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The relationship between Body Mass Index, Skinfold Thickness and Handgrip Strengths of Ellisras rural children aged 9 to 15 years: Ellisras Longitudinal Study

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**Abstract**

**Background and aim:** Handgrip strength is an important nutritional index and it was confirmed that subjects with low BMI have less handgrip strengths. High BMI, skinfold thickness and high handgrip strength increase the risk of obesity. The purpose of the study was to determine the relationship between BMI, skinfold thickness and handgrip strength of Ellisras children aged 9-15 years.

**Method:** The study was carried out on 769 children, (391 boys and 378 girls) aged 9-15 years who are part of the Ellisras Longitudinal Study. Height and weight were measured according to the procedure laid down by the International society for the advancement of Kinanthropometry. Handgrip was measured using EUROFIT procedures to all the subjects.

**Results:** Triceps skinfolds showed significant ( $p < 0.05$ ) association with right handgrip (beta= 0.191 and 95%CI 0.026 0.356) unadjusted for age and gender while biceps showed a significant association with right handgrip (beta=0.168 and 95%CI 0.00 0.337) after adjusted for age and gender. Majority of Ellisras rural children were underweight (1.7-85%) and the few were overweight (1.5-4.2%).

Conclusion: Ellisras rural children showed low hand grip strength with high prevalence of under nutrition. Further investigation into the dietary pattern of this children will shed more light into their nutritional status.

Key words: Under nutrition, upper body strength, rural South African children