

Influence of physical activity on posturographic parameters and muscular characteristics in children with GH deficiency

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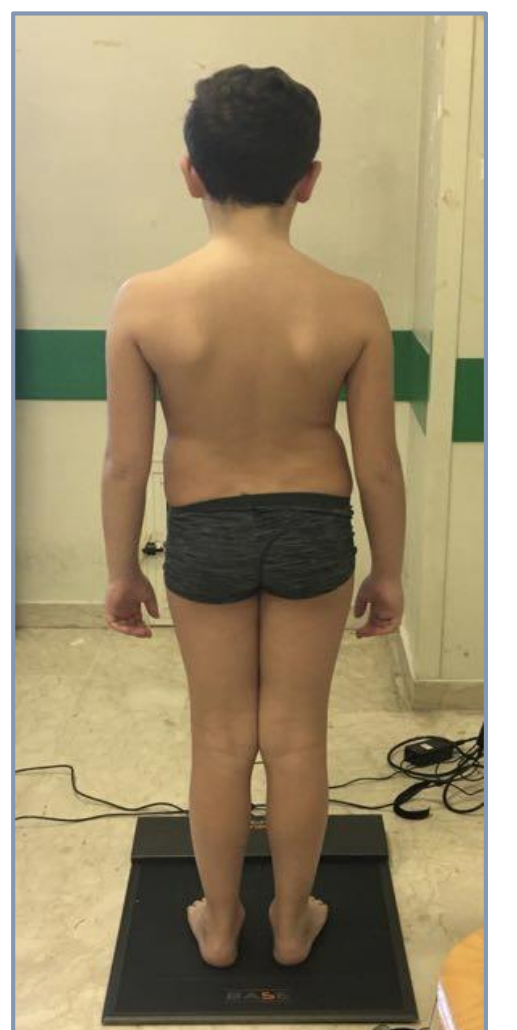
Purpose

Several studies have been assessed children with GH deficiency in exercise testing. It is known that physical activity increases GH secretion. Muscular strength, power and postural characteristics represent health-related fitness characteristics. The purpose of the present study was to investigate the influence of physical activity in GH-deficient young patients on posturographic parameters and muscular characteristics.

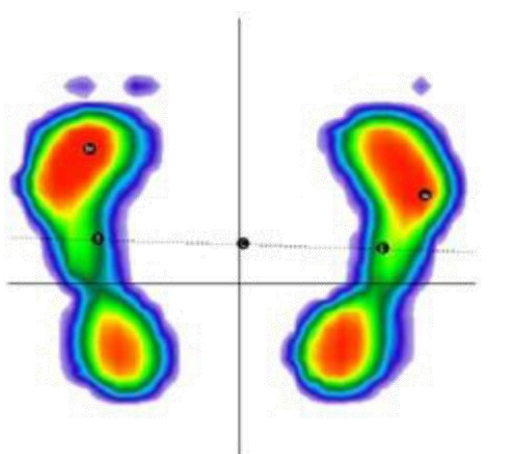
Methods



A number of twenty-two (13 males and 9 females) children affected by GH deficiency were recruited in Palermo University Hospital and divided into the physical activity group (PAG: n=14; age: 14.92±1.97 years; height: 147.57±11.86 cm; weight: 42±11.41 kg) with ≥3 consecutive years of physical activity background and the sedentary group (SG: n=8; age: 16.37±3.70 years; height: 138±15.04 cm; weight: 38.88±16.43 kg). All subjects completed the protocol assessment that included the following evaluations: a baropodometric test using the freeMed[®] baropodometric platform and the freeStep[®] software (Sensor Medica[®]; Guidonia Montecelio, Roma, Italia), a hand grip test through a mechanical dynamometer (Kern



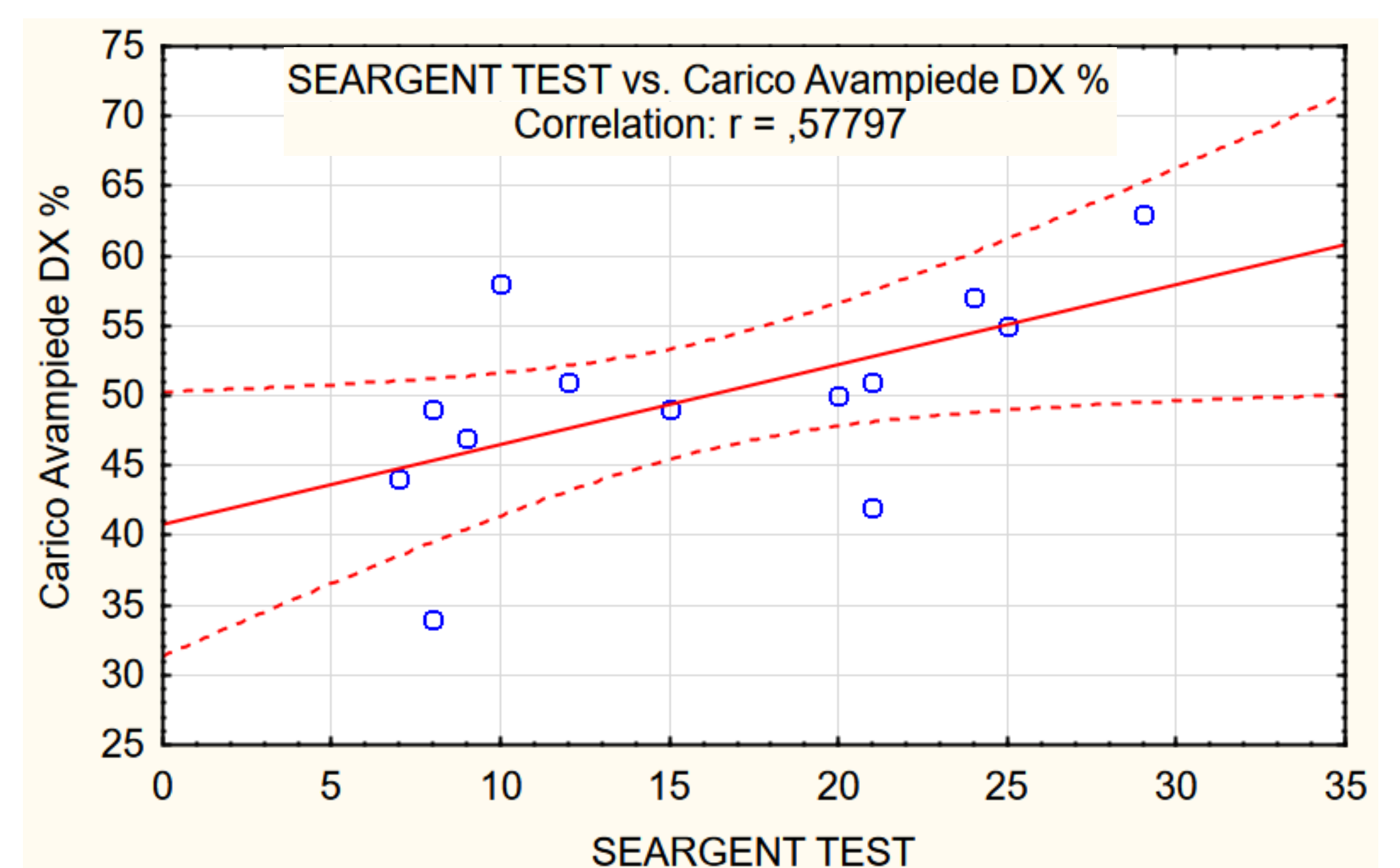
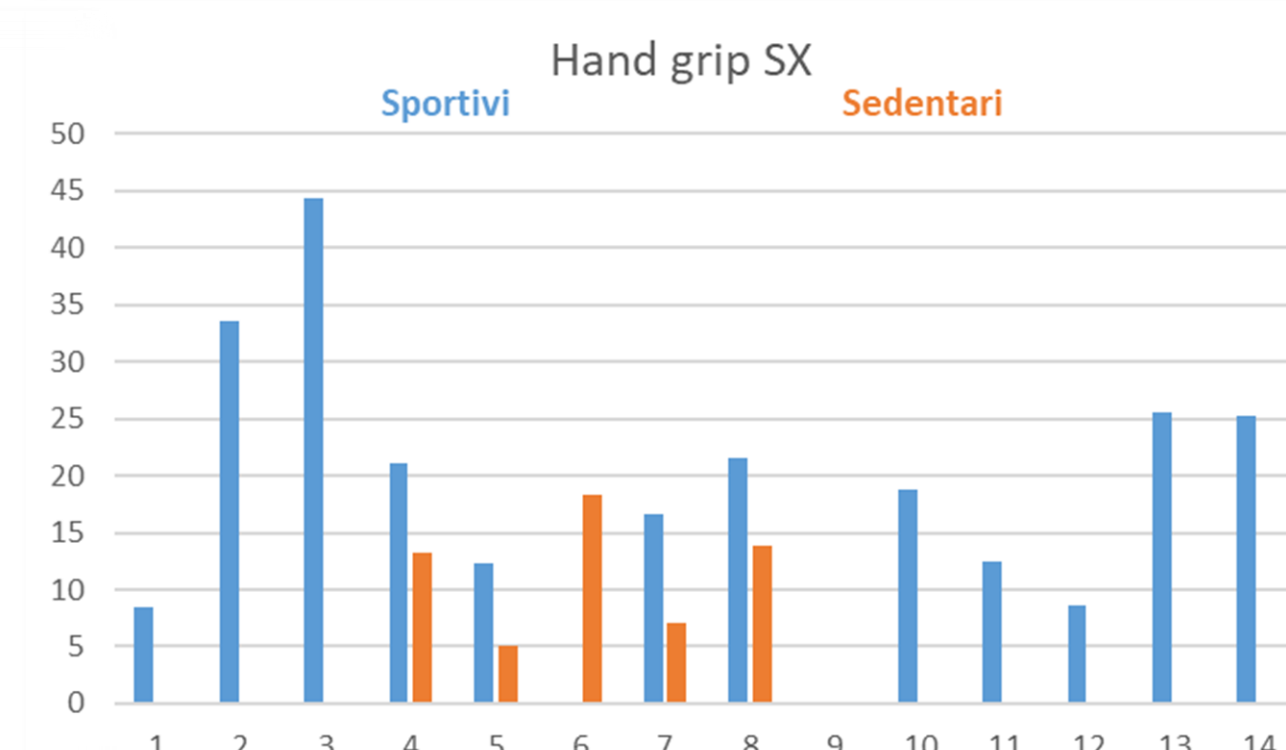
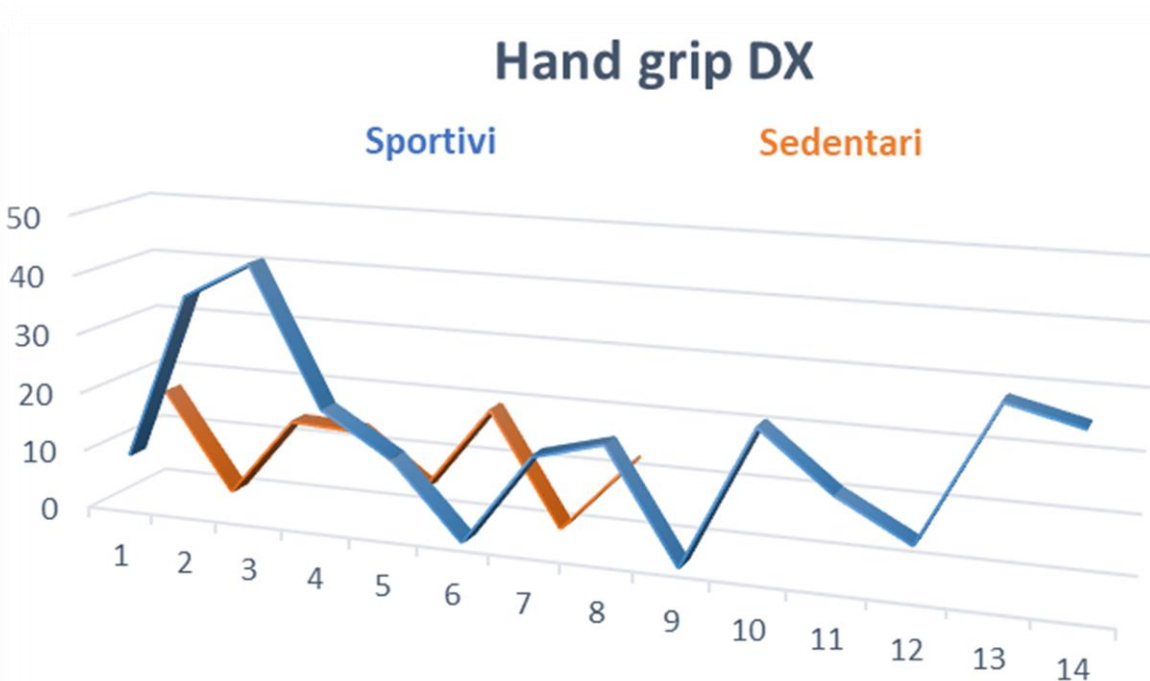
Map model 80K1 - Kern[®], Kern & Sohn GmbH, Balingen, Germany) and a Sergeant test. Mean values and standard deviations were calculated using Statistica Software 12 (StatSoft[®], TIBCO[®] Software Inc, Palo Alto, CA, USA). Differences between groups were analyzed using a t-test. The *p*-value was set at *p*<0.05.



Results

The baropodometric test showed a significant difference (*p*<0.05) between PAG and SG for forefoot-rearfoot distribution for both feet. In particular, our data showed higher significant load pressure on right forefoot as well as on left forefoot in PAG compared to SG. For the hand grip test, PAG results showed higher levels statistically significant (*p*<0.05) respect to SG. As concern the Sergeant test, any significant difference was found (*p*>0.05).

Finally, variable associations were tested by Pearson's coefficient of correlation showing a significant positive correlation between Sergeant test values and right forefoot load pressure in PAG (*r*=0.58, *p*<0.05).



Conclusions

Our results suggest that in GH-deficient children physical activity may induce to higher muscular strength levels and influence baropodometric characteristics. Considering the results of this study, we deem necessary to conduct further investigations regarding the relationships among physical exercise and GH deficiency.

References

1. Zueger T, Alleman S, Christ ER, Stettler C. (2011) Exercise-induced GH secretion in the assessment of GH deficiency in adult individuals. *Eur J Endocrinol.* 165(5): 723-28.