RELATION BETWEEN THE CARACTERISTICS OF A. I. S. AND VITAL CAPACITY IN JOUNG AND ADULTS

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The target is to reveal if

there is any relation between scoliosis characteristics,

such as Scoliosis Cobb angle, Surface Rotation, Hypokyphosis and Vital Capacity

in young teenagers as well as in adults with Adolescent Idiopathic Scoliosis.

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MATERIALS AND METHODS

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130 Patients

115 young teenagers with A.I.S. — 107 ♀ and 8 ♂

15 adults with not operated A.I.S. — 12 ♀ and 3 ♂

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Age

Teenagers

7 y - 18 y (average **14,2** y)

Adults

19 y - 60 y (average **30** y)

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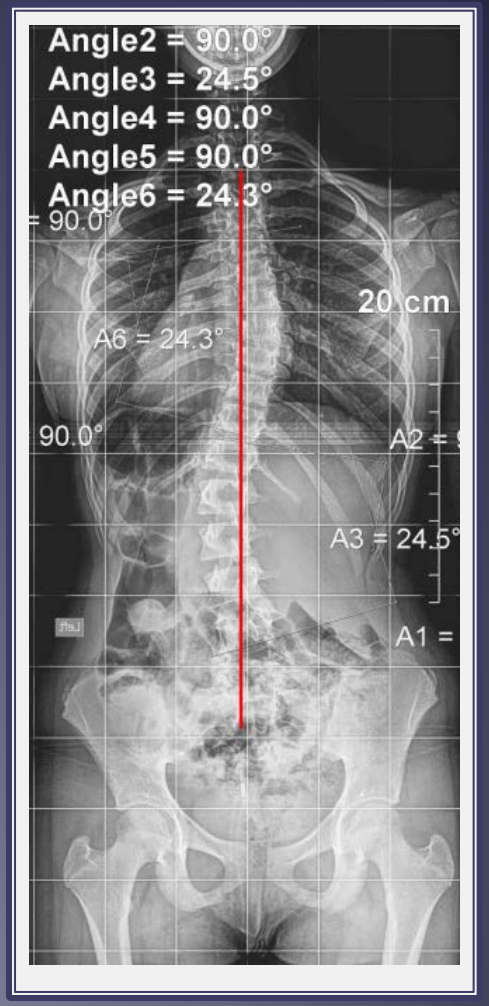
Measurements

For the Cobb angle we have used Digital X-rays in which we have measured with absolute accuracy the angle.



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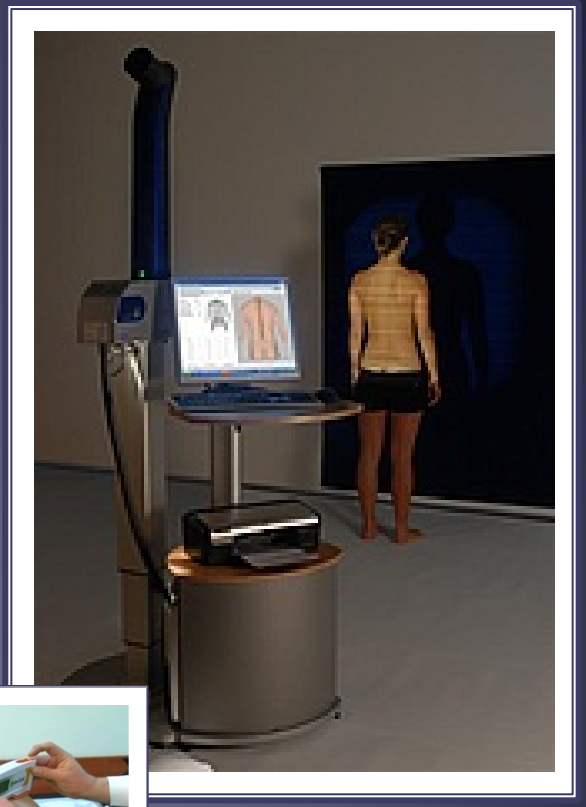
Measurements

For measure the surface rotation we have used the DIERS Formetric 4D in combination with SpineScan scoliometer



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Measurements

For spirometry we have used the Chest Graph HI 101 Spirometer. All patients wear no brace for 2 hours before the test and they didn’t take any drugs and especially bronchodilators

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RESULTS

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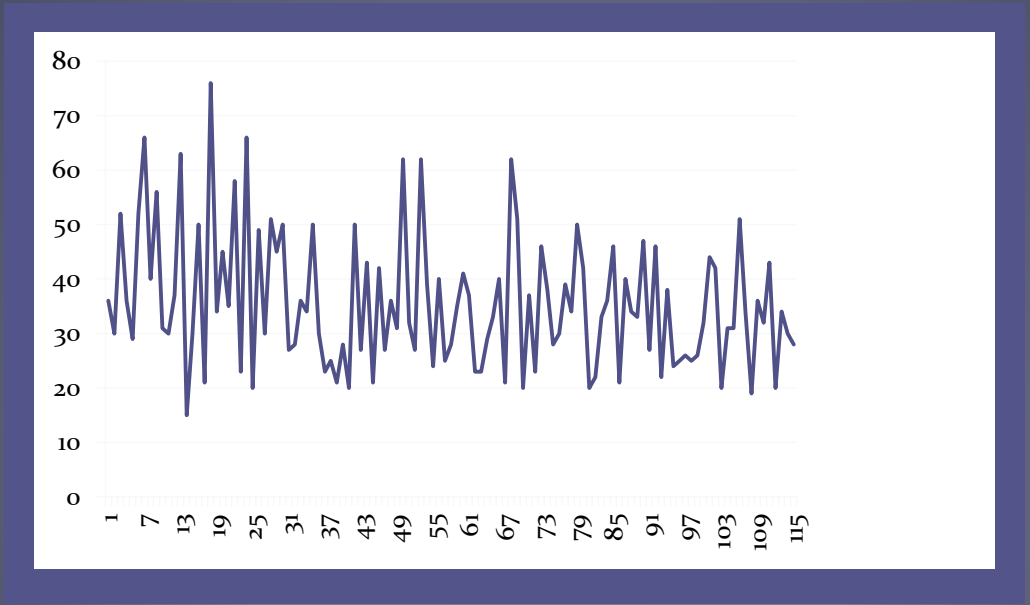
Scoliosis Cobb angle

Teenagers **19° - 76°** average 35,6°



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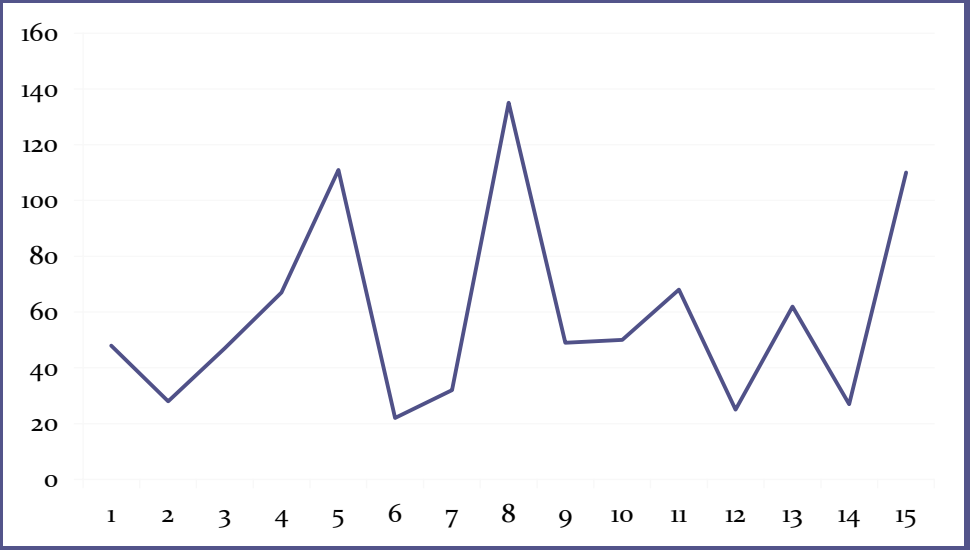
Scoliosis Cobb angle

Adults **22° - 135°** average **58.7°**



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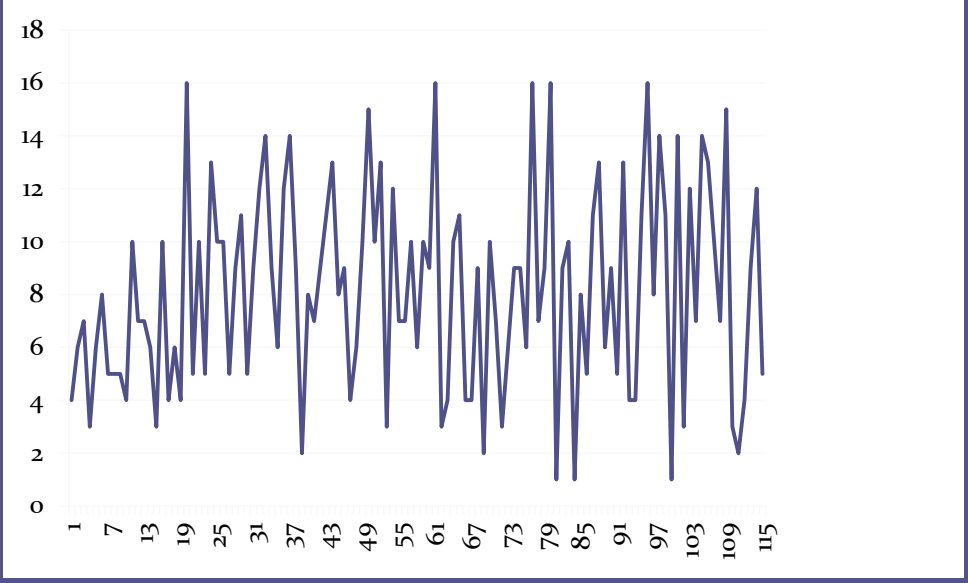
Surface Rotation

Teenagers **1° - 16°** average 8.1°



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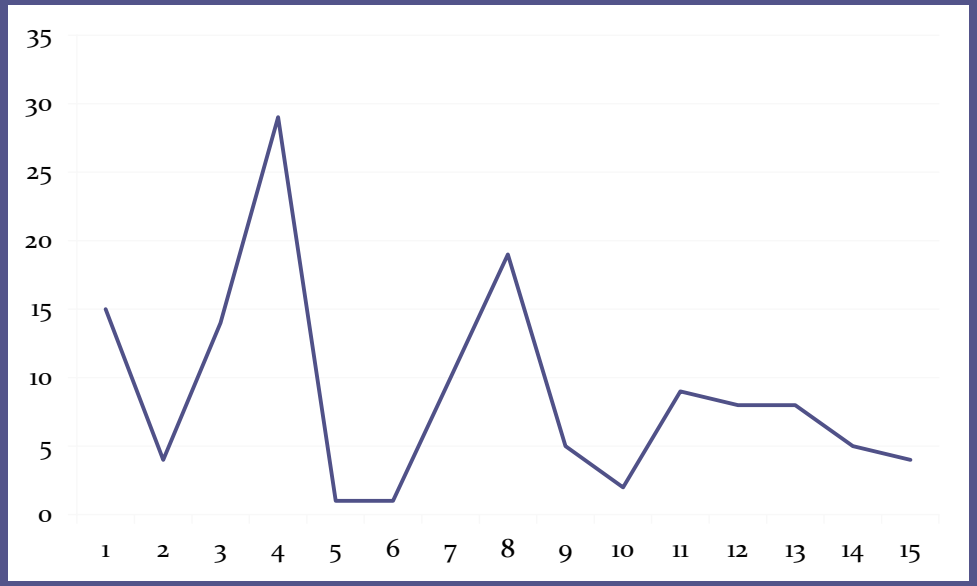
Surface Rotation

Adults **1° - 29°** average **8.9°**



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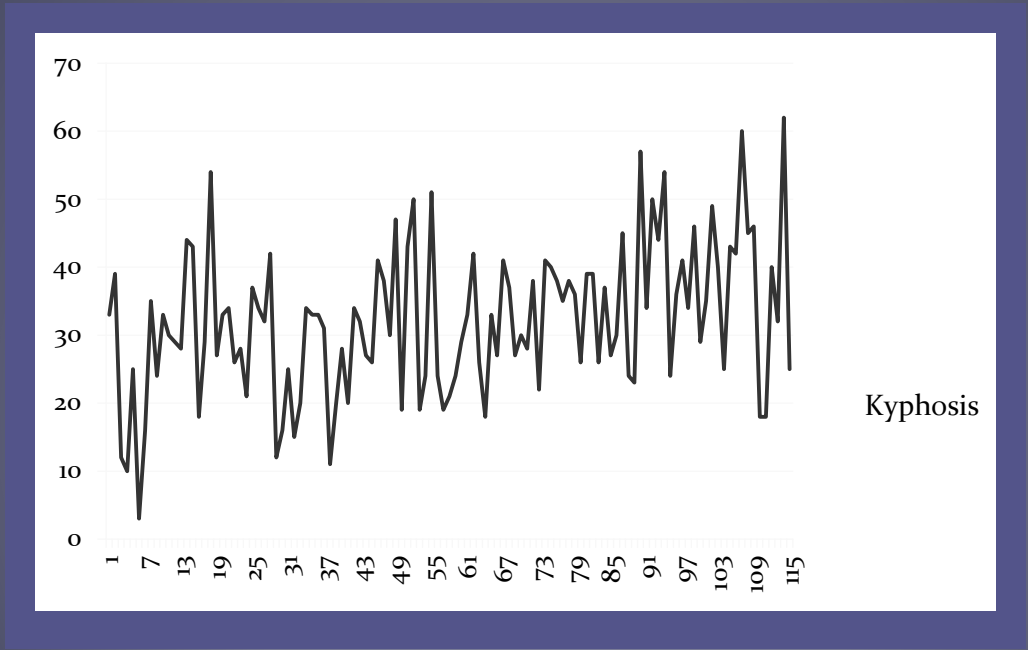
Kyphosis Cobb angle

Teenagers **3° - 62°** average 32.8 °



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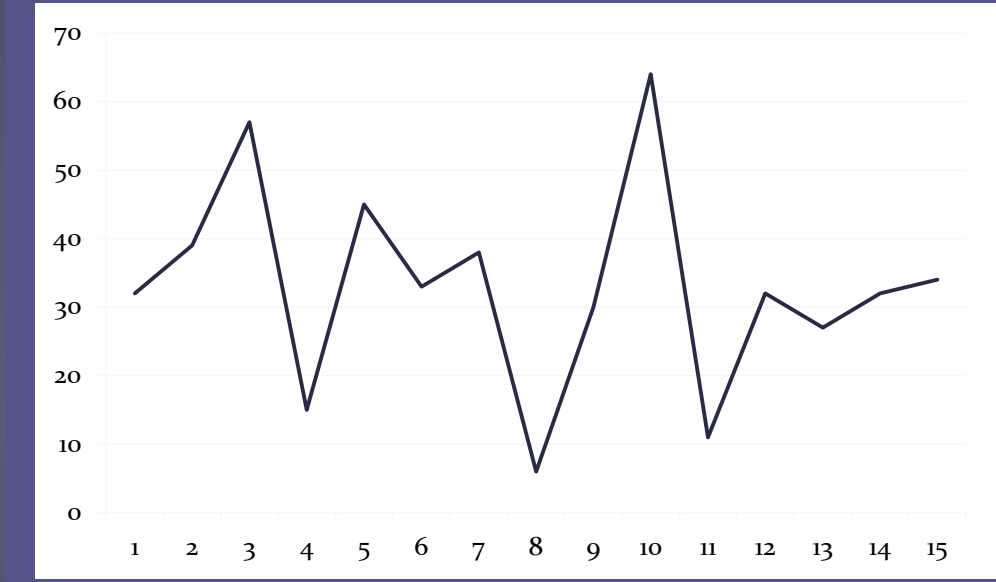
Kyphosis Cobb angle

Adults **6° - 64°** average 33°



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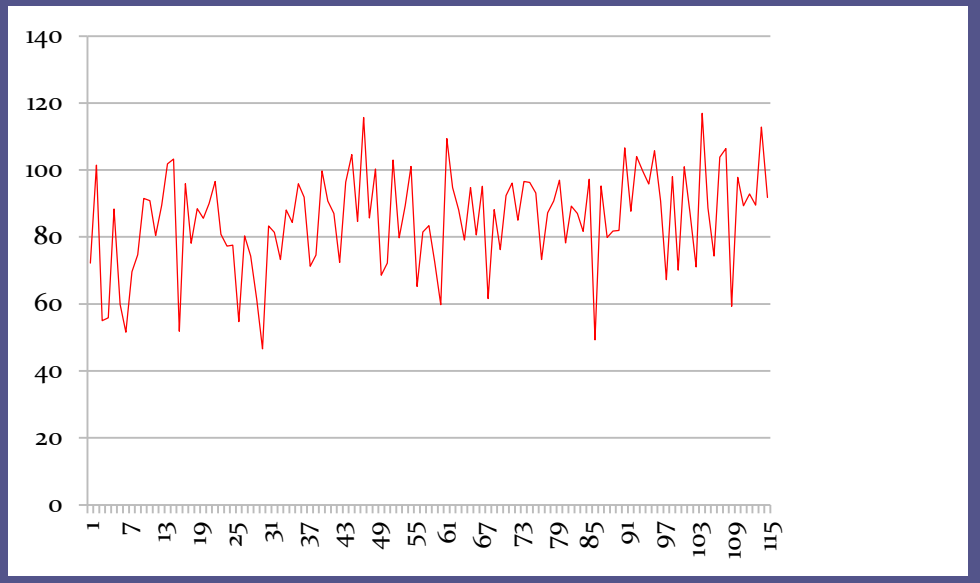
Vital Capacity

Teenagers **46.6** % - **116.9** % average 85.1 %



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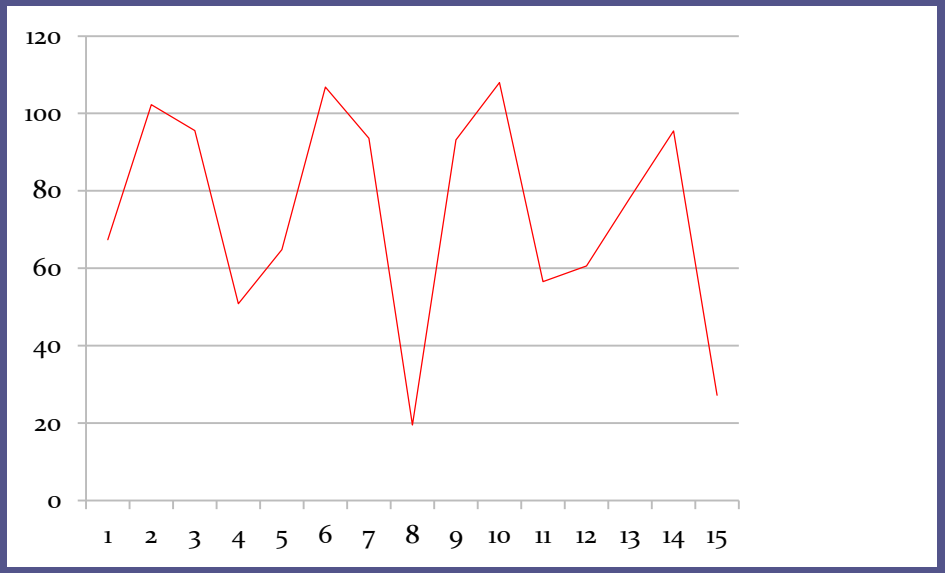
Vital Capacity

Adults

19.5 % - **106.8** % average 74.68 %



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Forced Vital Capacity (FVC)

Teenagers	**44.2** %	- **115.7** %	average	78.9 %
Adults	**19** %	- **105.4** %	average	71.3 %

Forced expiratory volume in 1st second (FVC1)

Teenagers	**44.5** %	- **121.7** %	average	81.1 %
Adults	**19.8** %	- **108.3** %	average	74.6 %

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DISCUSSION

There was no significant correlation between Cobb angle, surface rotation and Vital Capacity in Teenagers as well as in Adults

except for angles that exceeded **50°** Cobb angle with surface rotation >14°
which seemed that influence the Vital Capacity but only in young non athletic patients and ever with kyphotic angle less than 24°

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In adults with Cobb angles higher than 100° with surface rotation >22°, the Vital Capacity was measured even at 19,5%

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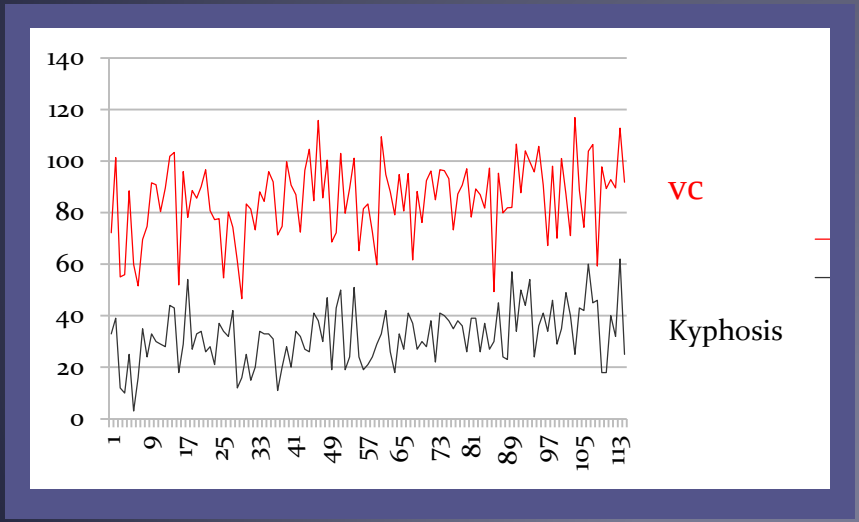
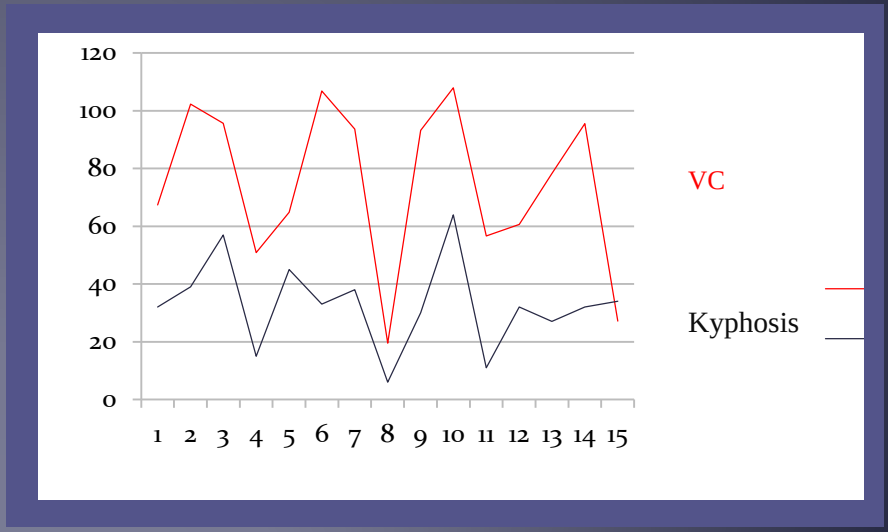
The only scoliosis characteristic that influenced the Vital Capacity was the Hypokyphosis, in which more smaller was the angle such less become the Vital Capacity



Teenagers



Adults

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CONCLUSION

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There is no significant correlation between Cobb angle, Surface Rotation and Vital Capacity (as well as FVC, FVC1) but seems that is influenced by Hypokyphosis

Also seems that sports, singing and special respiratory exercises like the Schroth method, increase the Vital Capacity.


Thank you