	306,24
11	47	7,15	3,2	2209	51,12	10,24	150,4	22,88	336,05
12	50	6,25	3,75	2500	42,51	14,06	187,5	24,45	326
13	39	5,98	2,95	1521	35,76	8,70	135,7	20,62	321,54
14	46	6,99	2,9	2116	48,86	8,41	113,1	17,34	233,22
15	40	6,34	3,18	1600	40,19	10,11	127,2	20,16	253,6
Jumlah	654	97,99	44,88	28794	643,12	135,97	1968,74	293,62	4286,25

$$\begin{array}{lll} \Sigma X_1 & = 654 & \Sigma X_1^2 = 28794 & \Sigma X_1 Y = 1968,74 \\ \Sigma X_2 & = 97,99 & \Sigma X_2^2 = 643,12 & \Sigma X_2 Y = 293,62 \\ \Sigma Y & = 44,88 & \Sigma Y^2 = 135,97 & \Sigma X_1 X_2 = 4286,25 \end{array}$$

Lampiran 4

Menghitung rata-rata dan simpangan baku

1. Daya Ledak Otot Tungkai (X_1)

Diketahui :

$$\Sigma X_1 = 654$$

$$\Sigma X_1^2 = 28794$$

$$\text{a. Rata-rata } (\bar{X}) = \frac{\Sigma X_1}{n}$$

$$= \frac{654}{15}$$

$$= 43,6$$

b. Simpangan baku

$$= \sqrt{\frac{n \Sigma X_1^2 - (\Sigma X_1)^2}{n(n-1)}}$$

$$= \sqrt{\frac{15 (28794) - (654)^2}{15 (15-1)}}$$

$$= \sqrt{\frac{431910 - 427716}{210}}$$

$$= \sqrt{19,97}$$

$$= 4,46$$

2. Kecepatan Berlari (X_2)

Diketahui :

$$\Sigma X_2 = 97,99$$

$$\Sigma X_2^2 = 643,12$$

a. Rata-rata (\bar{X}) = $\frac{\Sigma X_2}{n}$

$$= \frac{97,99}{15}$$

$$= 6,53$$

b. Simpangan baku

$$= \sqrt{\frac{n \Sigma X_2^2 - (\Sigma X_2)^2}{n(n-1)}}$$

$$= \sqrt{\frac{15 (643,12) - (97,99)^2}{15 (15-1)}}$$

$$= \sqrt{\frac{9646,8 - 9600,08}{210}}$$

$$= \sqrt{0,22}$$

$$= 0,46$$

3. Jarak Lompatan (Y)

Diketahui :

$$\Sigma Y = 44,88$$

$$\Sigma Y^2 = 135,97$$

$$\begin{aligned} \text{a. Rata-rata } (\bar{X}) &= \frac{\Sigma Y}{n} \\ &= \frac{44,88}{15} \\ &= 2,99 \end{aligned}$$

b. Simpangan baku

$$\begin{aligned} &= \sqrt{\frac{n \Sigma Y^2 - (\Sigma Y)^2}{n(n-1)}} \\ &= \sqrt{\frac{15 (135,97) - (44,88)^2}{15 (15-1)}} \\ &= \sqrt{\frac{2039,55 - 2014,21}{210}} \\ &= \sqrt{0,12} \\ &= 0,34 \end{aligned}$$

Lampiran 5

Perhitungan persamaan regresi

1. Regresi Y atas X_1

Diketahui

$$\begin{array}{llll} \Sigma X_1 & = 654 & \Sigma X_1^2 & = 28794 & \Sigma X_1 Y & = 1968,74 \\ \Sigma X_2 & = 97,99 & \Sigma X_2^2 & = 643,12 & \Sigma X_2 Y & = 293,62 \\ \Sigma Y & = 44,88 & \Sigma Y^2 & = 135,97 & \Sigma X_1 X_2 & = 4286,25 \end{array}$$

Diuraikan menjadi

$$\begin{aligned} a &= \frac{(\Sigma Y)(\Sigma X_1^2) - (\Sigma X_1)(\Sigma X_1 Y)}{n \Sigma X_1^2 - (\Sigma X_1)^2} \\ &= \frac{(44,88)(28794) - (654)(1968,74)}{15 \cdot 28794 - (654)^2} \\ &= \frac{(1292274,72) - (1287555,96)}{431910 - 427716} \\ &= \frac{4718,76}{4,194} \\ &= 1,125 \end{aligned}$$

$$\begin{aligned} b &= \frac{n(\Sigma X_1 Y) - (\Sigma X_1)(\Sigma Y)}{n \Sigma X_1^2 - (\Sigma X_1)^2} \\ &= \frac{(15)(1968,74) - (654)(44,88)}{15 \cdot 28794 - (654)^2} \end{aligned}$$

$$\begin{aligned}
&= \frac{(29531,1) - (29351,52)}{431910 - 427716} \\
&= \frac{179,58}{4194} \\
&= 0,042
\end{aligned}$$

Jadi persamaan regresi Y terhadap X_1 adalah $\hat{Y} = 1,125 + 0,042X_1$

2. Regresi Y atas X_2

Diuraikan menjadi

$$\begin{aligned}
a &= \frac{(\Sigma Y)(\Sigma X_2^2) - (\Sigma X_2)(\Sigma X_2 Y)}{n \Sigma X_2^2 - (\Sigma X_2)^2} \\
&= \frac{(44,88)(643,12) - (97,99)(293,62)}{15 \cdot 643,12 - (97,99)^2} \\
&= \frac{(28863,22) - (28771,82)}{9646,8 - 9602,04} \\
&= \frac{91,4}{44,76} \\
&= 2,042
\end{aligned}$$

$$b = \frac{n (\Sigma X_2 Y) - (\Sigma X_2)(\Sigma Y)}{n \Sigma X_2^2 - (\Sigma X_2)^2}$$

$$\begin{aligned}
&= \frac{(15)(293,62) - (97,99)(44,88)}{15 \cdot 643,12 - (97,99)^2} \\
&= \frac{(4404,3) - (4397,7)}{9646,8 - 9602,04} \\
&= \frac{6,6}{44,76} \\
&= 0,147
\end{aligned}$$

Jadi persamaan regresi Y terhadap X_2 adalah $\hat{Y} = 2,042 + 0,147X_2$

3. Regresi Y atas X_1 dan X_2

Dimana :

$$\Sigma y^2 = \Sigma Y^2 - \frac{(\Sigma Y)^2}{n} = 135,97 - \frac{(44,88)^2}{15} = 1,69$$

$$\Sigma x_1^2 = \Sigma X_1^2 - \frac{(\Sigma X_1)^2}{n} = 28794 - \frac{(654)^2}{15} = 279,6$$

$$\Sigma x_2^2 = \Sigma X_2^2 - \frac{(\Sigma X_2)^2}{n} = 643,12 - \frac{(97,99)^2}{15} = 2,99$$

$$\Sigma x_1y = \Sigma X_1Y - \frac{(\Sigma X_1)(\Sigma Y)}{n} = 1968,74 - \frac{(654)(44,88)}{15} = 11,98$$

$$\Sigma x_2y = \Sigma X_2Y - \frac{(\Sigma X_2)(\Sigma Y)}{n} = 293,63 - \frac{(97,99)(44,88)}{15} = 0,44$$

$$\Sigma x_1x_2 = \Sigma X_1X_2 - \frac{(\Sigma X_2)(\Sigma Y)}{n} = 4286,25 - \frac{(97,99)(44,88)}{15} = 13,89$$

$$\begin{aligned}
 b_1 &= \frac{(\sum x_1 y) (\sum x_2^2) - (\sum x_1 x_2) (\sum x_2 y)}{(\sum x_1^2) (\sum x_2^2) - (\sum x_1 x_2)^2} \\
 &= \frac{(11,98)(2,99) - (13,89) (0,44)}{(279,6) (2,99) - (13,89)^2} \\
 &= \frac{(35,82) - (6,11)}{(836,004) - (192,93)} \\
 &= \frac{29,71}{643,07} \\
 &= 0,046
 \end{aligned}$$

$$\begin{aligned}
 b_2 &= \frac{(\sum x_2 y) (\sum x_1^2) - (\sum x_1 x_2) (\sum x_1 y)}{(\sum x_1^2) (\sum x_2^2) - (\sum x_1 x_2)^2} \\
 &= \frac{(0,44)(279,6) - (13,89) (11,98)}{(279,6) (2,99) - (13,89)^2} \\
 &= \frac{(123,02) - (166,40)}{(836,004) - (192,93)} \\
 &= \frac{43,38}{643,07} \\
 &= 0,067
 \end{aligned}$$

$$\begin{aligned}
 b_0 &= \bar{Y} - b_1 \bar{X}_1 - b_2 \bar{X}_2 \\
 &= (2,99) - (0,046 \cdot 43,6) - (0,067 \cdot 6,53)
 \end{aligned}$$

$$= 2,99 - 2,0056 - 0,43$$

$$= 0,554$$

Jadi persamaan regresi berganda Y terhadap X_1 dan X_2 adalah

$$\hat{Y} = 0,554 + 0,046X_1 + 0,067X_2$$

Lampiran 6

Mencari koefisien korelasi dan uji keberartian koefisien korelasi

1. Koefisien Korelasi r_{y_1}

$$\begin{aligned} r_{y_1} &= \frac{n \sum X_1 Y - (\sum X_1) (\sum Y)}{\sqrt{\{n \sum X_1^2 - (\sum X_1)^2\} \{n \cdot \sum Y^2 - (\sum Y)^2\}}} \\ &= \frac{(15) (1968,74) - (654) (44,88)}{\sqrt{\{(15) (28794) - (654)^2\} \{(15) \cdot (135,97) - (44,88)^2\}}} \\ &= \frac{(29531,1) - (29351,52)}{\sqrt{(4194) (25,34)}} \\ &= \frac{179,58}{325,99} \\ &= 0,550 \end{aligned}$$

2. Uji Keberartian koefisien korelasi

$$\begin{aligned} t_{hitung} &= \frac{(r_{y_1})(\sqrt{n-2})}{\sqrt{1-(r_{y_1})^2}} \\ &= \frac{(0,550)(\sqrt{15-2})}{\sqrt{1-(0,320)^2}} \end{aligned}$$

$$= \frac{1,982}{0,835}$$

$$= 2,373$$

$$\begin{aligned} \text{Derajat kebebasan (dk)} &= n - 2 \\ &= 15 - 2 \\ &= 13 \end{aligned}$$

$$\begin{aligned} t_{\text{tabel}} &= dk : 1 - \frac{1}{2} \alpha \\ &= 13 : 1 - \frac{1}{2} (0,05) \\ &= 13 : 0,975 \\ &= 2,160 \end{aligned}$$

Berarti :

t_{tabel} dengan $\alpha = 0,05$ dan $dk = 13$ diperoleh sebesar 2,160. Karena $t_{\text{hitung}} = 2,373 > t_{\text{tabel}}(2,160)$, dengan demikian kita tolak H_0 , berarti koefisien korelasi 0,550 adalah signifikan

Nilai Koefisien determinasi

$$\begin{aligned} \text{KD} &= r_{xy}^2 \times 100\% \\ &= 0,550^2 \times 100\% \\ &= 0,3025 \times 100\% \\ &= 30,25\% \end{aligned}$$

3. Koefisien Korelasi r_{y_2}

$$\begin{aligned}
 r_{y_2} &= \frac{n \sum X_2 Y - (\sum X_2) (\sum Y)}{\sqrt{\{n \sum X_2^2 - (\sum X_2)^2\} \{n \cdot \sum Y^2 - (\sum Y)^2\}}} \\
 &= \frac{(15) (293,62) - (97,99) (44,88)}{\sqrt{\{(15) (643,12) - (97,99)^2\} \{(15) \cdot (135,97) - (44,88)^2\}}} \\
 &= \frac{(4404,3) - (4397,7)}{\sqrt{(44,76) (25,34)}} \\
 &= \frac{6,6}{33,67} \\
 &= 0,196
 \end{aligned}$$

4. Uji Keberartian koefisien korelasi

$$\begin{aligned}
 t_{hitung} &= \frac{(r_{y_1})(\sqrt{n-2})}{\sqrt{1-(r_{y_1})^2}} \\
 &= \frac{(0,196)(\sqrt{15-2})}{\sqrt{1-(0,196)^2}} \\
 &= \frac{2,825}{0,980} \\
 &= 2,882
 \end{aligned}$$

$$\begin{aligned}
 \text{Derajat kebebasan (dk)} &= n - 2 \\
 &= 15 - 2 \\
 &= 13
 \end{aligned}$$

$$\begin{aligned}
 t_{\text{tabel}} &= dk : 1 - \frac{1}{2} \alpha \\
 &= 13 : 1 - \frac{1}{2} (0,05) \\
 &= 13 : 0,975 \\
 &= 2,160
 \end{aligned}$$

Berarti :

t_{tabel} dengan $\alpha = 0,05$ dan $dk = 13$ diperoleh sebesar 2,160. Karena $t_{\text{hitung}} = 2,882 > t_{\text{table}} = 2,160$, dengan demikian kita tolak H_0 , berarti koefisien korelasi 0,196 adalah signifikan

Nilai Koefisien determinasi

$$\begin{aligned}
 KD &= r_{xy}^2 \times 100\% \\
 &= 0,196^2 \times 100\% \\
 &= 0,0384 \times 100\% \\
 &= 3,84\%
 \end{aligned}$$

5. Koefisien Korelasi ganda $r_{y1.2}$

$$\begin{aligned}
 JK (\text{Reg}) &= b_1 \cdot \sum x_1 y + b_2 \cdot \sum x_2 y \\
 &= (0,046 \times 11,98) + (0,067 \times 0,04) \\
 &= 0,551 + 0,002 \\
 &= 0,553
 \end{aligned}$$

$$\begin{aligned}
 r_{y1.2} &= \sqrt{\frac{JK(\text{Reg})}{\Sigma y}} \\
 &= \sqrt{\frac{0,553}{1,69}} \\
 &= \sqrt{0,327} \\
 &= 0,571
 \end{aligned}$$

6. Uji Keberhasilan Koefisien Korelasi Berganda

$$\begin{aligned}
 T_{\text{hitung}} &= \frac{(r_{y_{12}})^2 / K}{(1 - (r_{y_{12}})^2) / n - 2 - 1} \\
 &= \frac{(0,327)/2}{(1-0,327)/15-3} \\
 &= \frac{0,1635}{0,0357} = 4,57
 \end{aligned}$$

Berarti

T_{tabel} dengan prediktor = 2 sebagai pembilang dan $(n-K-1) = 12$ sebagai penyebut $T_{\text{hitung}} = 4,57 > T_{\text{tabel}} 3,89$ maka Koefisien korelasi berganda sebesar 32,6 adalah signifikan.

Nilai Koefisien determinasi

$$\begin{aligned}
 KD &= r_{xy}^2 \times 100\% \\
 &= 0,571^2 \times 100\% \\
 &= 32,6\%
 \end{aligned}$$