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ARTICLE

Energy Expenditure of Sedentary Screen Time Compared With Active Screen Time for Children

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OBJECTIVE. We examined the effect of activity-enhancing screen devices on children's energy expenditure compared with performing the same activities while seated. Our hypothesis was that energy expenditure would be significantly greater when children played activity-promoting video games, compared with sedentary video games.

METHODS. Energy expenditure was measured for 25 children aged 8 to 12 years, 15 of whom were lean, while they were watching television seated, playing a traditional video game seated, watching television while walking on a treadmill at 1.5 miles per hour, and playing activity-promoting video games.

RESULTS. Watching television and playing video games while seated increased energy expenditure by $20 \pm 13\%$ and $22 \pm 12\%$ above resting values, respectively. When subjects were walking on the treadmill and watching television, energy expenditure increased by $138 \pm 40\%$ over resting values. For the activity-promoting video games, energy expenditure increased by $108 \pm 40\%$ with the EyeToy (Sony Computer Entertainment) and by $172 \pm 68\%$ with Dance Dance Revolution Ultramix 2 (Konami Digital Entertainment).

CONCLUSIONS. Energy expenditure more than doubles when sedentary screen time is converted to active screen time. Such interventions might be considered for obesity prevention and treatment.

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Key Words: physical activity • obesity • indirect calorimetry • television • video games

Abbreviations: REE—resting energy expenditure