

Body-Weight as Determinator of Physical Efficiency

In view of the nutritional, educational and other implications of physical development, it is desirable to arrive at an objective evaluation of anthropometric

tween 6 and 17 years of age. Baldwin and Wood's age-weight tables were used as standards. The four weight sub-groups (A-D) were calculated according to Bogert's² recommendation.

A detailed account of our findings, with special reference to nutritional problems, will appear in

Item	Unit	Group*				Mean differences	Remarks on differences
		A	B	C	D		
NUMBER OF BOYS		351	492	544	127		
100 Yd. Running:							
Mean	Sec.	16.16	15.62	15.63	16.54	A - B: + 0.54	Significant
S.D.	"	2.205	2.252	2.175	2.235	B - C: - 0.01	Not significant
S.E.M.	"	0.118	0.102	0.093	0.203	C - D: - 0.91	Significant
Mean Index†	A = 100	100	103	103	98	A - D: - 0.38	Not significant
600 Yd. Running:							
Mean	Sec.	141.1	136.3	138.0	151.0	A - B: + 4.8	Significant
S.D.	"	18.15	20.70	20.10	20.85	B - C: - 1.7	Not significant
S.E.M.	"	0.969	0.933	0.862	1.890	C - D: - 13.0	Significant
Mean Index†	A = 100	100	104	102	93	A - D: - 9.9	Significant
Shot Put (12 lb.)							
Mean	Inches	142.9	156.4	162.7	168.2	B - A: + 13.5	Significant
S.D.	"	67.56	77.82	84.66	82.32	C - B: + 6.3	Not significant
S.E.M.	"	3.605	3.508	3.630	7.463	D - C: + 5.5	Not significant
Mean Index	A = 100	100	109	114	118	D - A: + 25.3	Significant

* A: Underweight, that is, 7 per cent or more under normal.

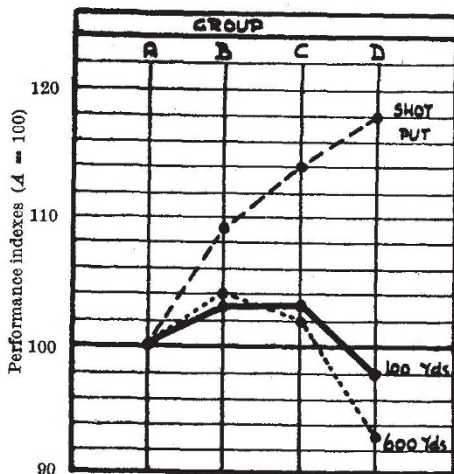
B: Slightly underweight, that is, less than 7 per cent under normal.

C: Normal and slightly overweight, that is, less than 15 per cent over normal.

D: Overweight, that is, 15 per cent or more over normal.

(Normal, according to Baldwin and Wood's Table.)

† Calculated by using reciprocals of means, since short running times indicate good performances.



measurements. Among the determinators of muscular efficiency which a study of physical fitness of school children in South Africa has revealed¹, body weight has been found to be of significance. We apply three performance tests intended to yield information with regard to neuro-muscular skill and speed (100 yards running), circulatory and respiratory endurance (600 yards running) and muscular strength (putting the 12 lb. shot). As the accompanying table and graph indicate, a specific determination of performance standards through body-weight is noticeable. In the 100-yard race, underweight and overweight are about equally disadvantageous. In the 600-yard race overweight is more disadvantageous than underweight, while in putting the shot only underweight is disadvantageous. The medium body-weight levels are associated with the best all-round physical efficiency.

The tests were conducted with 1,514 boys of be-

Manpower (Pretoria), the official organ of the National Advisory Council for Physical Education.

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¹ de Jongh, T. W., Cluver, E. H., and Jokl, E., "A National Manpower Survey of South Africa", *Manpower* (Pretoria), 1, 1 (September, 1942).

² Bogert, L. J., "Nutrition and Physical Fitness" (Philadelphia and London, 1939).

Analogy between Pseudopodia and Nerve Fibres

A GOOD many years ago, Verworn¹ developed in some detail a suggested analogy between rhizopod pseudopodia and nerve fibres. He suggested that these represent two extreme types of living substance in which the effects of stimulation are transmitted respectively with and without decrement.

Though this suggestion has not proved fruitful as a basis of further research, some points in a recent letter by J. Z. Young² on the structure of nerve fibres revive the possibility that it may not be entirely without significance. Both nerve fibres and foraminiferan pseudopodia^{3,4} apparently owe their form to the linear arrangement of micellæ, and are thrown into coils when this orientation is disturbed. In both, the internal protoplasm is in a more or less fluid condition and streaming movements can be observed.

Some observations made in the course of a prolonged study of foraminiferan pseudopodia at the Ghargaqa (Red Sea) Marine Biological Station some years ago may be compared with those of Young on the effects of cutting a nerve fibre. When a pseudo-