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## EFFECT OF XBOX ACTIVE VIDEO GAME AND NUTRITION EDUCATION INTERVENTION ON WEIGHT CONTROL, FITNESS AND THE CARDIOVASCULAR DISEASE RISK FACTORS IN OVERWEIGHT AND OBESE ADOLESCENT GIRL

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Introduction
The cause of obesity and overweight is an energy imbalance between calories consumed and calories expended. In addition to increasing physical activity and decreasing sedentary lifestyle, active video gaming might have an additional effect on the prevention of obesity [1]. Therefore, the aim of this study was to evaluate the effects of XBOX active video game (Just Dance 2016) and nutrition education on weight control, fitness and the cardiovascular disease risk factors in overweight and obese among high school female students.
Methods
This study was a parallel trial of 10-week period, 24 healthy, overweight or obese (BMI ≥ 22.7 – 32 kg/m2) subjects aged 15-18y, were randomly assigned into three groups: the active video game group (XBOX, n=8), the nutrition education group (Diet, n=8) and combined group (XD, n=8). XBOX group played XBOX One game (Just Dance 2016) 3 d/wk for at least 50 min. Diet group were provided five nutrition education classes and used 24-hour recalls to assess the dietary behaviors of food intake. XD group were observed the combination effects. Anthropometric measurements, fitness and fasting blood samples were measured at 0,5 and 10 weeks.
Results
In XBOX group, the body weight (69.9 ± 10.8 vs. 68 ± 11.6 kg), BMI (26.7 ± 3.6 vs. 26 ± 4 kg/m2), body fat percentage (40.4 ± 3.3 vs. 37.8 ± 4.3 %) and WHR (0.91 ± 0.06 vs. 0.88 ± 0.03) were significantly decreased after 10 weeks of the exercise gaming, and were significantly improved in the fitness (cardiorespiratory, flexibility and agility). In Diet group, there were significant improvement in the fitness (cardiorespiratory) and decrease in WHR (0.88 ± 0.05 vs. 0.3 ± 0.03) after 10 weeks intervention. In XD group, there were significant decreased in body weight (69.5 ± 9.7 vs. 66.7 ± 9.6 kg), BMI (26.6 ± 2.4 vs. 25.4 ± 2.4 kg/m2), WHR (0.89 ± 0.05 vs. 0.86 ± 0.03), TC (173.8 ± 24 vs. 163 ± 27.8 mg/dl), LDL-C (114.9 ± 28.8 vs. 104.9 ± 31.2 mg/dl), and were significant improvement in the fitness (cardiorespiratory and agility).
Discussion
It was demonstrated that combination with active video game and diet control could help improve body composition, decrease hyperlipidemia, enhance cardiorespiratory fitness and weight control in overweight or obese among high school female students , just as the other age groups in previous studies [2-3]. Exergames can be regarded as an enjoyable, motivating, and effective physical activity tool. Therefore, we suggest that active video game can be an effective technological tool for weight loss in sedentary group.
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## A POST WORKOUT BLEND BEEF AND WHEY PROTEIN BEVARAGE PROMOTE BETTER BODY COMPOSITION CHANGES THAN INGESTED ONLY CARBOHYDRATE IN CROSS COUNTRY RUNNING ATHLETES.

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Introduction
Both, Beef and Whey are high-quality protein sources with a very similar amino acid composition to that found in the skeletal muscle. Although whey contains higher concentrations of branched-chain amino acid (BCAA), specifically leucine, which is essential for supporting muscle protein synthesis after exercise, beef provides higher amounts of iron, zinc, vitamin B12, and essential fatty acid. The current study aimed at comparing the impact of an oral supplementation with a blend hydrolysate beef and protein, or only carbohydrate on body composition, and iron status in males endurance athletes.
Methods
Thirty-six resistance-trained males (32.23±9.77 years) were randomly assigned to the following 2 groups: blend beef and whey protein (BW n=13), or non-protein isoenergetic carbohydrate (maltodextrin; CHO n=13). All had to take 25 g of the proteins or carbohydrate, mixed with 300 ml plain water, once a day (immediately after the workout or during breakfast for the non-training days) over an entire 12-week training period. Body composition, measured by dual-energy X-ray absorptiometry (DEXA; Lunar Prodigy, GEMedical Systems, Bucks, UK) hemoglobin (g/dl), hematocrit (%), and ferritin concentration (ng/mL )were assessed before and after the intervention.
Results

Only the BW group showed significant decreases in body mass (p=0.011), total and relative fat mass (p=0.002) and trunk fat (p=0.024). Significant increases have been also observed in total (p=0.001) and relative (p=0.039) fat-free mass as well as the total fat measured for both right (p=0.13) and left leg (p=0.05). No changes were observed for the haematological variabls.
Discussion
Results demonstrated that ingesting a post work beef and whey protein beverage containing 25 g of proteins (10g of beef hydrolysed, and 15 g of whey isolate from Crown® Sport Nutrition, Spain) promote body mass decrease based on trunk fat mass reduction and increase of the lower body fat-free mass in trained males cross country runners. The present results support previous positive effects of protein supplementation at promoting positive body composition outcomes in endurance athletes.
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## GLUCOSE-FRUCTOSE INGESTION INTERACT WITH MUSCLE LACTATE METABOLISM DURING TRAINING SESSIONS

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Introduction
Blood lactate is generally considered to originate mainly from muscle glycolysis during exercise, and to be either used in other muscle fibers (lactate shuttle) or recycled back to glucose in the liver. These exchanges are modulated by exercise intensity and training. Ingestion of fructose-containing drinks stimulates lactate production and release from the liver during exercise, and that fructose-derived lactate is subsequently used as an energy substrate by muscle. How this hepatomuscular lactate shuttle affects muscle lactate production remains however unknown. In this work, we assessed whether ingestion of fructose-containing drinks alters the effects of exercise intensity and exercise training on lactate concentrations.
Methods
Sixteen sedentary healthy males participated in a training program during which they performed 15 sessions of continuous cycling exercise over 3 weeks (one 60 min session per day, five day a week). Training intensities were set as 50% (sessions 1-3), 55% (sessions 4-6), 60% (sessions 7-9) and 65% (sessions 10-12) of baseline VO2max. Subjects ingested either glucose-fructose drinks (GF group, n=8, three times 163 mL containing 16 g glucose and 10 g fructose) or plain water (C group, n=8, three times 163 mL), at -20, 0 and 20 min relative to the onset of exercise. Blood lactate concentration was measured at 0, 30 and 60 min exercise at the earlobe.
Results
Subjects anthropometrics, baseline VO2max (44.3±2.3 vs. 46.4±2.2 mL/kg/min) and training workloads were all similar in GF and C (all P=N.S.). Blood lactate at time 0 (i.e. postprandial but pre-exercise) was higher in GF than C, consistently across consecutive training days (mean: 1.7±0.2 vs. 1.1±0.1 mmol/L; group effect: P<0.01; sessions effect: P=0.62). During exercise, mean lactate concentrations were increased by exercise intensity significantly in C: 1.4±0.2, 2.0±0.3, 2.2±0.3 and 2.8±0.4 mmol/L at 50%, 55%, 60% and 65% VO2max (intensity effect: P<0.01). In GF in contrast, this effect was blunted: 1.6±0.2, 1.9±0.3, 1.9±0.3 and 2.3±0.4 mmol/L at 50%, 55%, 60% and 65% VO2max (group x intensity effect: P=0.02).
Discussion
Our data are consistent with muscle glycolysis being the main source of plasma lactate when subjects drink water during exercise, and with net muscle lactate efflux increasing at higher exercise intensities. In contrast, consumption of glucose-fructose drinks alters this effect. We postulate that, in these conditions, plasma lactate originating from splanchnic organs may impair muscle lactate efflux.
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## EFFECT OF ERGOGENIC AID HMB SUPPLEMENT ON SIGNAL TRANSDUCTION PATHWAY DURING OSTEOCLAST PRECURSOR FORMATION

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Introduction
Dietary supplement of β-hydroxy-β-methylbutyrate (HMB) had been proven not only increase muscle mass but also increase the mass, density and architectures of skeleton tissues in animal studies. Previous results of our research indicated that HMB supplement not only increase bone formation but also inhibited bone resorption, possibly through inhibition of NF-κB pathway. In the following study, we discovered that HMB supplement inhibited osteoclastogenesis through suppress receptor activator of nuclear factor κB (RANK) expression. However, downstream signal transducer of RANK, NFATc1, remain unaffected and downstream regulate protein DC-STAMP induced by NFATc1 remain stable as well. Such results indicated that inhibition effect of HMB supplement on osteoclastogenesis might work in inducing expression of RANK and consequently lead to reduce formation of osteoclast precursors. Evidences from literature review indicate that TNF-a not only promote leukocyte proliferation but also play a key role in osteoclastogenesis through inducing RANK expression. However, TNF-a has been proven to cross-talk with IGF-1 and be inhibited, while previous results of other researchers indicated that HMB supplement increase IGF-1 level. Therefore, hypothesis of present study was HMB supplement inhibit osteoclastogenesis through affecting cross-talk mechanism of TNF-a with IGF-1.
Methods
12 healthy college males aged 20-22 years old were volunteers for present study. All subjects ingested 3 grams of HMB daily in the early morning for 13 days and daily diets were recorded. Fasting blood samples were collected through venipuncture on 1, 2, 3, 6, 9, 12 hours after HMB supplement in day 1 and following sampling were early morning of day 2, 3, 4, 6, 8, 11 and 14. Plasma TNF-a and IGF-1 level were analyzed by ELISA kit. RANK and DC-STAMP expression on PBMC surface were analyzed by Flow cytometer.
Results