CHARLA CON EXPERTOS: Entrenamiento de resistencia (fuerza) y diabetes mellitus tipo 1

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La presencia generalizada de fibras lentas rojas y rápidas blancas en todos los vertebrados demuestra la ventaja evolutiva de tener dos tipos motores para el movimiento animal: uno económico lento para la mayoría de las actividades, y uno energéticamente costoso para movimientos rápidos y acciones de emergencia y que requieren un montón de fuerza[1].

En un ensayo *crossover* randomizado, 10 adultos con diabetes mellitus tipo 1 (DM1) de 33 +/- 10 años de edad y duración de 18+/-10 años de la enfermedad se asignaron a aeróbico, resistencia y no ejercicio. El objetivo primario era el porcentaje de tiempo en rango en 24 h. EL grupo aeróbico descendió la glucosa 71+/-48 y el grupo resistencia 24+/-32. El tiempo en rango de 24 h fue significativamente mayor en el grupo resistencia (70% vs. 60% y 56%). En conclusión, el entrenamiento de resistencia podría mejorar el control glucémico de esta población[2].

El ensayo clínico randomizado *Resistance Exercise in Already Active Diabetic Individuals* (READI) se propuso evaluar los efectos de mejoría de la HbA1c, *fitness*, composición corporal y factores de riesgo cardiovascular en individuos con DM1 aeróbicamente activos. Entre 131 individuos se asignaron a entrenamiento de resistencia (INT n=71) y a control (CONn=60) tras un *run-in* de 5 semanas por 22 semanas. Todos sostuvieron su entrenamiento aeróbico. No hubo cambios en la HbA1c. La circunferencia de cintura bajó más en el grupo INT en 6 meses. La fuerza muscular aumentó más en el grupo INT (p<,001). No hubo cambios en las hipoglucemias y otras variables. Agregar entrenamiento de resistencia no afectó la glucemia, pero aumentó la fuerza y disminuyó el perímetro de cintura en individuos previamente aeróbicamente activos con DM1. El menor perímetro de cintura se asocia fuertemente a menor riesgo cardiovascular y está independientemente asociado a disfunción diastólica en DM1.

Palabras clave: diabetes tipo 1; fuerza

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EXPERT TALK: Resistance (strength) training and type 1 diabetes mellitus

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The widespread presence of slow-red and fast-white muscles in all vertebrates supports the evolutionary advantage of having two types of motors available for animal movement. A slow economical motor used for most activities, and a fast energetically costly motor used for rapid movements and emergency actions, and actions that require a lot of force[1].

In a 3-week randomized crossover trial, 10 adults with T1D, 4M, 6F; age 33±6 yrs, duration of diabetes 18±10 yrs, A1C 7.4±1%, were assigned to three weeks of intervention: aerobic (treadmill at 60% of VO2max), resistance (8-12 repetitions of 5 upper and lower body exercises at 60/80% of 1-RM), or no exercise (control). The primary outcome was percentage of time in range (glucose >70mg/dl and <=180 mg/dl) for the 24 hours after each bout of exercise or rest during the control week. Aerobic exercise caused a mean glucose reduction during exercise of 71 ± 48mg/dl while the reduction during resistance was 24 ± 32mg/dl (p=0.007). Mean percentage time in range for the 24 hours following resistance was significantly greater than during the control period (70% vs. 56%, p=0.013) but not following aerobic (60%). Conclusions the resistance training could have improvements on glycemic control in this population. (2)
The Resistance Exercise in Already Active Diabetic Individuals (READI) Randomized Clinical Trial aimed to evaluate the incremental effect of resistance training on glycated hemoglobin A1c (HbA1c), fitness, body composition, and cardiometabolic risk factors in aerobically active people with type 1 diabetes. 131 aerobically active individuals with type 1 diabetes were randomly assigned to resistance exercise (n = 71 INT) or control (n = 60 CON) for 22 additional weeks. There were no significant differences in HbA1c change between INT and CON. Waist circumference decreased more in INT than CON after 6 months (P=.02). Muscular strength increased more in INT than in CON (P<.001). There were no intergroup differences in hypoglycemia or any other variables. Adding resistance training did not affect glycemia, but it increased strength and reduced waist circumference, in aerobically active individuals with type 1 diabetes. Lower waist circumference is strongly associated with lower subsequent risk of cardiovascular disease, and greater waist circumference has been independently associated with diastolic dysfunction in individuals with type 1 diabetes.

Key words: diabetes tipy 1; strength.