

aggressive activity and emotional conflicts,³² or because advice not to play, or to stop playing, was ignored.

The links between sporting exercise and sudden death recorded here do not constitute statistical evidence against the possible benefits of exercise training in the prophylaxis and treatment of ischaemic heart-disease. Not everyone dare play every sport,³³ but exercise training may be considered on its own merits^{2,3,34,35} and is held to be a safe procedure even in the presence of coronary-artery disease, provided supervision and defibrillators are available.^{6,35} Nevertheless, the present report and others linking physical activity with sudden cardiac death^{6,7,9-12,35} suggest that the benefits of exercise have to be balanced against a small risk of sudden death. To minimise the risk, Fox² has suggested that measurements during exercise could define an intensity of exertion which would give an acceptably low risk of sudden cardiac death but would improve fitness.

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Before Our Time

LIFE EXPECTATION OF ITALIAN RENAISSANCE ARTISTS

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"The days of our years are three-score years and ten."
—Psalm 90, verse 10.

WE commonly presume that the words of the biblical poet have come true only with the advent of the modern therapeutic armamentary.¹ Yet if this were true, why did the writer of the Psalms choose this particular lifespan?

McKeown et al.² demonstrated that the decline in mortality in England and Wales, France, Hungary, Ireland, and Sweden in the nineteenth century was almost entirely independent of direct medical intervention (and may even have occurred in spite of it) and was almost completely the result of better food and public health measures, such as the introduction of pure water supplies and the installation of adequate sewage systems. Razzell³ suggested that advances in personal hygiene were also probably very important. With the possible exception of smallpox,³ immunisation and drug therapy only began to have a noticeable effect upon mortality this century. Thus a relatively lower mortality-rate might be expected in populations enjoying a high standard of living and good hygiene at earlier times. One such group was the upper and middle classes of Italian towns in the Renaissance, who were enormously rich and could afford good food and lived in relatively superior conditions. There are many biographical data on one small section of this population—i.e., the painters and sculptors.

For the present study I obtained dates of birth and

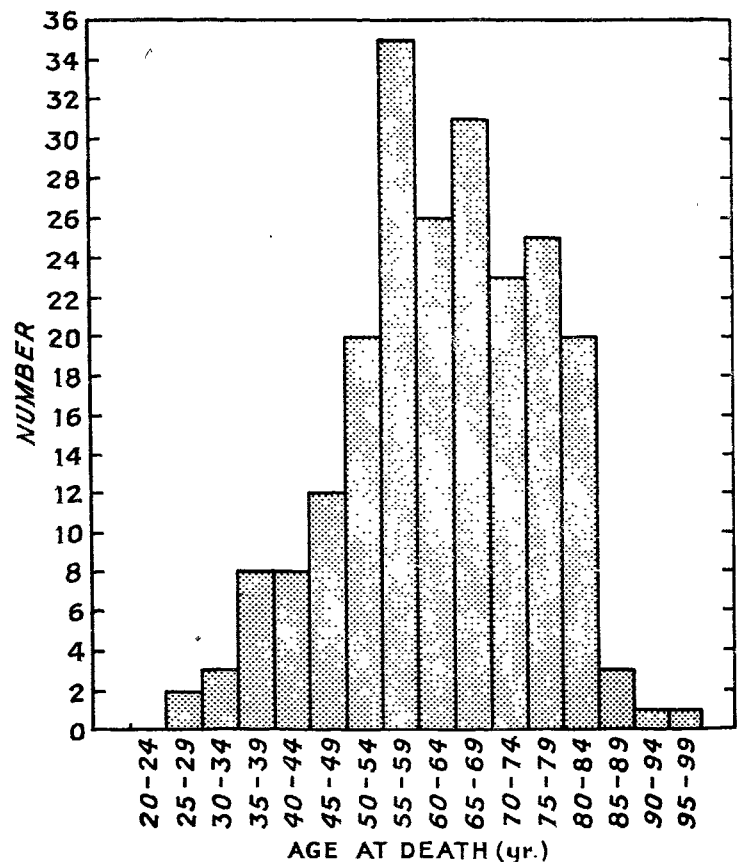


Fig. 1—Distribution of 218 Italian Renaissance artists according to age at death.

MEAN, S.D., AND MEDIAN DURATION OF LIFE FOR ITALIAN RENAISSANCE ARTISTS

	Mean (yr.)	s.d.	Median (yr.)	No.
<i>Dates of birth and death:</i>				
Total group	63.03	13.61	64.13	218
Accurate group	61.72	14.63	65.96	108
Approximate group	64.64	12.33	64.77	110
<i>Date of birth:</i>				
Pre 1450	64.02	13.90	64.64	94
Post 1450	62.84	13.23	63.65	124
<i>Place of work:</i>				
Florentine	60.56	14.14	64.77	59
Venetian	63.73	13.52	63.75	55
Central and Northern Italy	64.05	13.38	65.00	104
<i>No. of surviving works:</i>				
1st quartile	60.89	13.11	62.22	54
2nd quartile	59.08	14.78	58.33	47
3rd quartile	62.49	13.03	61.25	51
4th quartile	66.60	11.69	67.50	63
<i>Importance of artist:</i>				
Group A	62.60	15.52	59.28	42
Group B	62.22	13.30	65.00	68
Group C	63.70	12.89	63.55	114

death from Bernard Berenson's encyclopædic works.^{4,5} Adequate data were available for 218 male artists, and for this group the average age at death was 63.03 years (fig. 1). Only one female artist is mentioned, Sofonisba Anguissola, who lived to the grand age of 97 years. In half the artists either the date of birth or of death was known only approximately, and in such cases the smallest lifespan compatible with the dates was used. The age at death in this group does not differ substantially from those for whom accurate data were available (see accompanying table). The artists described were born between 1250 and 1550: only small differences were found between those born early in the period (pre 1450) and those born later (see table). Similarly, no major differences were found between those artists working in Florence, Venice, and Central and Northern Italy (see table).

The inclusion of an artist in Berenson's lists presupposes that some of his works have survived; thus the longer the life of the artist the more works would have

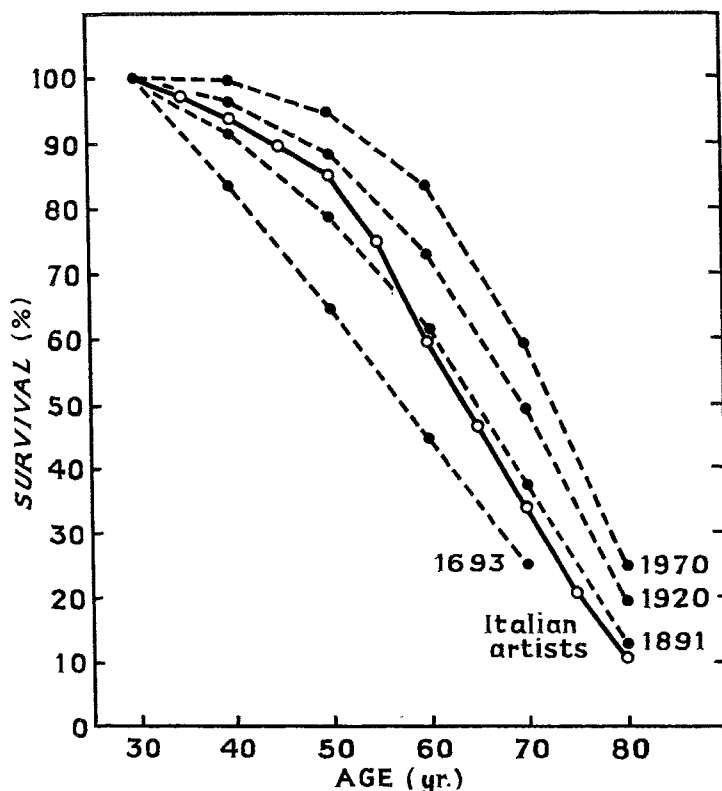


Fig. 2—Comparison of percentage survival of Italian Renaissance artists with that of 30-year-old males in England and Wales in 1693, 1891, 1920, and 1970.

been produced and hence the greater the probability of works surviving to the present day. Thus the mean survival of the artists would be artifactually raised. To investigate this possibility the size of the artist's *œuvre* was assessed by measuring the length of the entry in the lists, and the artists were divided into four groups, the first quartile having least works surviving and the fourth quartile having most. This factor had a slight influence upon the length of survival, but it is too small to explain the longevity of this group. Similarly, the work of lesser artists would be expected to survive less often, especially if the artist was shortlived. The artists were therefore divided into three groups—group A those for whom at least three illustrations occur in Berenson's one-volume work,⁵ group B those for whom only one or two illustrations occur in the one-volume work, and group C those who are only mentioned in the detailed seven-volume lists.⁴ There were no major differences between these groups (see table).

Thus it seems that such biographical data are a suitable source for demographic investigations. A comparison of the survival curves of the artists and men from the age of 30 in England and Wales (derived from life-tables for certain years between 1693 and 1970 [fig. 2]) shows that the survival curve for the artists is similar to that based on the year 1891. It is unlikely that Renaissance medicine made any important contribution to the survival of this group of artists, since mercury derivatives for venereal disease were the only effective drugs in active use, and surgery was limited to cutting for the stone and elementary surgery for trauma, such as bonesetting.⁶ During this period many books were written with the title *De Vita Longa*, generally advocating the importance of good food and moderation in all activities.⁷

Perhaps it is now possible to answer the question why three-score years and ten was chosen by the writer of Psalm 90. If the tribes of Israel were well fed and had good standards of hygiene (as is shown by the *Book of Leviticus*), adult survival would be expected to be comparable with that of the artists of Renaissance Italy or with the average adult in Britain at the turn of the century. Of course, this argument applies only to the survival of adults; infant mortality in England and Wales began to fall only at the beginning of the twentieth century as a result of the same factors which influenced adult mortality in the nineteenth century, and specific therapy (with the exception of the introduction of diphtheria antitoxin) only started to have a significant effect in the fourth and fifth decades. Infant and child mortality in Renaissance Italy and Old-Testament Israel were probably very high.

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