

# Clinical and radiographic guidelines to predict pubertal growth spurt

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## Abstract

**Objective:** The aim of this paper is to emphasize the organization of the information available in exams and along the orthodontics treatment of growing individuals, which are used as guidance to predict the pubertal growth spurt. **Conclusion:** Such information provide opportunities to increment the diagnosis and prognosis of these cases and in making planning decisions, treatment evolution and the retention phase, mainly for those patients presenting malocclusions associated to skeletal disharmonies.

**Keywords:** Growth. Prediction. Diagnosis. Prognosis. Malocclusion.

## INTRODUCTION

The use of clinical and radiographic guidelines to predict a patient's skeletal maturation is a routine practice for healthcare workers that adopt an integrated approach to examinations. Using these findings, the pubertal or adolescent growth spurt may be assessed to define whether it is imminent, present or complete.<sup>4,28</sup>

This type of knowledge is useful when patients are referred to orthodontic treatment, particularly because certain stages of pubertal growth spurt may benefit the treatment of some types of malocclusion associated with skeletal disorders.<sup>17</sup>

However, the detection of pubertal growth spurt in each individual is complicated because it occurs at different chronological ages.<sup>18</sup> Its prediction at least one year in advance may be essential if the purpose is to take advantage of it during orthodontic treatment.<sup>17,20,24</sup>

The direct clinical application of this prediction,

when made before orthodontic treatment, complements orthodontic diagnosis, planning and prognosis,<sup>2,23</sup> particularly because growth increments are maximized during this phase.<sup>2</sup> Therefore, in specific cases, less tooth movement may be required, and growth may be an ally; under other clinical conditions, tooth movement will have a predominant role in treatment results,<sup>20</sup> and growth should be controlled or even redirected, depending on whether its pattern is favorable or unfavorable.<sup>24</sup>

All individuals undergo a pubertal growth spurt, but there are differences in onset, duration, velocity and amount of growth.<sup>10,18,29</sup> This life phase is characterized by growth acceleration and achievement of velocity peak, which then slows down until adulthood is reached.<sup>29</sup>

This paper describes methods to predict the adolescent growth spurt focusing on the clinical applications of this knowledge and the variability of the characteristics described.

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