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Impact of a 3-month combined exercise regimen on taste perception for sucrose in patients with type 2 diabetes mellitus

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Introduction

Physical exercise plays a key role in prevention and control of type 2 diabetes mellitus (T2DM). Although the importance of regular exercises on glycemic control is studied extensively, its impact on sweet taste perception (i.e. supra-threshold intensity ratings and preference) in T2DM is less reported.

Objectives

The aim of this study was to assess the impact of combined exercises (i.e. aerobic and resistance exercises) for 3 months on taste perception for sucrose in T2DM.

Methods

A sample of 127 T2DM patients aged 35-60 years was recruited and assigned randomly into two groups, an exercise group (n=64) and a control group (n=63). Demographic data were obtained using a pre-tested questionnaire. A graded exercise protocol was introduced to the exercise group i.e. aerobic exercises 4-5 days/week and resistance exercises 2-3 days/week for 3 months without changing diet and medications. Supra-threshold intensity ratings for sucrose were tested using 'General Labeled Magnitude Scale' and preference for sucrose was assessed by 'Monell 2-series, Forced Choice Method' in both groups at 0 and 3 months. Data were analyzed by Wilcoxon signed rank test. Significance was set at p=0.05 level.

Results

Exercise group showed increased supra-threshold intensity ratings for 4 out of 6 sucrose solutions with statistically significant results for 2 higher concentrations i.e. Difference in mean for 2.02M: 4.01 ± 1.44 , $Z = -2.833$, $p = 0.005$ and for 0.64M: 6.83 ± 0.55 , $Z = -2.650$, $p = 0.008$ when compared to their baseline values. Preference for sucrose was significantly reduced (Difference in mean = 0.03 ± 0.01 , $Z = 2.569$, $p = 0.01$) after 3 months in the exercise group. The supra-threshold intensity ratings were not statistically significant in the control group while the preference for sucrose was significantly increased (Difference in mean = 0.1 ± 1.03 , $Z = 2.483$, $p = 0.013$).

Conclusion

Taste sensitivity increases especially for higher sucrose concentrations and taste preference decreases in T2DM patients after 3 months of regular combined exercises.