

Effects of Chronic Supplementation of Advocare's O2 Gold On Maximal Oxygen Performance

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Abstract

Purpose: The aim of this study was to analyze the advertised beneficial metabolic effects of chronic supplementation of Advocare's O2 Gold on active college students. Volume of Oxygen Consumption (VO₂), Heart Rate (HR) and Respiratory Exchange Ratio (RER) were measured to assess the effectiveness of the product for improving metabolism.

Methods: Eleven healthy university students (Age: 22.2±1.9; Height (cm): 174.8±8.2; and Weight (kg): 72.6±8.2) participated in the single-blinded study. After the initial Oxycon treadmill VO₂ Max Test, the participants were randomly and blindly given either the placebo or the O2 Gold at the same time every day for seven days, and then completed a final VO₂ Max Test using the same BU Sport protocol.

Results: Repeated independent t-tests were performed to determine significance (p≤0.05) between the control and intervention groups. No significance was found for VO₂ Max differences (p=.925), Heart Rate differences (p=.168), and Respiratory Exchange Ratio differences (p=.513). Control: HR pre (193.8±4.9); HR post (192 ± 7.2); RER pre (1.07±0.03); RER post (1.07±0.06); VO₂ Max pre (42.8±8.7); VO₂ Max post (42.3±8.4). Intervention: HR pre (191.6±6.5); HR post (191.3±7.2); Run Time to Fatigue pre (11:01±0.08); Run Time to Fatigue post (10:49±0.09); RER pre (1.08±1.06); RER post (1.08±0.07); VO₂ Max pre (46.6±4.1); VO₂ Max post (45.8±4.8).

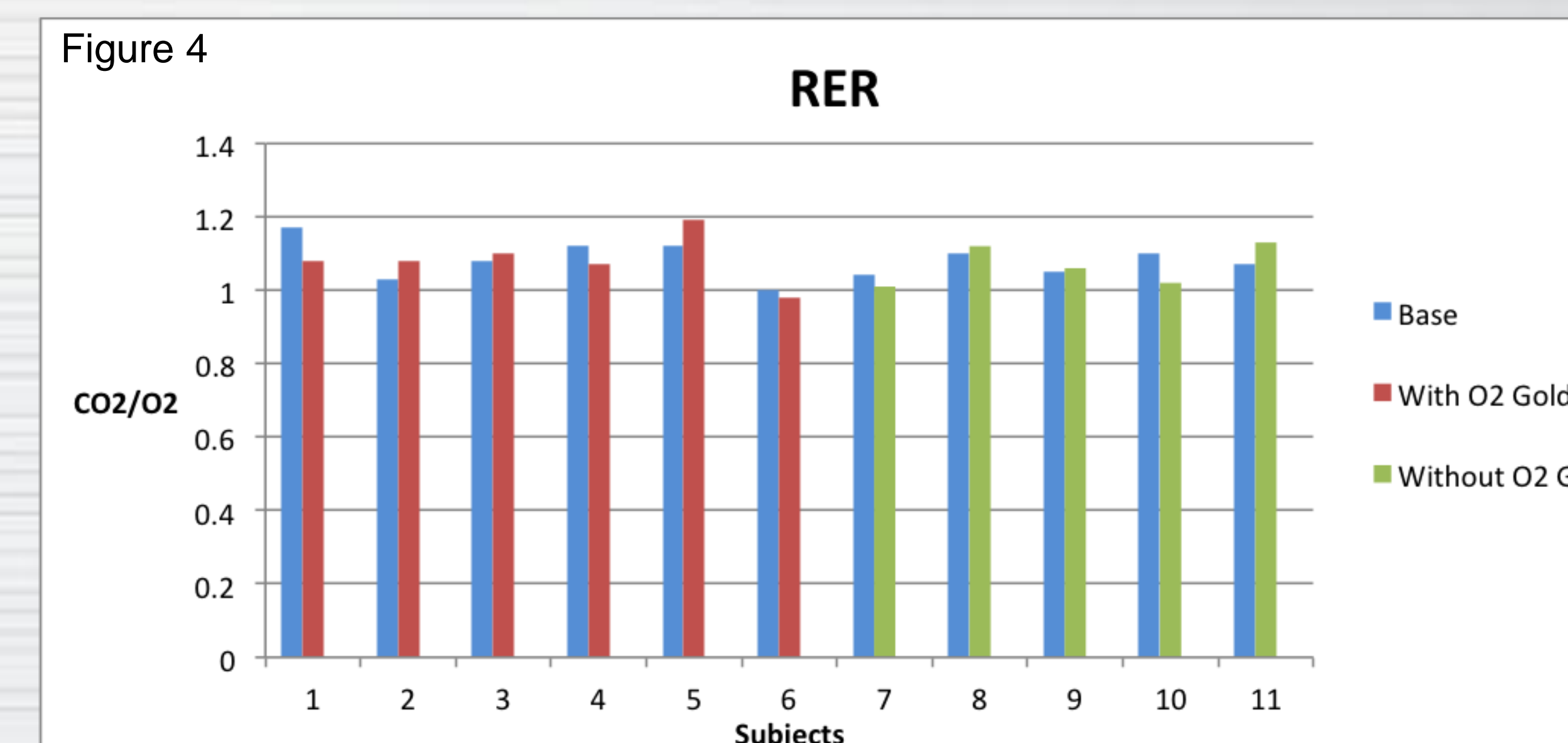
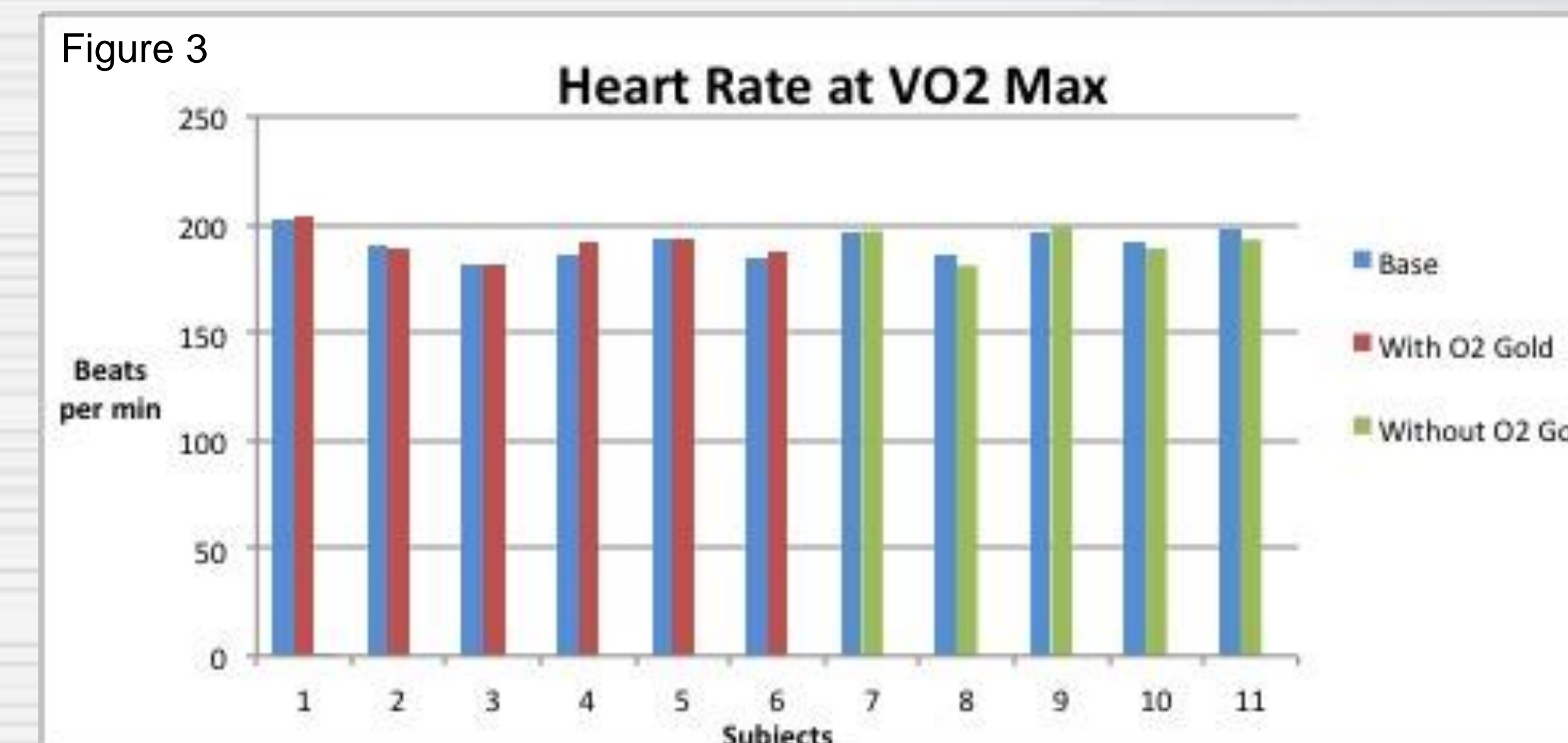
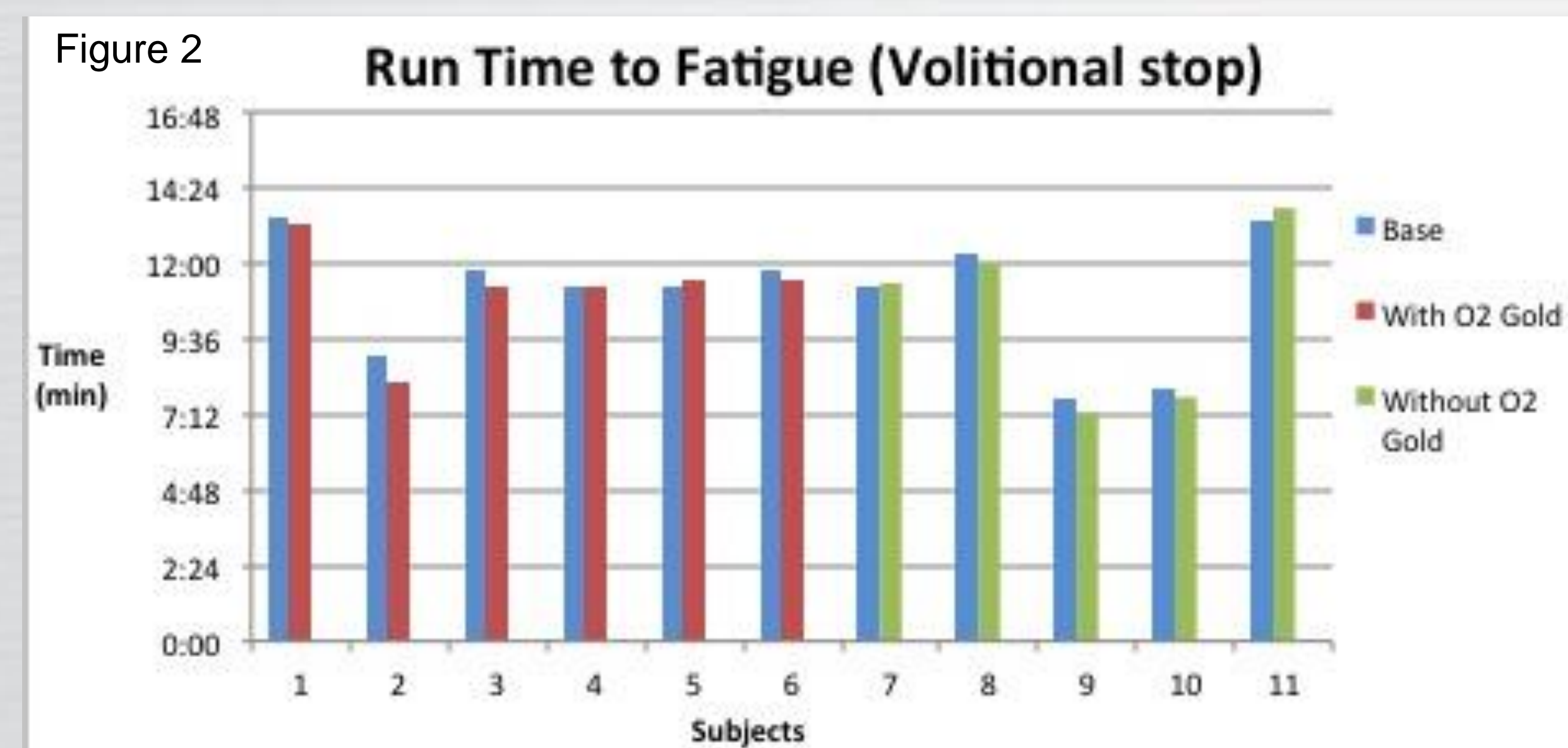
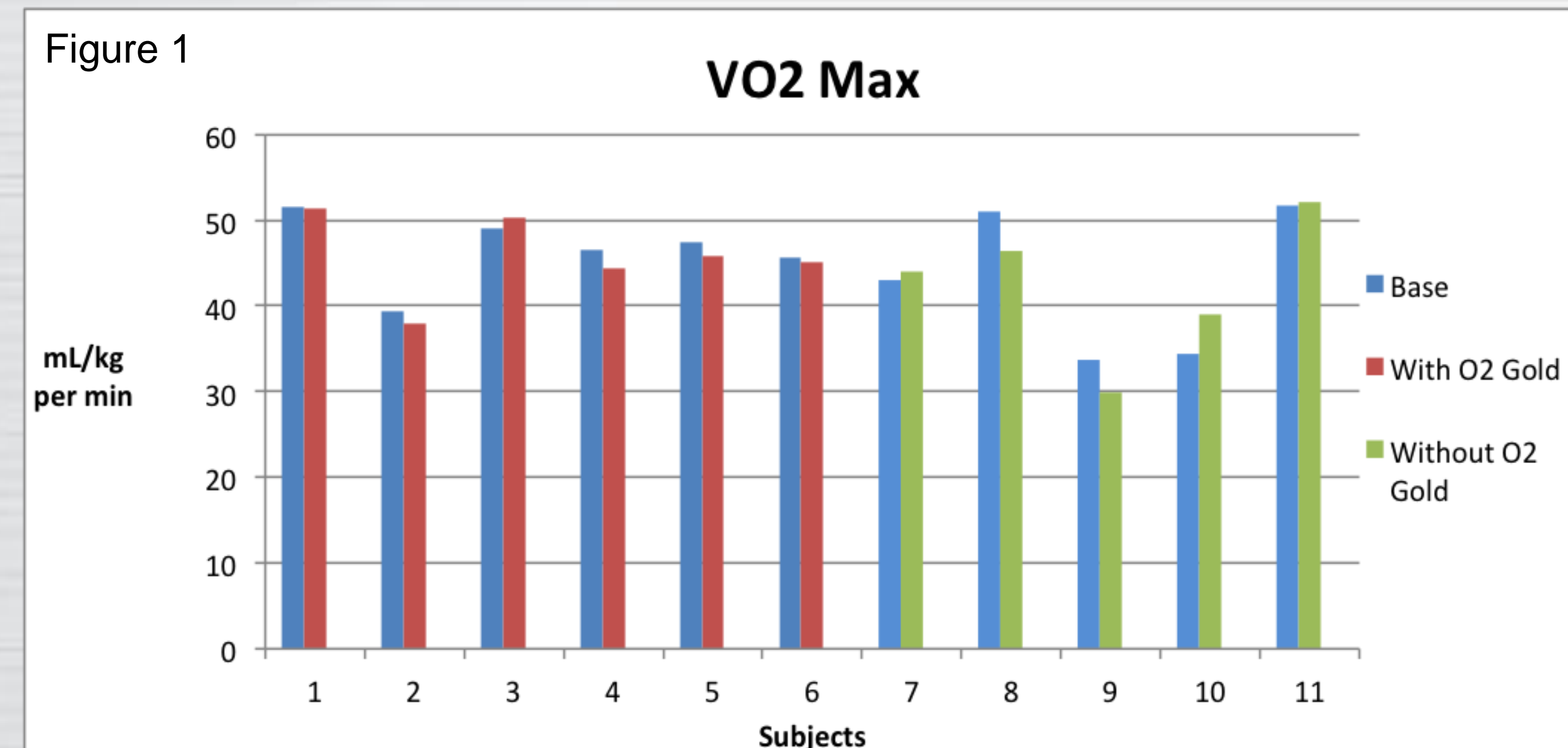
Conclusion: Results for VO₂ reveal that subjects did not experience significantly greater oxygen uptake metabolism or decreased HR and RER with the use of O2 Gold. This may show that the ingredients in O2 Gold did not act as advertised and cited as vasodilators or byproduct suppressors. Results for RER may indicate that production of byproducts did not decrease and the utilization of oxygen didn't increase with the use of O2 Gold. Results for HR show that O2 Gold didn't act as a catecholamine analogue to stimulate the sympathetic nervous system and its production of hormones such as epinephrine and norepinephrine that increase HR. Further evaluation of Heart Rate, VO₂ Max, and RER response at the same workload may elicit additional relevant data, as well as blood data.

References

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Introduction

The supplement industry is a 24 billion dollar industry which continuously markets with seemingly unproven claims. One such claim is that certain supplements may have the ability to improve aerobic endurance. Advocare O2 Gold is a supplement that claims on the label that it "enhances the body's use of oxygen, supporting peak performance and endurance at any activity level". Current research has looked into the use of specific nutrients as prospects for improving cardiorespiratory endurance with varying results. There are many physiological responses that take place within the body during cardiovascular/aerobic exercise, one such event is fatigue. Fatigue is caused by depletion of energy sources and can be caused through hypoxia, which is an increased state of deoxygenated blood returning to the heart, build up of byproducts causing the build up of lactic acid and decreased muscle glycogen supplies¹. Advocare O2 Gold is thought to synergistically address these causes of fatigue, thereby improving aerobic endurance. These components are: Eleuthero Root Extract (Eleutherococcus Senticosus) 50mg, Golden Root Extract (root--Rhodiola Rosea) 25mg, Inosine 500mg, Moomiyo 100mg, and Enzyme-Hydrolyzed Whey Peptides 1,000mg. To test whether or not O2 Gold improves aerobic endurance, aerobic capacity was measured by a VO₂ max test on a treadmill. Aerobic capacity is the highest amount of oxygen consumed during maximal exercise and is regarded by most as the best single measurement of cardiorespiratory endurance and aerobic fitness. The aim of this study was to analyze the metabolic effects of chronic supplementation of Advocare O2 Gold on active college students. See below: subjects #1-6=Female and #7-10=Male.



Methods

Data was collected from 11 healthy students (Male = 5, Female = 6) ages 22.2 ± 1.9 (mean weight = 72.6 kg ± 8.2, mean height = 174.8 cm ± 8.2) in this single-blinded, randomized, placebo-controlled study. Subjects were contacted via fliers and word of mouth. A familiarization session was conducted and consent provided. Once cleared to participate, subjects performed two VO₂ Max Tests on a treadmill. The Oxycon Mobile Gas Analyzer was calibrated before each session. The first session was a time in which health history, height, weight, blood pressure, informed consent, allergies to ingredients in the supplement, and the first of 2 max tests were all collected. In sessions two through seven participants saw the researchers once a day at the same time to receive either Advocare O2 Gold supplement in Naked Juice or the placebo (Naked Juice). The eighth session was the second of the 2 max tests.



Conclusion

The data reveal measures of certain physiological functions at work during exercise. Conclusions can therefore be hypothesized as to why, on a physiological basis, no significant improvements were seen. Manufacturers claim that O2 Gold will increase vasodilation and reduce vascular resistance leading to increased oxygen delivery to tissues. Golden Root has been shown to increase upper airway muscle force even under hypoxic conditions. These effects in theory should result in greater VO₂max (Figure 1), but no such significance was found. O2 Gold is theorized to decrease the effects of free radicals through its antioxidative properties. Free radical generation has been shown to increase after acute exercise and are conceived to modulate muscle function and accelerate fatigue¹. Therefore, O2 Gold should have decreased fatigue, resulting in greater run time (Figure 2) to fatigue and no such findings occurred. O2 Gold's label claims that it enhances the body's ability to utilize oxygen. Results for HR show that O2 Gold didn't act as a catecholamine analogue to stimulate the sympathetic nervous system by its production of hormones such as epinephrine and norepinephrine that are directly related to HR change (Figure 3). RER did not indicate the body being more efficient at oxygen utilization (Figure 4). Further evaluation of Heart Rate, VO₂ Max, and RER response at the same workload may elicit additional relevant data, as well as future data using blood values.