

Association of health-related physical fitness with total and central body fat in preschool children aged 3 to 5 years

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PURPOSE

To investigate whether health-related physical fitness components are associated with total and central body fat in preschool children.

METHODS

A total of 403 preschool children aged 3 to 5 years (57.8% boys; n=71, 133 and 199 for 3, 4 and 5 years-olds respectively) participated in the study. Health-related physical fitness was measured by means of the handgrip strength, the standing long jump tests (i.e. muscular strength); the 4x10m shuttle run and the one-leg stance tests (i.e. motor fitness); and the PREFIT 20m shuttle run test (i.e. cardiorespiratory fitness). Body mass index (BMI) and waist circumference (WC) were measured and used as markers to total and central body fat, respectively.

RESULTS

Table 1. Association between health-related physical fitness and body mass index after adjusting for sex, age in preschool children aged 3-5 years.

	β	SE	r	P
Handgrip (kg)	0.280	0.054	0.340	<0.001
Handgrip/weight	-7.892	1.117	-0.380	<0.001
Standing long jump (cm)	-0.020	0.006	-0.208	0.001
Standing long jump*weight	0.002	0.000	0.476	<0.001
4x10m (s)	0.154	0.065	0.157	0.019
One-leg stance (min)	-0.007	0.004	-0.101	0.060
PREFIT 20metres shuttle run test (laps)	-0.034	0.011	-0.198	0.003

B: unstandardized beta coefficient; SE: standard error; r: partial correlation.

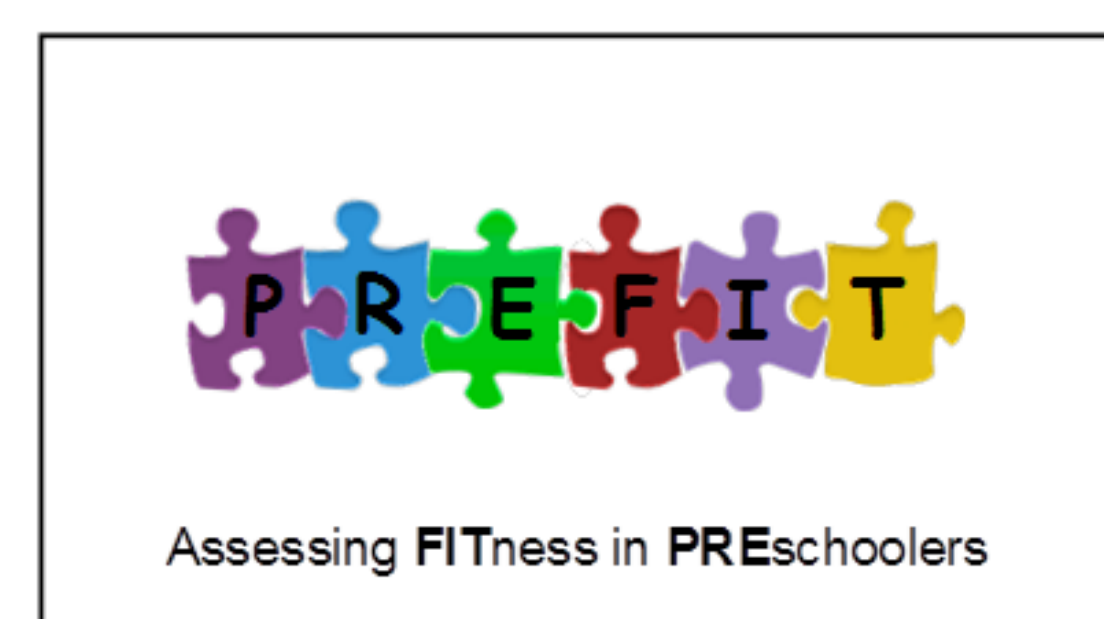
Table 2. Association between health-related physical fitness and waist circumference after adjusting for sex, age and height in preschool children aged 3-5 years.

	β	SE	r	P
Handgrip (kg)	0.254	0.145	0.112	0.081
Handgrip/weight	-18.972	2.563	-0.331	<0.001
Standing long jump (cm)	-0.072	0.014	-0.268	<0.001
Standing long jump*weight	0.002	0.001	0.219	0.001
4x10m (s)	0.652	0.150	0.240	<0.001
One-leg stance (min)	-0.012	0.009	-0.064	0.156
PREFIT 20metres shuttle run test (laps)	-0.102	0.025	-0.218	<0.001

B: unstandardized beta coefficient; SE: standard error; r: partial correlation.

CONCLUSIONS

The present study extends previous findings in older children and adolescents showing an association of health-related physical fitness components, mainly muscular strength, cardiorespiratory fitness, and the 4x10m shuttle run test (i.e. motor fitness) and total and central body fat in preschool children. Fitness assessment should be introduced in future epidemiological and intervention studies in preschool children because it seems to be an important factor determining health.



PROFITTH research group: The PREFIT study

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