HIGH VOLUME-LOW INTENSITY EXERCISE CAMP AND GLYCEMIC CONTROL IN DIABETIC CHILDREN

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Physical activity in diabetic children is a proven form of diabetes management but only if the physical activity stimuli are adjusted to the training level of the subject (Dorchy and Poortmans, 1991). The data about the effectiveness of "active" summer camps on objective parameters are very ambiguous. In our opinion, the volume and type of exercise programs in previous studies were not adequately programmed and monitored but many diabetic camps lack an exercise physiologist or kinesiology specialist who would be responsible for detailed programming of everyday physical activities (Semiz S et al., 2000; Post EM et al., 2000; Semiz S et al., 2005).

To evaluate the effects of the high volume-low intensity physical activity programme on glycemic control in diabetic children, twenty subjects (age 12.81 ± 2.14; BMI 18.73 ± 2.13) spent two weeks in a controlled environment of a summer camp.

An exercise physiologist and a kinesiology specialist programmed the three high volume-low intensity exercise sessions a day. Intensities of training stimuli was monitored by heart rate monitors. Total daily caloric intake was controlled and there were no meals allowed apart from the provided meals (mean daily caloric intake was 2020.00 ± 268.72 kcal; minimum 1600 kcal/day and maximum 2500 kcal/day). Blood glucose sampling was performed 4 times a day. The insulin dosage was individually modified and initial average insulin dosage was 0.95 ± 0.21 U/kg. (American Diabetes Association, 1999). Glycemic control was recorded prior to camp, 10 days after and 2 months after the camp.

Mean initial HbA1c value for the total sample was 8.28 ± 1.3%. In many of the patients HbA1c values were not satisfactory prior to the camp and HbA1c values <7.5% were found in 4 children. Control measurements performed 10 days after the camp revealed that the number of children with HbA1c level <7.5% doubled (8 children). Mean values at that time were 7.92 ± 1.41% and the decrease was statistically significant two weeks after the camp. Although the girls had more desirable levels of HbA1c, participants in both the boys and girls groups were unable to maintain any long-term beneficial effects of the camp (boys vs girls before camp 7.8 ± 1.1 vs. 9.0 ± 1.2; 10 days after 7.5 ± 1.2 vs. 8.6 ± 1.5; two months after 7.8 ± 1.2 vs. 9.1 ± 1.2 p<0.05 in all measurements).

With only two manifested hypoglycaemia episodes the proposed program was found to be satisfactory and would be implemented in organised summer camps for diabetic children in Croatia in the future. The downside is that the duration of the effects was not satisfactory because on control check-ups the observed parameters had returned to the values recorded before the camp. Developing the free organised physical activity programs for diabetic children in their hometowns would be a necessary precondition for maintenance of the camp effects.


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