

Mr. Ernst JOKL, doctor of medicine, professor and director of the experimental research laboratories of the University of Kentucky, is the founder of sports medicine in the United States. Our readers have already seen in the "Olympic Review" no. 36 of September, 1970, the article "*Bob BEAMON's Fabulous Jump*". We are publishing in this issue a study, which he has just carried out on:

Weightlifting records

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A study of scope and limitation of human power

Analyses of performance developments are available for track and field athletics, swimming and basketball, not however for weightlifting. In order to assemble information on the latter, we have plotted the results of world championships and Olympic Games as well as world records established since 1948, calculated percentage increases of performance improvements for the period under reference, and fitted growth curves to the scatter diagrams thus obtained.

The following is a summary of the results:

- 1/ All record performances in weightlifting have significantly improved since 1948.
- 2/ Growth curves of records in weightlifting in the lower classes may soon enter their asymptotic deflection phases. An interrupted rate of record growth is noticeable only in the superheavy weight class, due to the fact that increasingly heavier competitors have



made their appearance during recent years. (The Mexico City winner Zhabotinsky weighed 162.8 kg.)

3/ Per kilogram body weight, weightlifters in the bantam, feather and lightweight classes are much stronger than weightlifters in the super-heavy class.

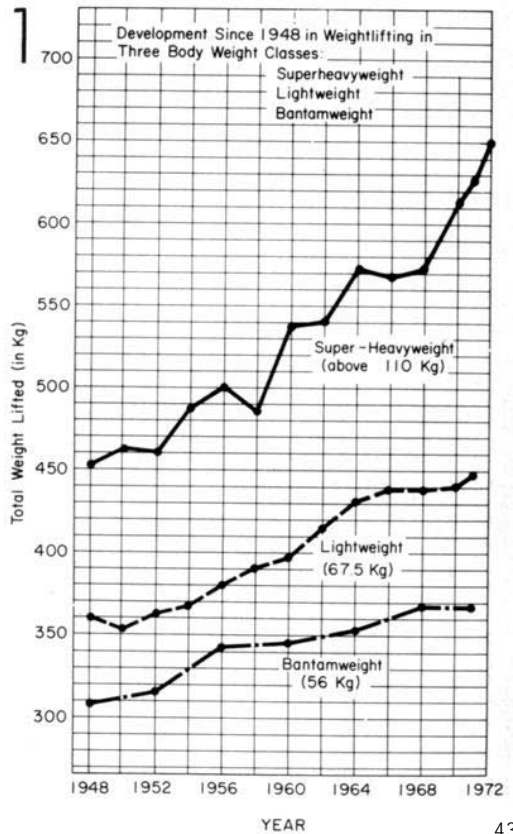
4/ Until recently the growth curve of the world record in the shot put ran parallel with the growth curves of weightlifting world records in the heavyweight class. The present shot put world record was established by Matson in April, 1967

(71 ft., 5½ ins. or 21.78 m.). Since then the weightlifting world record for the heavy-weight class has improved but not the world record in the shot put. It will be worthwhile for shot putters to lay more stress on speed and not concentrate too much on muscle building. On 4th September, 1971, Walter Schmidt of Germany established a new hammer throw world record (76.40 m.). During the preceding two weeks he had reduced his body weight by 10 pounds.

Like all other athletic records, those in weightlifting will soon approach finite levels. Human power is great but limited.

Figure 1 and 2

Performance development since 1948 in the bantam-weight, light-weight and superheavy-weight classes. (Figure 1). Percentage rates of growth are shown in Figure 2. The growth curve for the bantam and light-weight classes may soon enter their asymptotic deflection phases. Performances in the superheavy-weight class continue to rise. During the 1971 world championships in Lima, Peru, Vassily Alexeyev



performed as follows: Press-230 kg.; Snatch-170 kg.; Clean and Jerk-235 kg.; Total-635 kg. Of these, the press and the clean and jerk are new world records. Alexeyev predicts that a total of 650 kg. will be attained at the 1972 Olympic Games in Munich. The winning performance in the heavy-weight class at the 1968 Olympic Games was 572.5 kg.

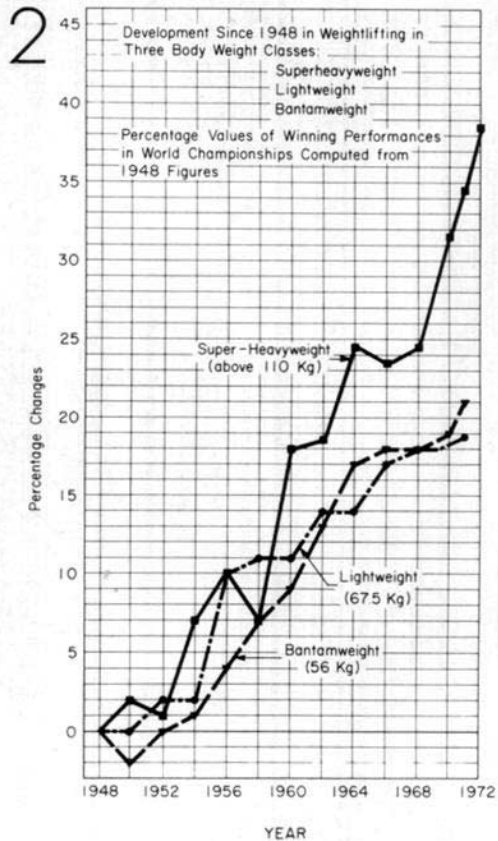


Figure 3

Weight lifted per kilogram body weight by gold medal winners in all body weight classes at the Mexico City Olympic Games in 1968 (continued line) and in Lima, Peru in 1971 (interrupted line).

Two new classes were introduced since 1968, "Fly Weight" (51 kg.) and "Superheavy-Weight" (110 kg.+). The more marked downward trend of the Mexico City curve is due to the exceptionally heavy body weight of Zhabotinsky. (Table 1 and 2)

In Mexico City in 1968, body weights of competitors for the heavy weight medals differed by as much as 40 kilograms. The placement of the winners would have been different had their performances been evaluated in terms of their body weight. (Table 3) The respective strength ratios for Zhabotinsky, Reding and Dube amounted to 1.17, 1.49 and 1.29 kg. Zhabotinsky weighed 162.8 kilograms.

At the 1971 World Championships in Lima, Peru, Alexeyev's strength ratio was 1.42 kg.-significantly higher than Zhabotinsky's 1.17 kg. at Mexico City in 1968, but still below the 1.49 kg. of Reding, the Olympic silver medal winner.

Légende

Weight lifted per KG body weight - Poids soulevé par kilo du corps

Weight class - Catégories

Fly: Mouche - *Bantam*: Coq -
Feather: Plume - *Light*: Léger -
Middle: Moyen - *Light heavy*:
Lourd-léger - *Middle heavy*:
Moyen lourd - *Heavy*: Lourd -
Super heavy: Super lourd.

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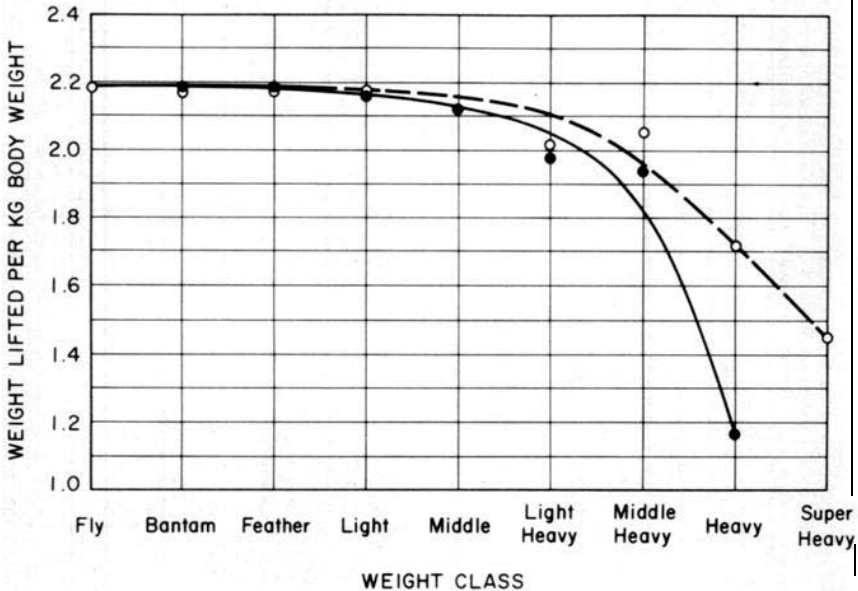


TABLE IWINNING PERFORMANCES IN WEIGHTLIFTING
AT 1968 OLYMPIC GAMES IN MEXICO CITY

Weight Class	Name	Country	Body Weight kgs.	Press kgs.	Snatch kgs.	Jerk kgs.	Total kgs.	Weight lifted per kg body weight
Bantam weight 56.0 kg.	Nasiri, Mohammad	Iran	55.7	112.5	105	150	367.5	2.19
Feather weight 60.0 kg.	Miyake, Yoshino	Japan	59.5	122.5	117.5	152.5	392.5	2.19
Lightweight 67.5 kg.	Baszanowski, Waldemar	Poland	67.4	135	135	167.5	437.5	2.16
Middleweight 75.0 kg.	Kurentsov, Victor	U.S.S.R.	74.6	152.5	135	187.5	475	2.12
Light Heavy- weight 82.5 kg	Selitski, Boris	U.S.S.R.	81.5	150	147.5	187.5	485	1.98
Middle Heavy- weight 90.0 kg	Kangasniemi, Kaarlo	Finland	88.6	172.5	158	187.5	518	
Heavyweight 90.0 kg. & +	Zhabotinski, Leonid	U.S.S.R.	162.8	200	170	202.5	572.5	1.17

TABLE II

1971 WORLD WIGHTLIFTING CHAMPIONSHIP RESULTS: LIMA PERU

WEIGHT CLASS	NAME	COUNTRY	BODY WEIGHT KGS.	PRESS KGS.	SNATCH KGS.	JERK KGS.	TOTAL KGS.	WEIGHT LIFTED PER KG BODY WEIGHT
*Flyweight 51.0 kg.	Z. Smalchz	Poland	51.7	115.0	95.0	130.0	340.0	2.19
Bantam weight 56.0 kg.	G. Chetin	U.S.S.R.	56.6	117.5	107.5	145.0	370.0	2.17
Featherweight 60.0 kg.	Y. Miyake	Japan	59.4	122.5	115.0	150.0	387.5	2.17
Lightweight 67.5 kg.	z. Kaczmaul	Poland	67.5	143.3	127.0	165.0	440.0	2.17
Middleweight 75.0 kg.	V. Kanzgin	U.S.S.R.	74.9	160.0	142.5	175.0	477.5	2.12
Light Heavy- Weight 82.5 kg.	B. Pavlov	U.S.S.R.	81.8	160.0	145.0	190.0	495.0	2.01
Middle Heavy- Weight 90 kg.	D. Rigert	U.S.S.R.	87.8	177.5	162.5	202.5	542.5	2.05
*Heavyweight 110 kg.	Y. Kozin	U.S.S.R.	107.3	200.0	150.0	202.5	552.5	1.71
S. Heavyweight 110+ kg.	V. Alexeyev	U.S.S.R.	145.2	230.0	170.0	235.0	635.0	1.45

*These two class were introduced to the International Weight Lifting scene subsequent to the 1968 Olympic Games at Mexico City,

TABLE III

MEXICO CITY - 1968 - HEAVY WEIGHT - WEIGHT LIFTING

	<u>90 kg and above</u>					
	<u>Weight</u>	<u>Press</u>	<u>Snatch</u>	<u>Jerk</u>	<u>Total</u>	<u>Weight lifted per kg. body weight</u>
1. Zhabotinski, Leonid - U.S.S.R.	162.8	200.0	170.0	202.5	572.5	1.17
2. Reding, Serge - Belgium	124.4	195.0	147.5	212.5	555.0	1.49
3. Dube, Joseph - U.S.A.	143.0	200.0	145.0	210.0	555.0	1.29

All weights in kgs.