**DIABETOLOGY &
METABOLIC SYNDROME**

MEETING ABSTRACT

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Impact of different methods of physical training in inflammatory cytokines of type 2 diabetes

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Background

Changes in the levels of inflammatory cytokines such as tumor necrosis factor (TNF-α) and adiponectin may contribute to the aggravation of inflammatory processes the incidence increasing in 55% of cardiovascular events in diabetic patients. Exercise is indicated as part of diabetes treatment. According to the American Diabetes Association, various kinds of methods should compose a physical training program for diabetics, but the most used protocols are the aerobic and resistance, with fiw protocols that use the method of combined training.

Objective

To identify which training method is more effective in relation to levels of proinflammatory cytokines and anti – inflammatory type 2 diabetics.

Materials and methods

Study experimental nondandomized was approved by the Ethics Committee in Research of the Hospital Complex HUOC-PROCAPE/UPE on CAAE: 0154.0.106.000.11. 30 individuals with T2D were recruited who are part of the Sweet Life program Supervised Exercise Program for Diabetics the ESEF/UPE. The subjects were divided into 3 groups: Aerobic-GA n=10 which held 40 min. walk; Resisted-GR n=10 which held 8 strength exercises, and Combined -GC n=10 which held 20 min from GA and GR. The training program was performed 3 times a week for 24 weeks. The determination of cytokines (TNF-α and Adiponectin) was performed by Enzyme –Linked Immunosorbent Assay (ELISA). Analyzes of fasting glucose (8-12 h fasting). Blood postprandial glucose were also performed (after 1 hour of a standardized meal of 300 Kcal) made in the same intervals of cytokines by means of

Variáveis	GRUPOS								
	GR			GA§			GC **		
	Pré	Pós	p	Pré	Pós	p	Pré	Pós	p
GJ (mg/dL)	135±38,5	122,1±23,7	0,901	144,5±40,3	133,8±39,2	0,042*	126±20,2	111,9±19,1	0,002*
GPP (mg/dL)	205,5±49,0	176,7±29,05	0,045*	209,2±51,7	193,9±57,4	0,162	173±51,6	153,6±34	0,031*
Gcp (mg/dL)	160,3±36,1	117,6±26	0,034*	179,1±36	114,4±37,3	0,048*	160,2±47,4	111,5±32,4	0,000*
TNF-α (µg/ml)	13,0±1,54	12,35±1,56	0,09	12,7±1,32	11,4±1,16	0,001*	13,7±1,62	12,8±1,62	0,000*
Adiponectina (µg/ml)	1,34±0,38	1,28±0,40	0,154	1,32±0,23	1,29±0,22	0,220	1,23±0,28	1,24±0,31	0,243

Tabela 03: Perfil metabólico de diabéticos tipo 2 submetidos aos diferentes protocolos de treinamento físico

GR: grupo resistido; GA: grupo aeróbio; GC: grupo combinado; GJ: glicose de jejum; GPP: glicose pós-prandial; Gcp: glicose capilar; TNF-α: fator de necrose tumoral alfa; mg/dL: miligrama por decilitro; Pré: pré-treinamento; Pós: pós-treinamento; µg/ml: micrograma por mililitro; p: valor estatístico; *: valor estatisticamente significativo intragrupo; **: Melhores resultados na análise intergrupos para glicose e TNF-α comparado ao GR com o Teste de Kruskal-Wallis (p=0,031); §: Melhores resultados na análise intergrupos para TNF-α comparado ao GR e GC (p=0,000).

Figure 1 Metabolic profile of type 2 diabetics undergoing different types of training.

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capillary glucose using Brezze2 glucometer from Bayer. Data were analyzed by non-parametric Wilcoxon test and Kruskal-Wallis beyond the Pearson Correlation, adopting a significance level of $p \leq 0.05$.

Results

The sample consisted mostly of women (n=25), mean age 66.4 ± 8.7 yrs. When analyzing the impact of different training protocols on cytokines, the GR did not show changes in cytokine analyzed. In the intergroup analysis GA and GC showed a significant improvement in the values of TNF-α after the intervention (GA 12.7 ± 1.32 vs 11.4 ± 1.16 mg/mL p=0.001 and $13.7 \pm$GC 1.62 vs. 12.8 ± 1.62 mg/mL p=0.000). There were no changes in adiponectin values after application of physical training protocol.

Conclusion

The protocol of combined training showed greater efficiency in regulating the levels of TNF-α in this sample, with a greater emphasis on aerobic training.