

The Endocrine Response to a Gonadotropin Releasing Hormone (GnRH) Test: Establishing a Reference Interval in Healthy Girls below 6 Years of Age

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Introduction

Premature thelarche and precocious puberty are frequently diagnosed in girls below 6 years of age. A GnRH test is often included in the diagnostic work up. Interpretation of the GnRH test in girls below 6 years of age is, however, difficult, because the reference interval for luteinizing hormone (LH) and follicle stimulating hormone (FSH) has not been established in this age group.

Aim

The aim of this project was to establish the normal LH and FSH response to a GnRH test in girls below 6 years of age.

Materials & Methods

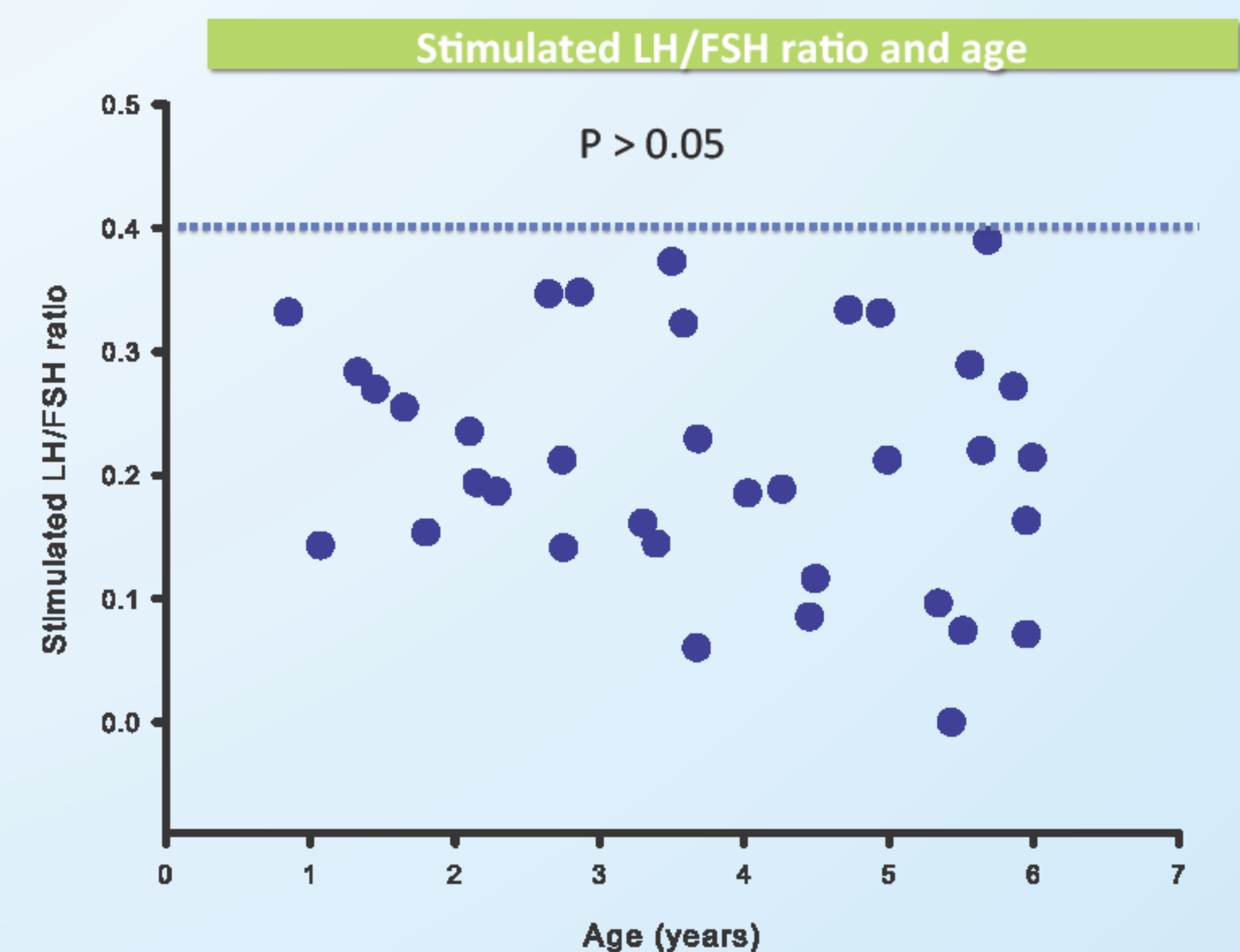
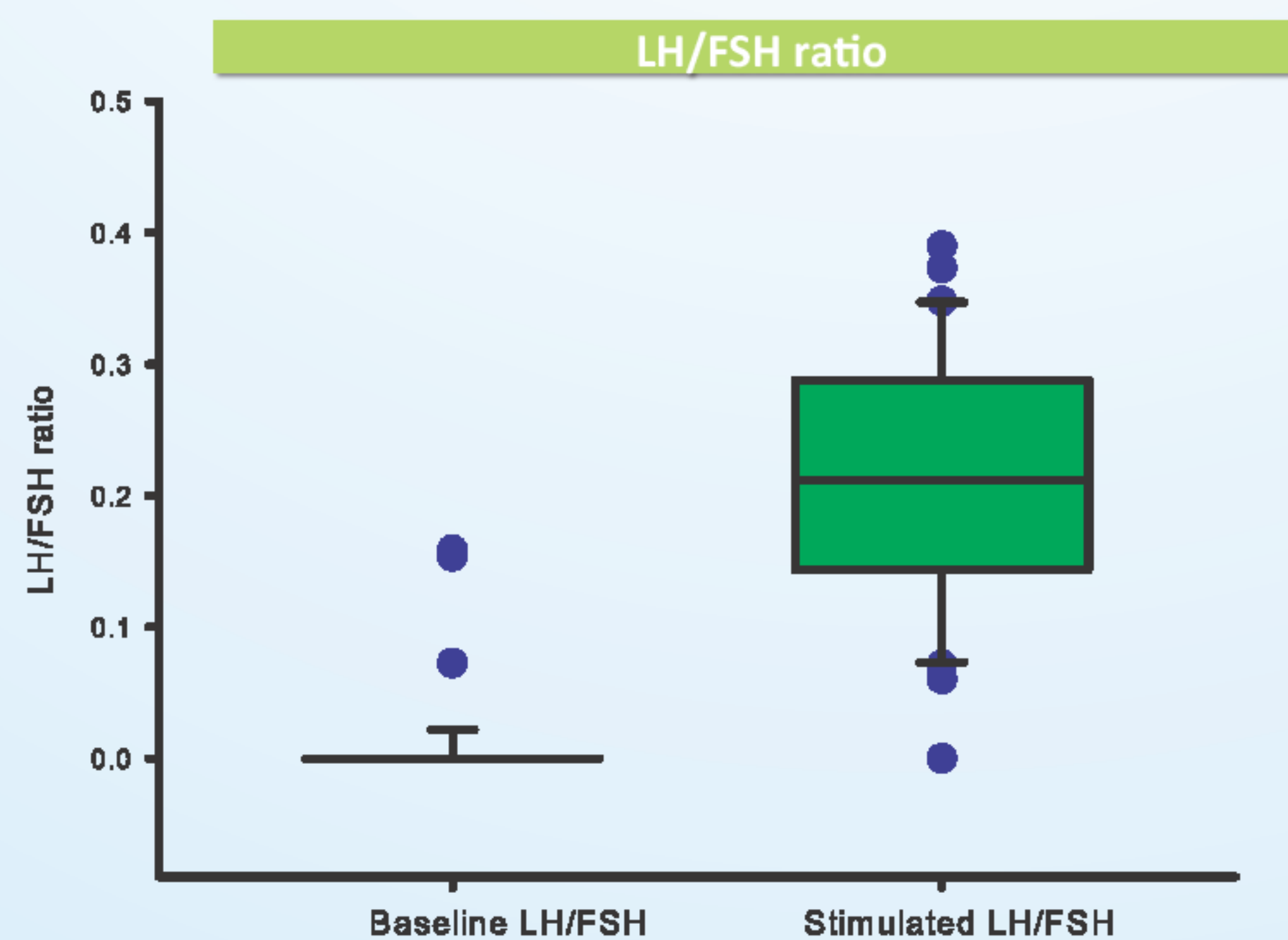
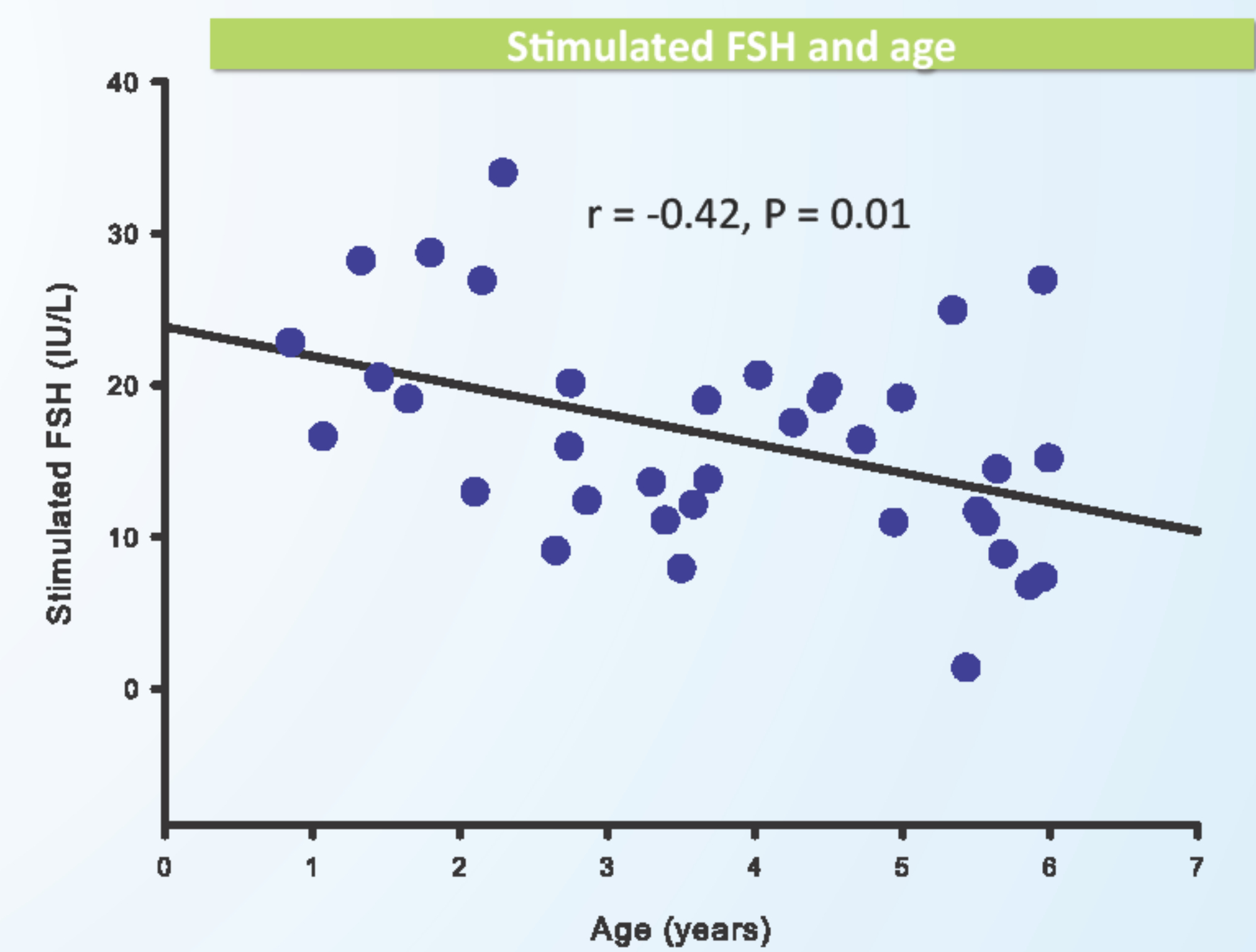
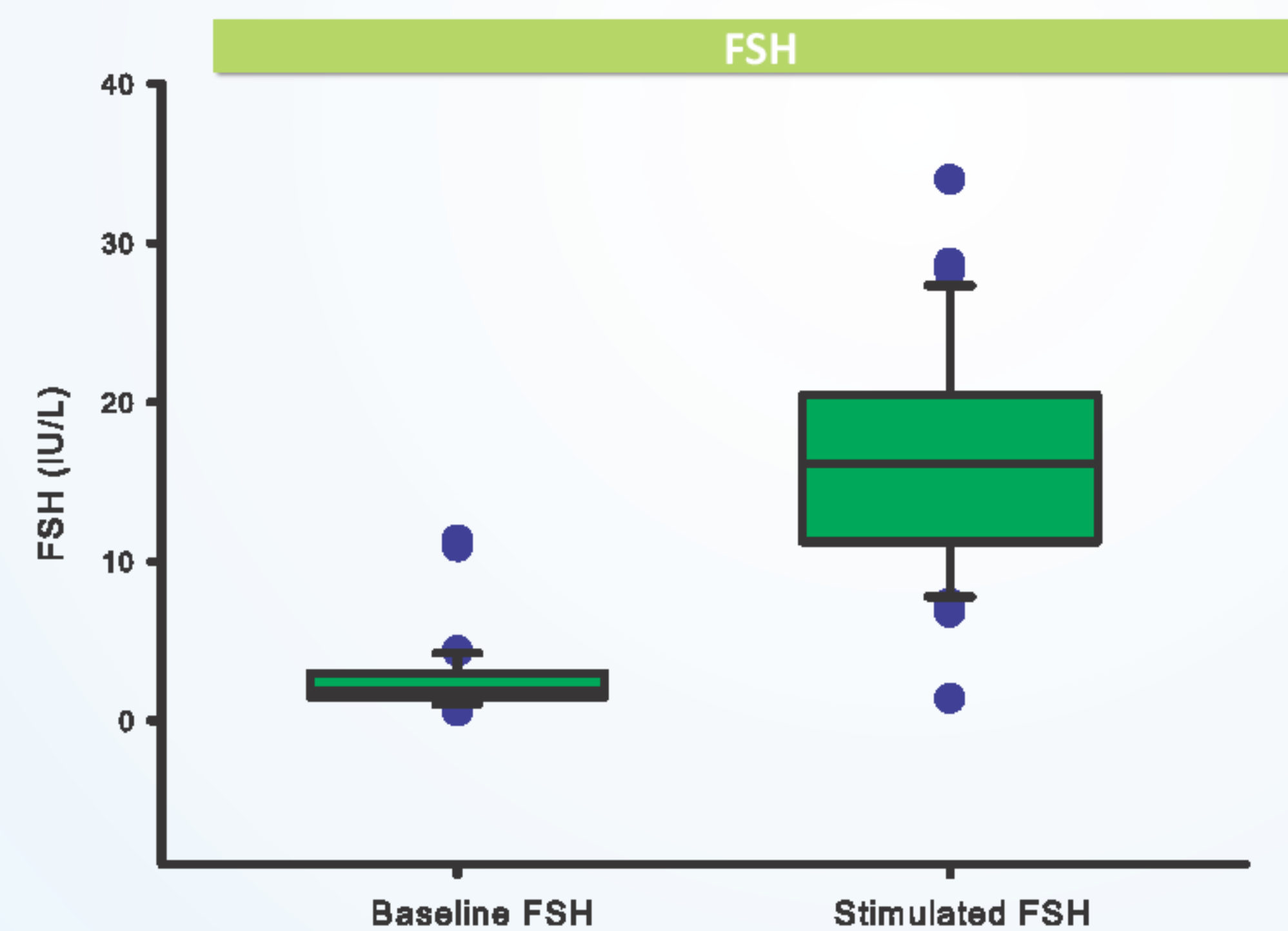
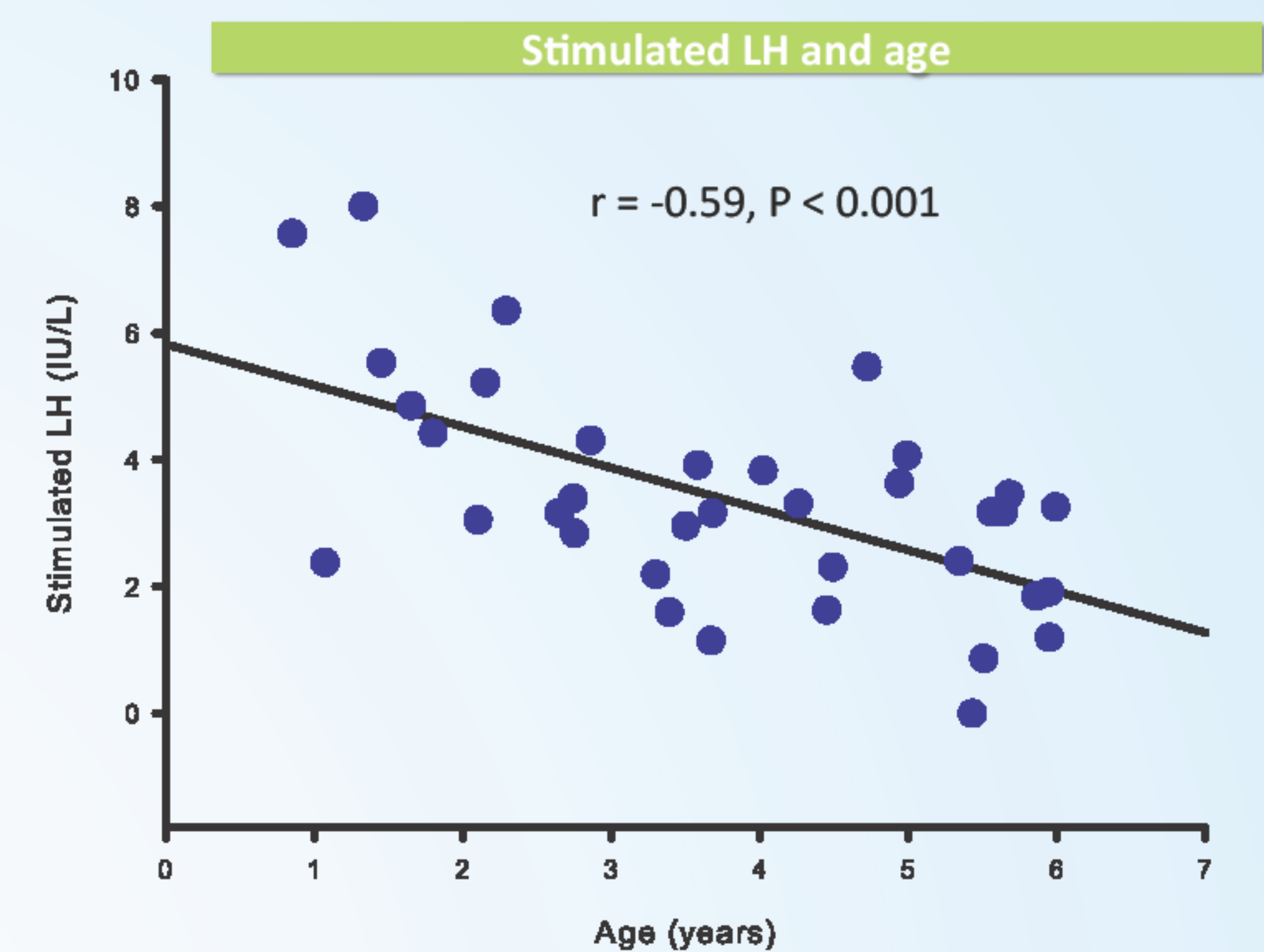
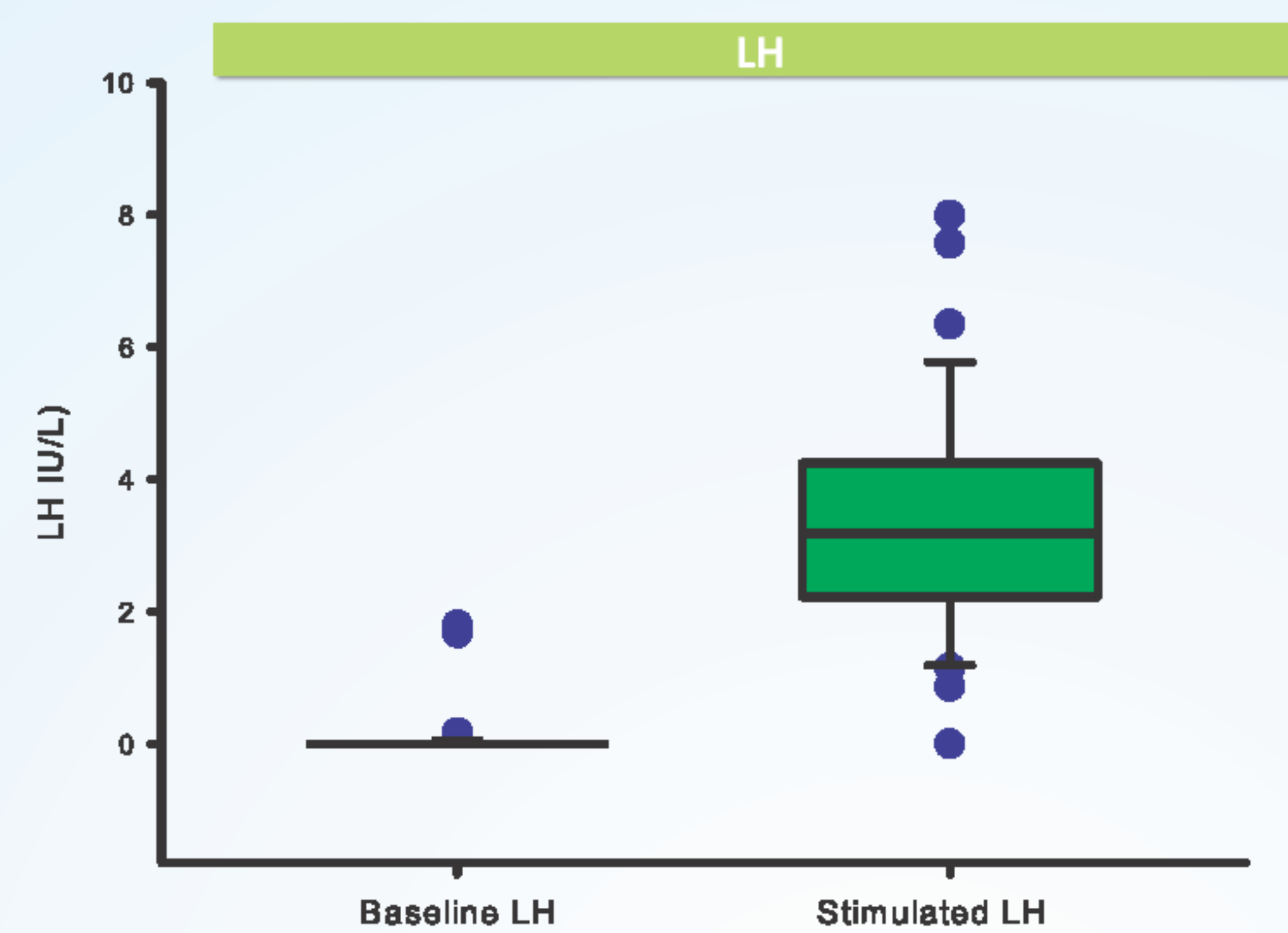
Thirty-six healthy girls volunteered. The following variables were measured for each participant: Anthropometrics (height and weight), Tanner stage, bone age according to Grylich & Pyle, and baseline serum levels of estradiol, sex hormone binding globulin (SHBG), LH, FSH, and thyroid stimulating hormone (TSH). Estradiol, SHBG, LH, FSH, and TSH were measured by a electrochemiluminescence immune-assay (Roche Cobas E601, module immunology analyzer). Data are presented as median and range (min-max).

Procedures

Each girl participated in a GnRH test: Blood samples for serum values of LH and FSH were drawn before and 30 minutes after an i.v. injection of gonadorelin 0.1 mg/m² (max 0.1 mg).

Results

N	Age	Bone age	Estradiol	SHBG	Baseline LH	Stimulated LH	Baseline FSH	Stimulated FSH	Baseline LH/FSH	Stimulated LH/FSH	TSH
	Years	Years	nmol/L	nmol/L	IU/L	IU/L	IU/L	IU/L			mIU/L
36	3.7	3.7	0	149	0.0	3.2	1.9	16.2	0	0.21	3.2
	(0.85-5.95)	(-6.48)	(0-0)	(82-219)	(0.0-1.8)	(0.0-8.0)	(0.6-11.4)	(1.4-34.0)	(0.00-0.16)	(0.00-0.39)	(1.4-9.3)



Conclusions

1. We provide a reference interval for healthy girls below 6 years of age for the LH and FSH responses and the LH/FSH-ratio for the GnRH test.
2. Stimulated LH and FSH correlated inversely with age in healthy girls.
3. The stimulated LH/FSH ratio did not exceed 0.4.

Acknowledgements

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