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### **Adherence to physiotherapeutic scoliosis specific exercises during adolescence: Voices from patients and their families. A qualitative content analysis**

Ferrario I.<sup>1</sup>, Vanossi M.<sup>1</sup>, Negrini A.<sup>1</sup>, Poggio M.<sup>1</sup>, Premoli V.<sup>1</sup>, Leonelli B.<sup>1</sup>, Donzelli S.<sup>1</sup>, Negrini S.<sup>2,3</sup>

<sup>1</sup>ISICO (Italian Scientific Spine Institute), Milan; <sup>2</sup>Dept. of Biomedical, Surgical and Dental Sciences, University "La Statale", Milan; <sup>3</sup>IRCCS Istituto Ortopedico Galeazzi, Milan, Italy

**Introduction:** Physiotherapeutic Scoliosis Specific Exercises (PSSE) have shown promising results in the conservative treatment of adolescents with spinal deformities. In fact, PSSEs are effective in avoiding brace prescription or spinal curvatures exceeding a Cobb angle of 29° at the end of growth. Naturally, PSSE efficacy largely relies on patients' adherence to the prescribed program. Adherence in physiotherapy is a multi-dimensional concept that includes appointment attendance, frequency of undertaking prescribed exercises, and correct performance of exercises. Adherence is the result of the interactions of factors related to the treatment, the patients, their families, and the healthcare providers. Therefore, identifying factors that sustain or prevent adherence to PSSE is crucial to maximising the outcome that adolescents can get from their treatment.

**Aim:** The purpose of this study was to explore the experience with PSSE of adolescents with spinal deformities and their parents, and their insight on how to assess the quality and frequency of the PSSE performed at home. This study constitutes the exploratory phase of the development of a new Rasch-consistent questionnaire to assess adherence to PSSE in adolescents with spinal deformities.

**Methods:** Data were collected anonymously through an online survey with open-ended questions investigating personal thoughts and experiences about adherence to a home-based PSSE program. Specifically, participants were asked what could hinder and what could facilitate PSSE compliance. The survey was sent to patients and their parents attending an outpatient tertiary referral clinic that specialized in the conservative treatment of spinal deformities. The qualitative formal content analysis was conducted on the collected data via MAXQDA 22.2.1 software.

**Results:** We sent 2699 emails and received the answers from 110 adolescents (mean age 14.3 ± 4.5 years, 91 female) and 93 parents (mean age 48.7 ± 4.5 years, 75 female). We analysed approximately 7500 words of written text. Forty-one primary codes were detected and ascribed to 5 main categories: "Understanding therapy goals", "Loneliness", "Exercises characteristics", "Time and space organization", and "Helpful tools". In each category, codes were divided into two sub-categories: facilitating and hindering factors. Among the facilitating factors, the most commonly reported were the use of a specifically-developed app, listening to preferred music while performing the exercises, free scheduling of the home sessions, and exercise characteristics (i.e., easy exercises, fun exercises, exercises that do not require specific tools). Among the hindering factors, the most commonly reported were the lack of time, lack of motivation, lack of feedback from the physiotherapist, and exercises characteristics (i.e., boring exercises).

**Conclusions:** The findings of this qualitative study show that patients and their families are aware of what can help or interfere with adherence to a home-based PSSE program. The possibility of programming the PSSE session according to the patient's schedule is a huge advantage, but it requires careful planning. Further, the lack of company or supervision may discourage patients. Listening to their insight on hindering and facilitating factors can help physiotherapists to develop exercise programs tailored to the specific needs of patients and provide solutions and strategies to common difficulties.