

trendingBot

case study #3 - anatomical analysis

trendingIT

problem

100-meter-runners trainer → most adequate body?

1. get some information from top-ranked athletes
2. run trendingBot

1. data

legs (perimeters) [cm]		legs (lengths) [cm]		shoulder-to-shoulder [cm]	muscle mass [kg]	weight [kg]	height [cm]	best time [s]
thigh	calves	thigh	calves					
55	23	66	50	90	26	92	192	10.6
54	24	67	49	90	28	90	192	10.3
55	22	65	48	93	27	89	188	10.5
50	21	67	50	92	25	95	197	9.79
57	25	64	50	91	29	94	194	9.88
62	22	65	47	93	30	93	192	10.2

solution

2. trendingBot

$$-33.83+1.095\cdot 10^{-3}\cdot \text{thigh_per}\cdot \text{calv_per}\cdot \text{thigh_leng}-6.75\cdot 10^{-9}\cdot (\text{thigh_per}\cdot \text{calv_per}\cdot \text{thigh_leng})^2$$

mean error after applying this equation to the original data below 0.5% ✓

athlete	personal best time	thigh_per	calv_per	thigh_leng	Ideal best time
1	10.90	55	24	64	10.49
2	10.29	57	23	67	10.27
3	10.53	61	22	67	10.05

- ✓ athlete 2 → best athlete
- ✓ athletes 1 & 3
 - their bodies should be capable to generate higher speed
 - technical capabilities to be improved

justification

Athletics

- ✓ mental strength (capital issue in top-level competition) very difficult to be accounted
- ✓ applied theory
 - identical bodies should develop same speed
 - the contrary case → technique/mental capabilities to be improved

TrendingBot

- ✓ data from top athletes best technique & mental strength
- ✓ compare your athlete's anatomy with theirs
- ✓ know his ideal best time