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Topic **Physiotherapy for Kyphosis**Title **Efficacy of specific SEAS exercises for hyperkyphosis: end-growth results of a controlled prospective study.**Authors **Romano M, Negrini S, Parzini S, Atanasio S, Fusco C, Zaina F, Negrini S.**

**Abstract**

**Objective:** The aim of this prospective controlled study is to present end-growth results of different exercise for Hyperkyphosis.

**Background:** In scientific literature there are not available papers on exercise in the treatment of adolescent hyperkyphosis. It's possible to find only papers on exercise to avoid progression of kiphosis and risk of fall in elderly age. Nevertheless, this is a diffuse approach to this pathology especially in Europe and Japan.

**Methods:** Study design Controlled prospective study Population 40 adolescent outpatient (19 male, 21 female) with hyperkyphosis were divided into 2 exercise groups and treated with exercise until end-growth. SEAS Groups (18 subjects) treated with specific SEAS exercises at our centres. CONTROL Group (22 subjects) treated with "classical" exercise at different facilities. Outcome criteria - Difference in the number of braces prescribed. - Mean plumbline distances at C7 and L3. - Number of patients clinically changed. According to a previous study we consider clinically significant a change of at least 10 mm. Statistics Anova, t-test, Chi square

**Results:** Three patients in the control group had a brace prescription versus none in the SEAS. No significant statistical differences between pre treatment values in two groups. No significant statistical differences between post treatment values in two groups. Statistically significant Improvement of plumbline distance measures after treatment in both groups. The number of improved patients was significantly higher in the SEAS Group ( $p < 0.05$ ) while the number of worsened patients significantly higher in Controls.

**Conclusion:** Physical exercises to improve hyperkyphosis in adolescents are effective. The quality of exercises seems to be relevant to reduce brace prescription and to achieve a better result.

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	C7				L3			
	Pre treatment		Post treatment		Pre treatment		Post treatment	
	SEAS	61 (12)		39 (11)	47 (11)		41 (13)	
CONT	54 (12)		41 (12)	46 (14)		42 (12)		

  

	Modification of C7			Number of patient	Modification of L12			Number of patient
	% IMPROVED	% STABLE	% WORSENERD		% IMPROVED	% STABLE	% WORSENERD	
	SEAS	77,78	22,22		0	18	33,33	
CONTROL	36,36	50	13,64	22	27,27	36,36	36,36	22
	22	15	3		12	18	10	