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THE INCIDENCE OF ACHILLES TENDON RUPTURE

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During the years 1950–1973, 229 cases of Achilles tendon rupture were diagnosed in the city of Malmö. More than half of the injuries were caused by sporting activities, the most common being badminton and football (soccer). Ruptures caused by injuries other than sports injuries were found in considerably older subjects. During the period investigated the incidence of Achilles tendon rupture increased in the city more than could be accounted for by changes in the population. This increase could only be partly explained by the increasing interest in sporting activities in the population at risk.

Key words: Achilles tendon; rupture; incidence; sporting injury

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Many investigators have presented age distributions for rupture of the Achilles tendon. So far, however, there is no study in which the age distribution is related to the population at risk so that a true incidence can be calculated. Such calculations are of particular interest since it has been suggested (Barfred 1973) that the incidence of the injury is increasing. This statement is based on the literature. Sets of observations presented in the past (Mayr 1957, Schönbauer 1960, Viernstein 1963, Frings 1969, Freilinger et al. 1970, Philadelphy et al. 1971) have shown this tendency. There is, however, no incidence study which covers a prolonged time period in the same population.

The objective of the present study was to calculate the age specific incidence of Achilles tendon rupture in the city of Malmö and to investigate possible changes in this incidence over recent decades.

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MATERIAL AND METHODS

Included in this study were all cases of rupture of the Achilles tendon who were diagnosed during the years 1950–1973.

Altogether 229 cases were included. All the patients were admitted to the Department of Orthopedic Surgery. Since the Malmö General Hospital serves a well-defined area, the city of Malmö, the Emergency Room and the Orthopedic Department of the hospital receive all cases of ruptured Achilles tendon who get medical attention in this city.

The charts were researched with regard to the causal injury. The injuries were subdivided into sporting injuries and other injuries and the sports injuries were divided according to the sporting activity during which the rupture occurred. All the patients had been operated on.

Standard statistical methods were applied. Probability levels of 5 per cent or better have been referred to as significant.

Table 1. The distribution of Achilles tendon ruptures between the sexes and between sporting injuries and other injuries.

	Men	Women	Total
Sport	121	13	134
Other	79	16	95
Total	200	29	229

Table 2. The distribution of Achilles tendon ruptures between the seven sports activities most frequently causing this injury.

Badminton	38
Soccer	35
Calisthenics	19
Tennis	15
Hand ball	9
Running	6
Table tennis	5
Others	7
Total	134

RESULTS

The distribution of the cases according to sex and type of injury is shown in Table 1. The sporting activities in which the patients were involved at the time of the injury are listed in Table 2. The annual incidence was calculated in relation to the population of the city (Figure 1). When sports injuries and other injuries were compared (Figure 2) it was clearly demonstrated that the two had different age distributions with different modal values, the cases with sports injuries being considerably younger.

The observed numbers of Achilles tendon ruptures in the city were compared with the numbers which could be expected from the change in population in the city. The increase was significantly greater than expected (Figure 3). This could be demonstrated also for the two subsets, sports injuries and other injuries, separately (Figures 4 and 5).

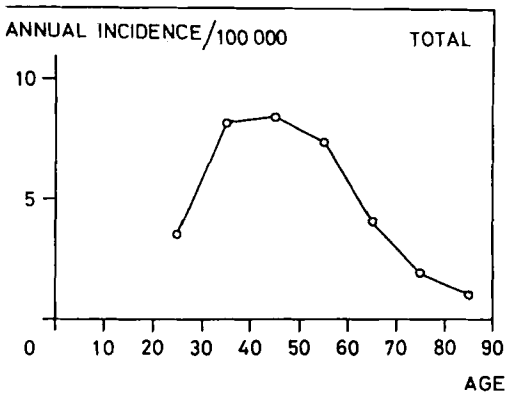

Figure 1. The annual incidence of Achilles tendon rupture in Malmö during the years 1950–1973, total.

There was no significant difference between the two with regard to the increase in incidence.

DISCUSSION

In a survey of the literature regarding Achilles tendon injury Barfred (1973) and Arner & Lindholm (1959) found a peak value in the latter part of the fourth decade of life. Younger as well as older modal ages have been presented. Pillet & Albaret (1972) found a bi-modal distribution curve according to age. The age

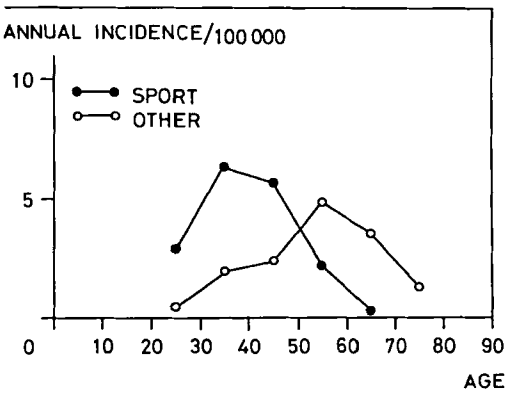

Figure 2. The annual incidence of Achilles tendon rupture in Malmö for the year 1973 shown for sporting injuries and other injuries separately.

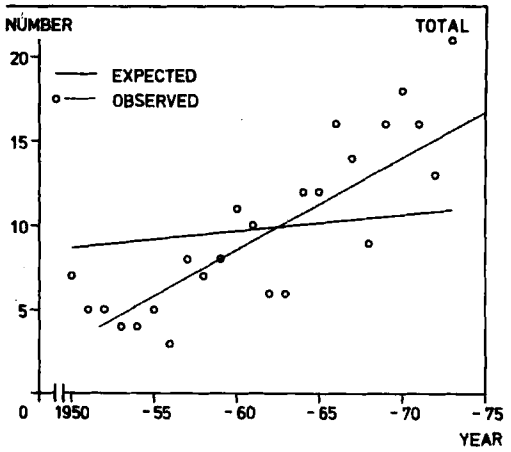

Figure 3. Comparison between the observed change in incidence of Achilles tendon rupture in Malmö during the years 1950–1973 and the expected numbers reflecting the change in population. The observed change is represented as the slope calculated from the least squares equation of the annual numbers observed. The expected numbers are based on the null hypothesis that no change occurs other than could be accounted for by changes in the size of the population at risk and that the cases are otherwise evenly distributed over the years. The slopes are compared by the t-test.

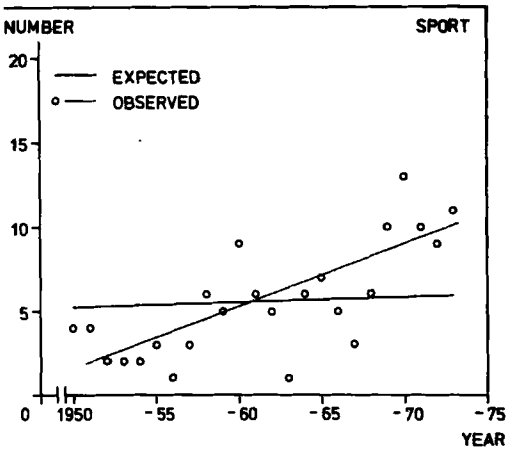

Figure 4. Comparison between the observed change in the incidence of Achilles tendon rupture in Malmö during the years 1950–1973 for sporting injuries only and the expected numbers reflecting the change in population.

distribution in our series places it amongst those in the literature with a greater proportion of cases in the older age groups. The bi-modal pattern becomes obvious when the injuries are subdivided into sporting and other injuries. The younger distribution agrees well with that of Frings (1969) in a study of sporting injuries. It should be taken into account that our data are based on a defined population and express incidence rather than frequency. Obviously there is a preponderance of cases in the upper middle age group and when the injury is caused by sporting accidents it is more common among older athletes. Most athletes active in games and competition are below 30.

It is obvious that the risk of having a

Table 3. Enrolment (County of Scania) in sports associations.

	1950	1962	1974
Badminton	1,117	1,229	2,833
Soccer	32,166	45,520	60,937
Calisthenics	14,017	22,527	44,030
Tennis	3,248	5,317	8,630

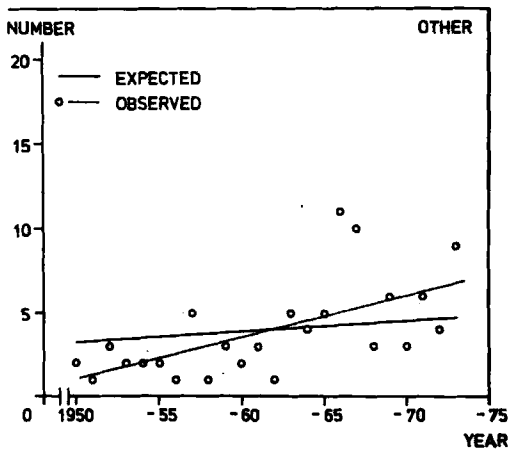

Figure 5. Comparison between the observed change in incidence of Achilles tendon rupture in Malmö during the years 1950–1973 for ruptures not caused by sporting injuries and the expected numbers reflecting the change in population.

ruptured Achilles tendon has increased in the city of Malmö during recent decades. The increased participation in sporting activities may to some extent be reflected in the enrolment of members in the various sporting associations (The Swedish National Sport Association and the Swedish National Football Association) (Table 3). Insofar as the enrolment reflects the participation in sporting activities in the area the increase in the incidence of rupture of the Achilles tendon is in proportion to the increased participation in the sports most commonly causing this injury.

It is much more difficult to explain the increasing incidence of other Achilles tendon ruptures. Changes in age distribution have not occurred during the period under study and it cannot be decided whether the change in incidence is due to a decreasing quality of the tendinous tissue of the residents of Malmö or an increased risk of adequate violence.

Badminton is a popular sport in Malmö; several champions of international accomplishment have been trained in the city. This may be one reason for the relatively large number of ruptures in this sport. However, the people engaged in this sport are out-numbered several times by the tennis players, and, in recent years also by the squash players. Badminton seems to involve a special element of risk for the Achilles tendon of the player.

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