Muscular strength and aerobic capacity in men 50—64 years old

By

IRMA ÅSTRAND and RUNE HEDMAN

With 5 Figures in the Text

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Very few data of muscular strength are available in the ages above 50 years. Therefore when a group of males in these ages were examined with regard to aerobic work capacity, isometric strength of the elbow flexors and lifting strength were also measured.

Materials

44 men 50—54 years old, 22 men 55—59 years old and 5 men 60—64 years old were examined. They had a heavy daily work as draymen and distributed daily about 50—80 cases of beer each weighing about 43 kg or 100—125 cases each weighing about 19 kg. The carrying of the cases on the back demands an oxygen uptake of from 1.5—2.5 l/min and is therefore a rather heavy work.

The oxygen uptake capacity was in mean 2.55 ± 0.05 l/min (mean ± error of the mean) for the 50—54 year old group; 2.43 ± 0.07 l/min for the 55—59 year old group and 2.14 ± 0.14 l/min for the 60—64 year old group.

Methods

All measurements of strength were made with a strain gauge.

On two different days, the isometric strength of the two elbow flexors were measured as a torque, on each occasion 3 times with a 5 minutes' interval. The highest value was recorded. The tests were made with the elbows in 90° flexion (see Fig. 1) since preliminary measurements had given the highest value with this flexion. The distance between the elbow and the handgrip was suited so that the contractions could be made with a straight wrist. The error of the method for a single determination, calculated from 45 duplicates (highest recordings from the too different days), was ± 1.3 kp (5.5 per cent).

On both occasions also the lifting strength was measured. The subjects were standing with bended knees and with the hands gripping a handle between the knees (see Fig. 2). The height of the handle above the platform was 45 cm and the lifting was performed with straight arms. The highest value of altogether 6 measure-
Fig. 1. Measurement of isometric strength of the elbow flexors
Fig. 2. Measurement of lifting strength

Fig. 3. Maximal isometric strength of the elbow flexors (right or left) in relation to aerobic work capacity

Results

The isometric strength of the elbow flexors for the strongest arm was in mean $25 \pm 0.5$ kp for the 50—54 year old group ($n = 44$) and the