

**IS STAGNARA'S "AGE HEUREUX" AN EFFECT OF SPONTANEOUS PROGRESSION
OR ATTRIBUTABLE TO RE-EDUCATION AT THE
CENTRE DES MASSUES IN LYONS?**

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INTRODUCTION

In 1980, Fustier presented the results of research conducted at the Centre des Massues in Lyons. The author had detected a spontaneous prepubertal remission of progressive idiopathic scolioses in 50% of his sample. According to the patients' records used, these were scolioses which had not been subjected to any form of treatment, apart from a re-education programme which, in the author's view, had not affected their spontaneous progression.

Five years later, at the G.K.T.S. congress held in La Rochelle, Mollon and Rodot presented the results of another study conducted at the Centre des Massues which, instead, demonstrated the efficacy of re-education in the treatment of minor structural scolioses.

This led us to wonder whether the re-education programme followed by Fustier's selected patients had, in fact, influenced the results of his study.

THE RESEARCH CONDUCTED BY FUSTIER

From the archives of the Centre des Massues in Lyons, Fustier took the first 100 consecutive dossiers which fulfilled the following criteria:

- idiopathic scoliosis discovered during the pubertal growth period and, as demonstrated by radiographic evidence, developing prior to any form of treatment, and prior to the completion of bone maturation, over a period of at least three consecutive years.

The resulting sample was composed of 100 scolioses ranging from 10° to 45° (average age of patients, 9 years).

Of these 100 scolioses:

- 42 were seen to have been progressive in the prepubertal period and had been treated when they reached 34° ($\pm 10^\circ$); the average age of the patients when treated was 13 years \pm 18 months.
- at the same age, 38 patients were found to have had stable scolioses with the curves remaining close to 20° ($\pm 6^\circ$);
- the other twenty scolioses presented as extremes of these two modalities of progression.

Of the 42 progressive idiopathic scolioses:

- 21 (50%) presented a spontaneous remission prior to the onset of worsening, a remission which always coincided with the start of the pubertal growth spurt.

These scolioses are shown in Figure 1: the degree of bone maturation is indicated on the x-axes, while the angles of the curves (in degrees) are given on the y-axes. It can be seen that the initial worsening of the scoliosis is followed by a spontaneous remission in excess of 5° (average 8°); this ends as the pubertal growth spurt begins, at which point, all the curves once again start to show a worsening.

Figure 2 examines the relationship between the progression of the curves and Duval-Beaupère's "P" point which corresponds to the first signs of puberty.

In the light of Fustier's findings, Stagnara coined the expression "AGE HEUREUX" (happy age) to refer to this prepubertal period of spontaneous remission of scoliosis.

THE RESEARCH CONDUCTED BY MOLLON AND RODOT

From the same archives at the Centre des Massues in Lyons, Mollon and Rodot gathered 105 dossiers on scolioses fulfilling the following criteria:

- an initial angle of less than 33° ;
- radiographic evidence of the scoliosis spanning a period of at least three years;
- minimum age upon first examination: 7 years.

In addition, the length and intensity of eventual re-education programmes had to be established beyond doubt, as did the diagnosis of structural scoliosis (ruling out, therefore, the possibility of postural defects or dysmorphia).

The average age of the resulting sample was 11 years and 3 months at the first examination and 16 years at the last check-up. The average follow-up period, therefore, was 4 years and 9 months.

On the basis of these data, the dossiers were split into two groups:

- 87 on patients who had undergone re-education;
- 18 on patients who had not undergone re-education;

The progression of the angle of the curve, in the two groups, was found to be the following:

- in the group of patients who had undergone re-education, the average values of the initial and final angles were 18.24° and 20.71° respectively (an average progression of 2.54°);
- in the group of patients who had not undergone re-education, the average values of the initial and final angles were 15.66° and 25.72° respectively (an average progression of 10.06°).

Subsequently, the research was extended to other Italian and French centres. The total number of dossiers collected rose to 210 and comprised:

- 160 on patients who had undergone re-education;
- 50 on patients who had not undergone re-education.

The results obtained confirmed those relating to the first sample.

Duval-Beaupère conducted a statistical analysis of the data and concluded that the results of the analysis supported the effectiveness of re-education: "tout concorde à conclure à l'efficacité, de la kinésithérapie" (the analysis of the data highlights the effectiveness of re-education).

Stagnara, commenting on the research, writes on page 232 of his text entitled "Les déformations du rachis": "Des à présent, je crois qu'on peut dire que cette rééducation est efficace" (I now feel able to affirm the efficacy of re-education).

The aims of this re-education are:

- to develop a global morphological equilibrium;
- to develop the functions of this equilibrium;
- to achieve, in postural education, neuromotor integration of the correct body image;
- to modify the subject's living environment so as to facilitate the prolonged maintenance of correct posture.

A REVIEW OF THE LITERATURE

Following a search of the MEDLINE databank, (conducted using the key words: natural history, juvenile idiopathic scoliosis, scoliosis progression), we found 85 articles examining the natural history of idiopathic scolioses in the pubertal growth period, published between 1966 and 1996.

Nowhere in these studies did we find any report of the kind of spontaneous pre-pubertal remission of idiopathic scoliosis described by Fustier.

DISCUSSION

In Fustier's opinion, re-education alone could not have affected the natural progression of the scolioses, recorded in the archives of the Centre des Massues in Lyon, on which he had based his study. The research conducted by Mollon and Rodot, meanwhile, challenged this presupposition.

Fustier found that 21/42 (50%) of the scolioses found to show worsening in puberty had shown a spontaneous remission in the period preceding the onset of puberty, a period described by Stagnara as the "age heureux".

We have examined the medical literature spanning three decades (1966-1996), but no other author has reported findings supporting those of Fustier.

Duval-Beaupère has studied the relationship between the worsening of the scoliotic curves and the speed of spinal growth. In relation to the onset of puberty (point P), she has identified two progressive periods:

- a relatively slow initial period of worsening;
- a period of rapid worsening coinciding with the onset of puberty.

The reduced progression of the scoliosis in the prepubertal period can be seen to correspond with a period of slow spinal growth.

It is thus logical to conclude that re-education was particularly efficient in this favourable period, and that it must have affected the progression of the scolioses examined by Fustier.

CONCLUSION

For the reasons set forth in this paper, we believe that Fustier's "age heureux" does not represent a spontaneous remission of the scoliosis, but is, rather, an expression of the particularly beneficial effects of re-education in prepubertal subjects.

REFERENCES

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Figure 1.

Fustier's diagram. Pre-pubertal remission: 21 scolioses; 26 curves.
Spontaneously evolving curves, in relation to age.

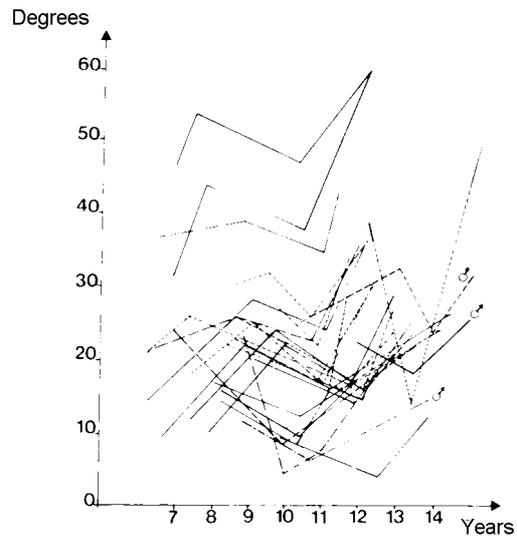


Figure 2.

Fustier's diagram. Pre-pubertal remission: 21 scolioses; 26 curves.
The relationship between spontaneously evolving and P points.

