

Evaluation of body composition and resting metabolic rate in adolescents with Klinefelter syndrome

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BACKGROUND

Klinefelter syndrome (KS) is a frequent anomaly of sex chromosomes due to the presence of an extra X chromosome in the karyotype 46,XY. This disease is characterized by hypergonadotropic hypogonadism and a high risk of developing disorders of carbohydrate and fat metabolism, despite the absence of a pronounced androgen deficiency in adolescents with KS. There are reports of changes in body composition in adolescents with KS even before the symptoms of hypogonadism appear.

PATIENTS AND METHODS

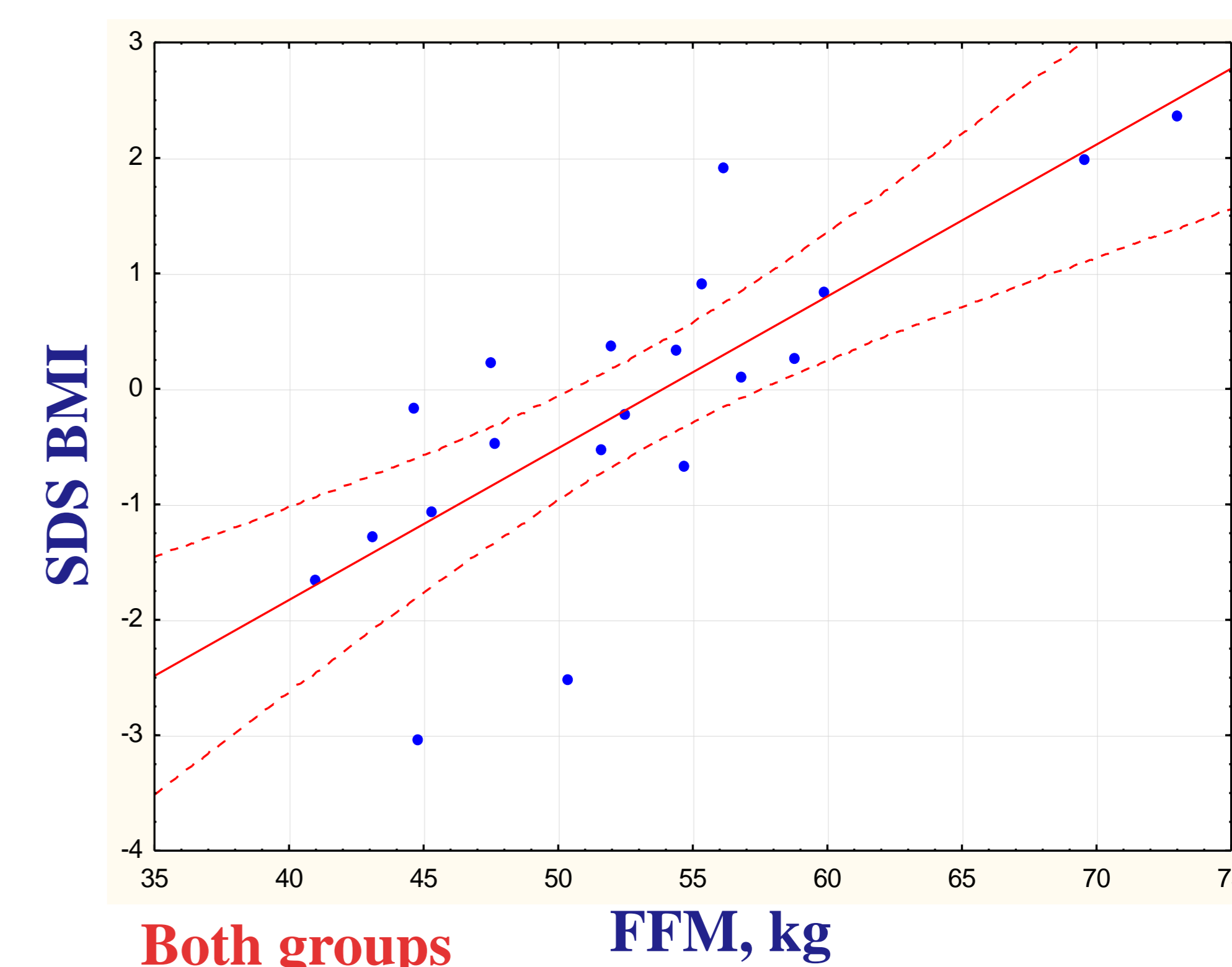
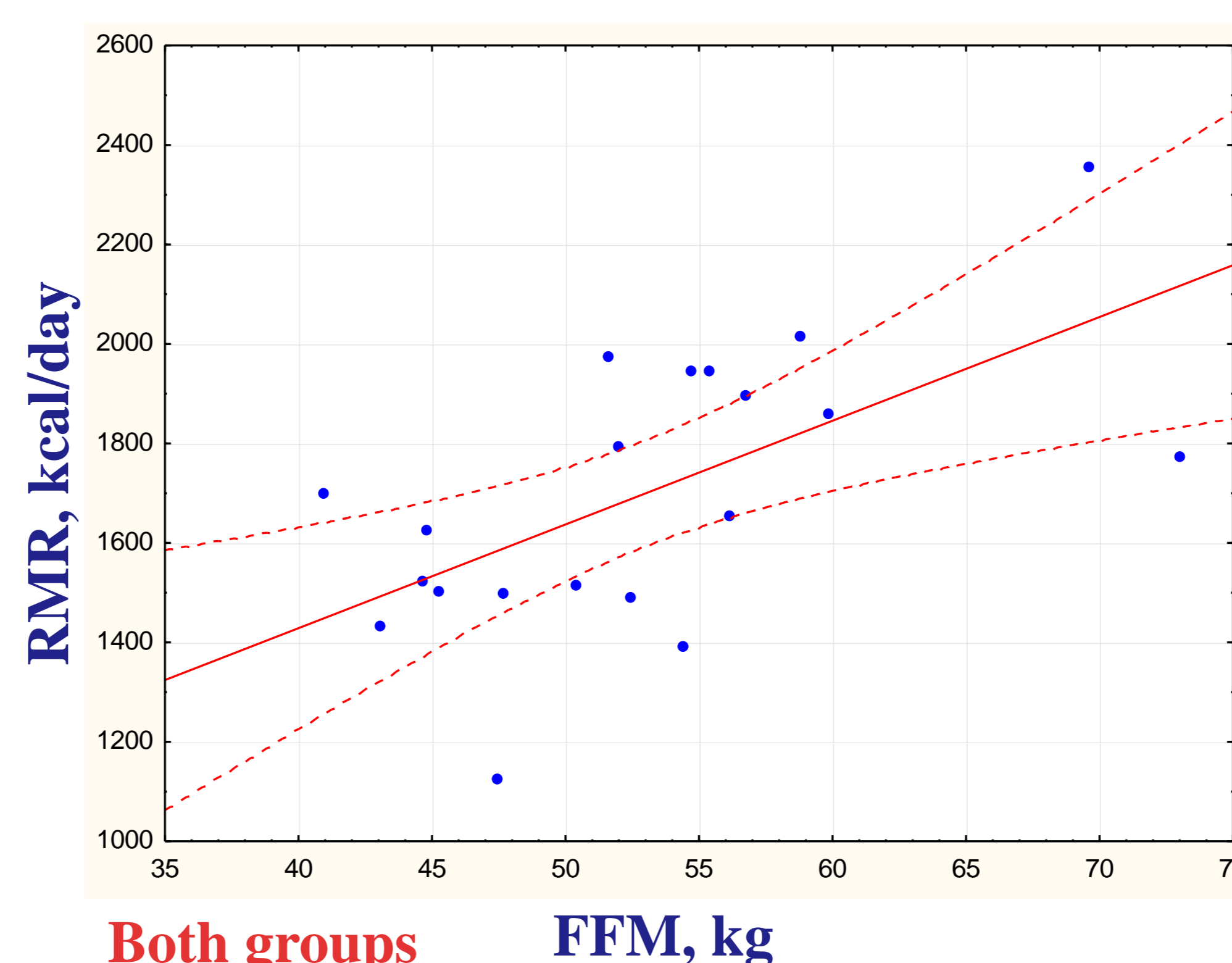
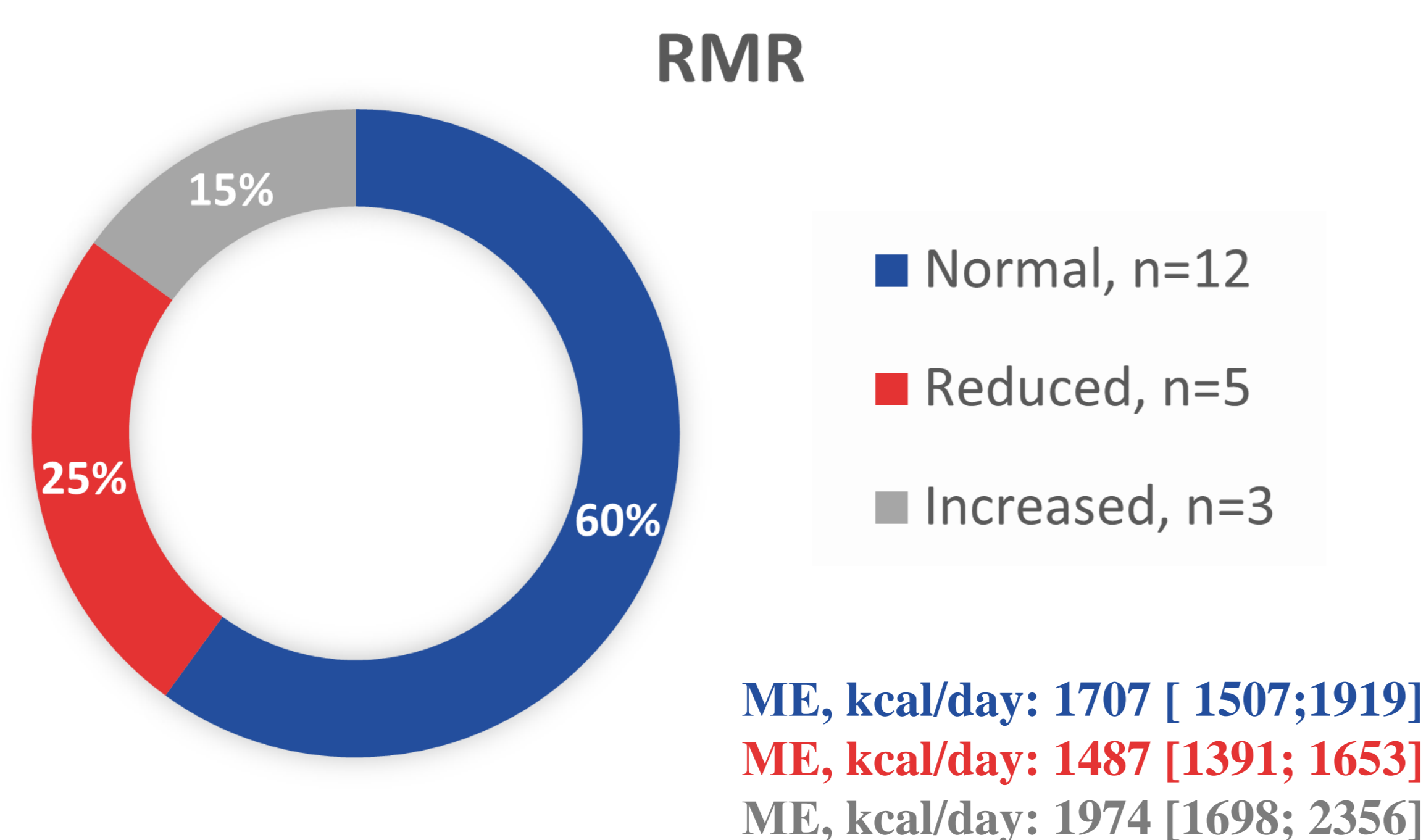
We examined 20 adolescents with KS, comparable in age and the puberty stage according to Tanner classification. Patients were divided into 2 groups depending on signs of hypogonadism (reduced level of testosterone, eunuchoid body shape). We investigated the hormonal profile, evaluated the body composition using the body composition analyzer Tanita BC-418MA and determined the RMR using the indirect calorimetry method (QUARK RMR) in all children. We used the RMR indicator adjusted for the free fat mass (FFM)-RMR/FFM.

OBJECTIVE

To analyse the body composition and resting metabolic rate (RMR) in adolescents with KS.

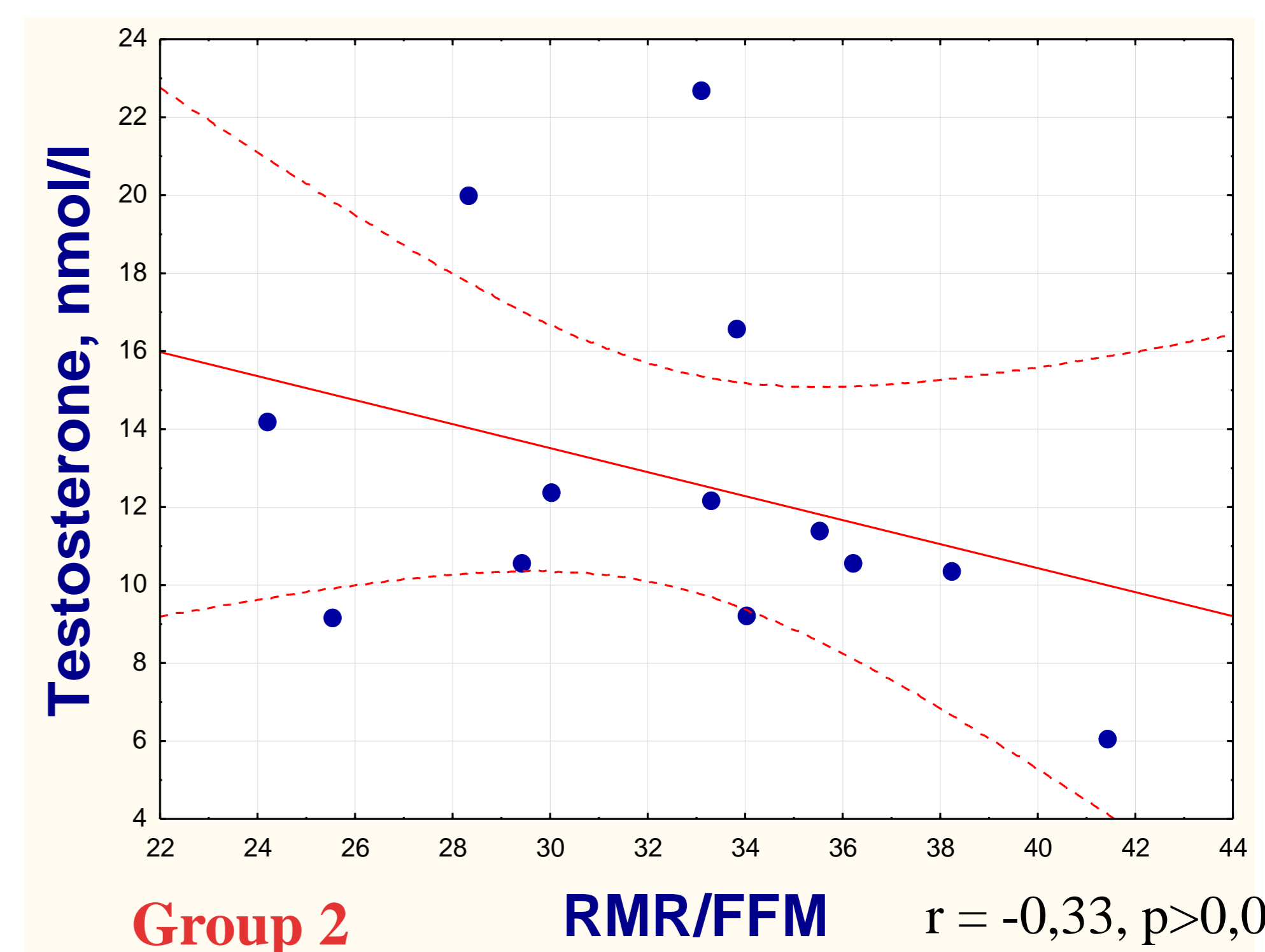
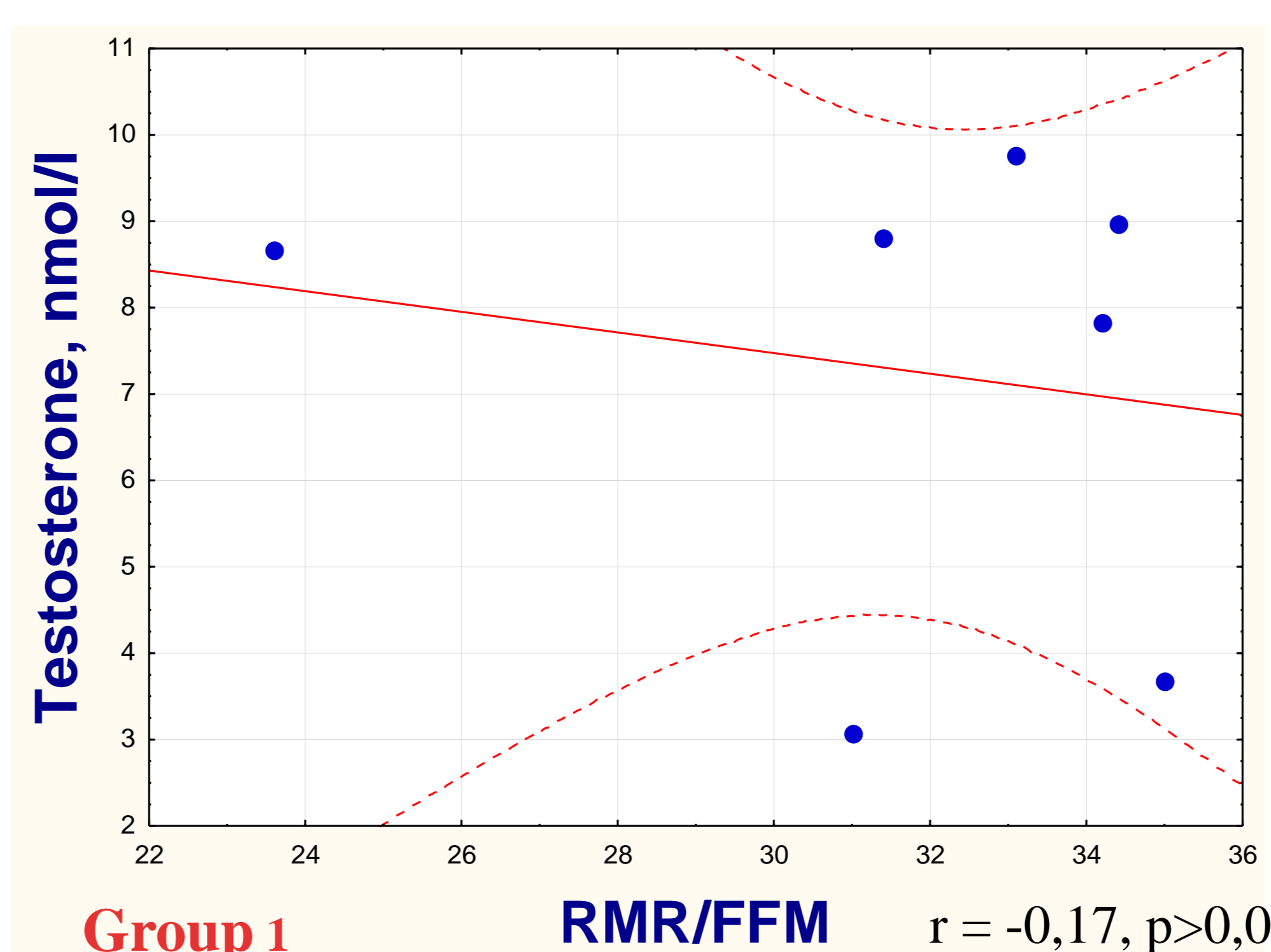
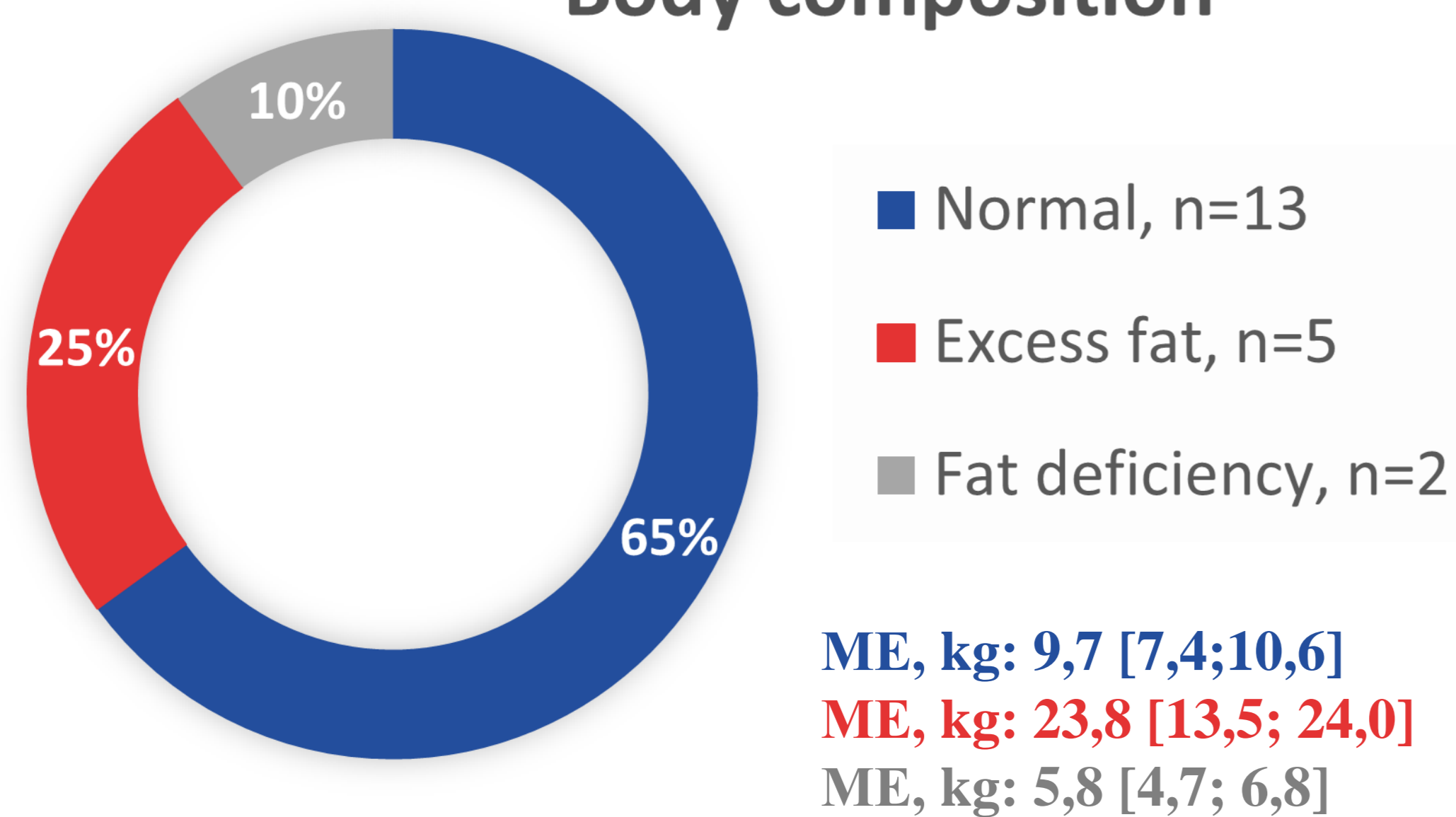
	№ of patients	Age, years	Bone age, years	Puberty stage	Testosterone, nmol/l	SDS BMI	Body fat, %	RMR/FFM, kcal/kg
KS with signs of hypogonadism	7	15.3 [15.06;17.79]	14.5 [14.5;16.5]	3 [3;4]	8.6 [3.69;8.98]	0.3 [-0.48;0.83]	16.3 [14.9;19.4]	33.1 [31;34,4]
KS without signs of hypogonadism	13	16.0 [15.11;16.63]	16.5 [15.5;17.0]	4 [3;4]	11.4 [10.4;14.2]	-0.2 [-1.28;0.32]	15.1 [12.7;22.3]	33.3 [29.4;35.5]

RESULTS



Correlation analysis revealed average positive correlation between the amount of FFM and RMR ($r=0.59$, $p < 0.05$) and a strong positive correlation with SDS BMI ($r=0.78$, $p < 0.05$).

Body composition



CONCLUSION

The correlation analysis of the RMR/FFM did not reveal its connection with blood testosterone levels. Comparative analysis of two groups of patients with KS revealed no differences in terms of RMR/FFM.

Most patients with KS in our study revealed normal indices of body composition and RMR regardless of the level of testosterone. No correlation between the basal metabolism and the level of testosterone may indicate a slight effect of androgen deficiency on energy metabolism at rest in adolescents with KS.

Authors declare no conflicts of interests