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Single Session of High Intensity Exercises on Random Blood Sugar on Type II Diabetes Subject on Insulin Therapy

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Abstract
An alarming rise in type II diabetic subjects with role of physical therapy need more to be carved. Self managing skills with exercises such as HIE will be of value in improving glycemic control
Aims & Objectives *of this original research presentations was to evaluate the efficacy single bout of HIE on RBS in a type II diabetic subject on insulin therapy.*
Materials & Methodology: *62 year male on 15 years of insulin therapy (20 Units) was treated with single of HIE for 15 minutes this RBG before and after session exercises were measured on 11-11-2017.*
Results *of pre and post RBG were analyzed statistically with P<.001 Conclusion: A reduction of blood sugar with single session gives confidence to the diabetic subject with exercises, hence can get more adherence with physical training so that better glycemic control can be achieved.*
Keywords: *VO2 Max, DM- Diabetes Mellitus, High intensity Exercise, MHR – Maximum Heart Rate , BMI – Body Mass Index, WC – Waist Circumferences , RBS – Random Blood Sugar , ADA - American Diabetic Association, HIT – High Intensive Therapy, PPBG - Postprandial Blood Glucose.*

Introduction

Type II diabetes is a worldwide epidemic associated with obesity and sedentary lifestyle [Peter Adanus 2013] and the lifetime estimated risk of developing diabetes for a person in the US male is 33% female is 39% as on 2000 [Narayan etal 2003]. In 2010 DM accounted for 12% of the global expenditure [Rubin etal 1999] and it increase morbidity and mortality due to heart disease, stroke, blindness, kidney failure ,foot problems ,and periodontal disease [US national diabetic fact sheet 2007]. Treatment goals for patients with diabetes include achieving and maintaining optimal blood glucose, blood pressure and lipid levels in order to prevent or delay the progression of chronic complications [ADA 2012].meta analysis on the effects of exercise have estimated that for people type II diabetes both aerobic and resistance exercises improve glycemic control to an extract comparable to some oral anti diabetic drugs [Boule etal 2011]

Aims and objective of this research presentation was to evaluate the efficacy of single bout of NIE on RBS in a type II diabetic on insulin therapy

Materials and Methodology

62 year old type II diabetic male with HBA1C at 9% on 20 units of human mixtard insulin therapy and T glyciphage

BMI: 28kg/m^2 WC: 98 cm

Single bout of high intensity exercise using Physioball for 20 min with 15 exercises of 5 repetitions each with post exercises heart rate at 135 /mt intensity of exercises at 85% of MHR profuse sweating was noted. No hypo glycemic spell recorded.

Results

Results on pre and post RBS with HIE using student t test

TEST	RBS mg	SD	SE	t	p
pre	234	26.55	15.33	3.01	<.001
post	188				

Discussion

V O2 max, the maximum amount of oxygen in mellitus can be used in one minute per kg of body weight, is a measurement of cardio vascular fitness, which co relates with insulin sensitivity in type II diabetes [Leite etal 2009]. Moderate exercise intensity requires 50 to 70 % of maximum heart rate which is equivalent of brisk walking and is considered vigorous when it requires more than 70 % of MHR [sigal etal 2004]. This study was based on high intensity resisted exercises of 20 minutes at 85% MHR with rest in between of 2 minutes. A single session of high intensity exercises was reported to reduce PPBG [Gillen etal 2012]. Little etal 2011 have recorded 13 % reduction in BG with HIT, where as this study subject has shown 19 %.drop in RBG as supported by controlling PP hyper glycomia is a treatment goal; in type II diabetes [Adams etal 2013]. Hence findings of this original research was an innovative in diabetic care.

Mechanism during High Intensity Exercises

High intensity exercises maybe performed on a continuous basis , very fit persons can maintain a intensity of above 80% vo2 max for only 10to15min .and in intense exercise [>80%vo2 max] , unlike at lesser intensities ,glucose is the exclusive muscle fuel [Marlis etal 2002]. the catecholamine levels risk markedly, causing glucose production to rise 7 to 8 fold while glucose utilization is only increased 3 to 4 fold .the primary energy source of glucose derived from muscle glycogen, and as aerobic capacity is exceeded, most of this converted to lactate to provide aerobic ATP the rate of glycogenolysis gets reduced later ,significant amount of lactate accumulate [Parolin etal 1999]. these exercise require a high level of motivation, and often sessions are supervised with significant verbal encouragement to exert maximal; effort [Irg 06 etal 2011].

Conclusion

High intensity exercises are effective with safe physical therapy tool in the treatment of type II diabetic subject. It improves confidence and weekly thrice session are adequate for glycemic control, however requires long term follow up, larger sample subjects, including other blood sugar variables, involving control subjects and comparing other physical exercise modes are recommended as future studies and stronger scientific validation of this study findings.

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