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The relative effect of CXWORX™ versus Tabata™ group exercise programs on body mass index, body composition, predicted $VO2_{max}$ and body image in adult exercisers

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Abstract: In this present work we took an initiation to compares the effects of two common approaches to group exercise: CXWORX™ and Tabata™ , which employ differing exercise strategies, on common fitness measures and psychological perceptions. The purpose of this study was to determine the effect of Tabata™ versus CXWORX™ on body mass index (BMI), body composition, maximal oxygen uptake ($VO2_{max}$) and Multidimensional Body-Self Relations Questionnaire (MBSRQ) measured self-perceptions in adult exercisers. The mixed gender sample consisted of a sub-set of 10 adult cross fit exercisers and 10 students from a regional comprehensive university class randomized to each exercise program. Analysis of Variance was used to examine program effects. While no significant main effect of the training period on body composition or BMI was found; mean $VO2_{max}$ was significantly increased as a large main effect across the study groups ($F=1.054$, $P<0.05$, $\eta^2 =0.533$) without significant interaction. In addition, there was a significant large interactive effect of the training program and time to increase MBSRQ scores for appearance evaluation ($F=1.648$, $P<0.05$, $\eta^2 = 0.367$), appearance orientation ($F=1.447$, $P<0.05$, $\eta^2 = 0.377$), fitness evaluation ($F=1.637$, $P<0.05$, $\eta^2 = 0.557$), and body areas satisfaction ($F=2.744$, $P<0.05$, $\eta^2 = 0.533$), in the CXWORX™ group in comparison with the Tabata™ group. In conclusion, participants who completed a CXWORX™ exercise program increase $VO2_{max}$ similarly to participants who complete a Tabata™ exercise program, while also reporting significant improvements in body image scores which the Tabata™ participants did not. Neither program had a significant effect on body composition or BMI.

Keywords: Choreographed exercise, High intensity interval, Continuous training.

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Dr. Carol Foust is a full Professor in the School of Health Sciences and Human Movement at Colorado State University-Pueblo. She has made more than 80 peer reviewed presentations and has authored more than 25 peer reviewed publications. In addition, she was the principal investigator, grant writer, evaluator and/or project member on 34 grants totaling more than $5.1 million. Dr. Foust is interested in mental, emotional and spiritual health issues and how they impact chronic disease and quality of life.

1. Introduction

Group fitness programs are commonly organized in one of two styles – choreographed movements using a continuous moderate intensity approach (CMIT) or non-choreographed "free" movements applied in a high intensity interval approach (NCHIT). These differences in style are epitomized by the trademarked CXWORX™ program, which uses a CMIT approach and Tabata™ , which uses a NCHIT approach. However, the question of whether such differences in style produce different outcomes in physical fitness in a group field application has not been resolved experimentally. More specifically, personal trainers, coaches, exercise physiologists, and scholarly researchers in the fitness industry cannot yet fully articulate benefits provided by the two different styles of exercise, due to the lack of research identifying the difference in direct application [1].

However, a large body of research has examined the differential effects of high intensity interval training (HIT) versus moderate intensity continuous training (MIT) in laboratory settings, with the most recent review and meta-analysis of the available experimental studies on the topic concluding that both approaches significantly improve VO2max in healthy young to middle aged subjects, albeit to a greater degree in HIT training approaches [2]. Current evidence from a meta-analysis of this effect in overweight and obese participants also suggests short-term and long-term HIT training programs can increase VO2max and cardiovascular endurance and lower cardiometabolic risks [3]. In addition, a meta-analysis of this effect in children and adolescents also established a greater relative effect of HIT training in these groups, although they found no effect based on work interval organization [4].

However, no published studies have examined these comparisons in formalized programs (CXWORX™ and Tabata™) in the field using grouped subjects who self-selected the program without prior knowledge of the approach to be used. Consequently, the purpose of this study was to examine the effect of using the CMIT CXWORX™ program versus the NCHIT Tabata™ program in the field on body mass index (BMI), body composition, self-reported body image and estimated aerobic capacity ($VO2_{max}$) in young to middle aged mixed gender adult exercisers using a two-group partially randomized experimental trial.

2. Experimental Methods

2.1 Participants

The mixed gender sample (N=20) consisted of 10 adult members of a local fitness training facility and 10 university students enrolled at a small region comprehensive university. Ten participants were female and 10 were male. Descriptive Statistics by gender can be found in Table 1.

2.2 Measures

The dependent variables were measured in the first week of each program and again in the final (10^{th}) week of the program using a consistent testing approach as to time of day and day of the week. The dependent variables included body mass index (BMI), body composition, estimated $VO2_{max}$ from a step test protocol and body self-image factors related to physical activity as assessed by ten subscales from The Multi-dimensional body self-relations questionnaire (MBSRQ).

2.3 Procedures

The study was approved by the Institutional Review Board at Colorado State University – Pueblo. Both classes (CXWORX™ and Tabata™**)** were taught at the university and the local fitness facility during the same 10 week study period. CXWORX™ was taught from 6:00 – 6:30 am on Mondays and Wednesdays and Tabata™ was taught from 6:00 - 6:30 am on Tuesdays and Thursdays at the local fitness facility. CXWORX™ was taught from 12:20-12:50 pm and Tabata™ was taught from 11:00-11:30 am on Mondays and Wednesdays at the university.

Table 1 Participant Descriptive Characteristics by Gender

Gender	Age (M±SD)	VO2max (M±SD)	BMI (M±SD)	Body Composition (M±SD)
Male (n= 10)	33 ±13	46.4±7.1	25±4.8	25±5.9
Female (n= 10)	34±15	44.4±6.9	27±3.4	28±4.3

Participants self-selected enrollment in separate exercise training classes at each facility without prior knowledge of the training format and were then recruited to participate in the study upon doing so. Study participants self-selected one of the two exercise times at each facility at their own discretion and then participated in either a choreographed (CXWORX ™) or non-choreographed (Tabata™) exercise program at each facility over a 10-week training period, meeting two times per week for 30 minutes. Both programs were led by the same instructor, certified in both training approaches, using consistent methodology and comparable workloads within each class. The CMIT exercise program used the CXWORX™ training method which is performed with music and sequenced to instructor cues at a relatively moderate exercise intensity and whereby the movements performed are similar in every exercise session. The NCHIT exercise program used the Tabata™ training method, which does not utilize a designed sequence of movements, music or talk. Rather, it uses a HIT approach completed in 30 second work intervals interspersed with 10 second recovery intervals.

2.4 Data Analysis

Means and standard deviations were calculated to describe the subject descriptive variables. Means and standard errors were calculated to describe the dependent variables by experimental condition. A mixed two factor ANOVA was used to assess the effect of the independent variable exercise program on each dependent variable. The alpha level was set at 0.05 and effect sizes were interpreted using Eta^2 (η^2) and the following scale: 0.02 – 0.129 was considered a small effect, 0.13 – 0.259 was considered a medium effect and greater than 0.26 was considered a large effect.

2.5 Instruments and Software

Body weight and height were measured using a balance beam scale and stadiometer (Detecto Model 449 Medical Scale, Detecto, USA) with body mass index calculated using the standard metric equation: weight (kgs) / height (meters)^2. Body composition was measured using bioelectrical impedance (Omron Body Composition Monitor, Model: HBF-516B Omron Healthcare, Inc., Kyoto, Japan). $VO2_{max}$ was estimated using the YMCA Step Test protocol as described by the American College of Sports Medicine (Bushman 2017) and previously validated by Bennet et al. [3]. The Multi-dimensional body self-relations questionnaire (MBSRQ) was used to evaluate body image [4, 5].

The MBSRQ is used for assessment of adolescents and adults 15 years-old and older. The 69-item test battery consists of 10 subscales including seven primary factor scales: Appearance Evaluation, Appearance Orientation, Fitness Evaluation, Fitness Orientation, Health Evaluation, Health Orientation, Illness Orientation; and three additional subscales: Body Areas Satisfaction (BASS), Overweight Preoccupation (OP) and Self-Classified Weight (SCW). Evaluation factors are focused on the subject's self perceptions relative to the constructs of appearance, fitness, and health. Orientation factors are focused on the subjects self perceptions of the value of engaging in behavior designed to improve the constructs of appearance, fitness, health and address illness. The additional BASS subscale addresses self-perception of specific areas of body appearance. The overweight preoccupation subscale addresses general concern and anxiety related to body weight and eating behaviors. The self-classified weight subscale addresses the subject's classification of their own weight status relative to perceived normative status, as to whether they consider themselves as overweight or underweight. The evaluation consists of affective, cognitive, and behavioral elements. The affective elements address the subject's beliefs about their own body. The cognitive elements address their thoughts about the value of attention paid toward their own body. The behavioral elements refer to their chosen actions in

relation to their body in accordance with the three physical domains: appearance, fitness or health/illness. Each question response is scored on a 1-5 Likert scale with responses in the various elements averaged to produce each factor score [6, 7].

The statistical analysis was completed using the Statistical Package for the Social Sciences (SPSS version Premium v26, USA).

3. Results

3.1 Physiological Results

A significant large main effect of the exercise programs to increase $VO2_{max}$ was calculated from pre to post illustrating that the cardiovascular fitness levels in participants improved in the programs overall ($F=27.54$, $p = 0.000$, $\eta^2 = 0.533$). However, there were no significant main effects of the exercise programs on BMI or body composition. There was also no significant interaction effect of exercise program on $VO2_{max}$, BMI or body fat percentage indicating that both groups responded to the exercise programs in the same way. These results are illustrated in Table 2.

Appearance Orientation

There was a significant large interaction effect between time (pre/post) and exercise program (CXWORX™ vs Tabata™) ($F=9.566$, $p = 0.006$, $\eta^2 = 0.377$), as depicted in figure 2. Main effects were not significant. The interaction indicates that participants in the CXWORX group improved significantly in their belief that the fitness program resulted in improved appearance whereas participants in the choreographed Tabata group did not.

Fitness Evaluation

There was a significant large interaction effect between time (pre/post) and exercise program (CXWORX™ vs Tabata™) ($F=9.053$, $p = 0.008$, $\eta^2 = 0.557$), as depicted in figure 3. Main effects were not significant. The interaction indicates that participants in the CXWORX group improved significantly in their self perceptions of physical fitness as a result of their training program whereas participants in the Tabata group did not.

Body Areas Satisfaction Scale

There was a significant large interaction effect between time (pre/post) and exercise program (CXWORX™ vs Tabata™) ($F=5.271$, $p = 0.034$, $\eta^2 = 0.533$), as depicted in figure 4. Main effects were not significant. The interaction indicates that participants in the CXWORX group improved significantly in body area satisfaction as a result of their training program whereas participants in the Tabata group did not.

Table 2-Effects of Training on BMI, Body Composition and VO2max

Dependent Variable	**CXWORX™ Pre**	**CXWORX™ Post**	**Tabata™ Pre**	**Tabata™ Post**
Body Mass Index (BMI)	24.7 ± 2.82	24.57 ± 2.97	26.77 ± 3.86	26.17 ± 3.89
Body Composition (% Fat)	26.25 ± 8.03	29.77 ± 4.63	25.27 ± 5.65	24.92 ± 5.34
$VO2_{max}$ (ml/kg/min)	44.42 ± 6.79	48.42 ± 7.88*	46.4 ± 8.48	50.58 ± 8.56*

*Significant pre post main effect difference at $p<0.05$.

3.2 Psychological Results

Appearance Evaluation

There was a significant large interaction effect between time (pre/post) and exercise program (CXWORX™ vs Tabata™) ($F=5.007$, $p = 0.038$, $\eta^2 = 0.367$), as depicted in figure 1. Main effects were not significant. The interaction indicates that participants in the CXWORX group improved significantly in their reported self-perception of their appearance whereas participants in the Tabata group did not.

No significant main or interaction effects were found for the Fitness Orientation, Health Evaluation, Health Orientation, Illness Orientation, Overweight Preoccupation or Self-Classified Weight scales.

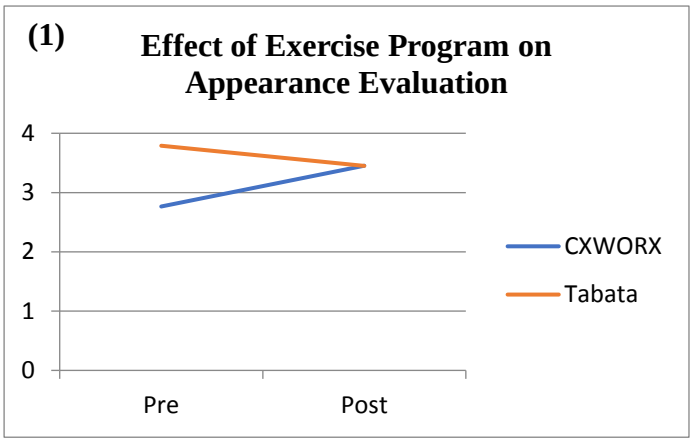

Figure 1 Depiction of interaction between time (Pre, Post) and exercise program for the Appearance Evaluation scale.

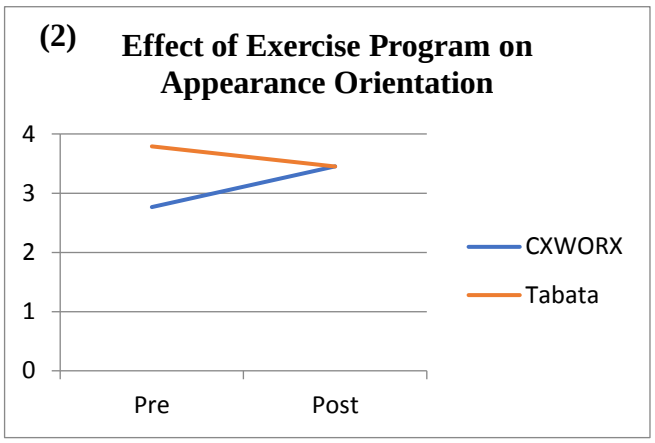

Figure 2 Depiction of interaction between time (Pre, Post) and exercise program for the Appearance Orientation scale

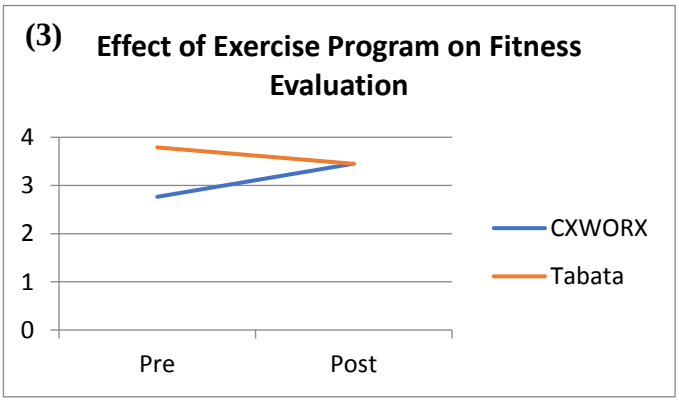

Figure 3 Depiction of interaction between time (Pre, Post) and exercise program for the Fitness Evaluation scale.

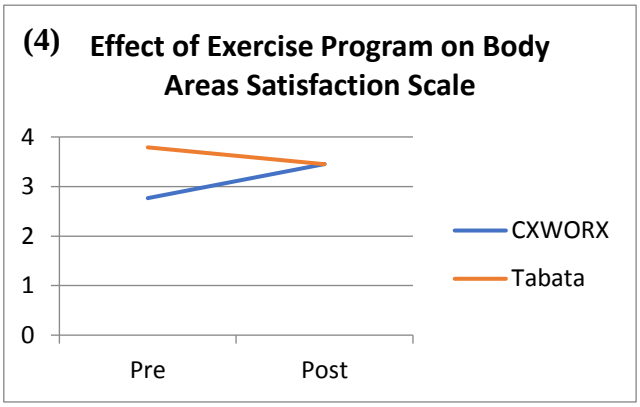

Figure 4 Depiction of interaction between time (Pre, Post) and exercise program for the Body Areas Satisfaction scale.

4. Discussion

The participants in both exercise programs experienced significant and comparable gains in predicted $VO2_{max}$ from both forms of training. However, neither group experienced significant changes in BMI or body composition. Further, the choreographed moderate continuous exercise CXWORX™ exercise program subjects self-reported improvements in MBSRQ measured appearance evaluation, appearance orientation, fitness evaluation and body area assessment satisfaction scales, whereas the non-choreographed high intensity interval training Tabata™ group did not report such changes.

The absence of positive effect on the BMI and body composition of the subjects in these exercise programs may reflect a combination of the relatively low total exercise load possible when exercising only 30-minutes twice per week, as well as the nature of the study subjects entry fitness levels, which placed them as gender groups in the above average level for both men and women (Males: mean VO2max = 46.4±7.1, mean age = 33±13; Females: mean VO2max = 44.4±6.9 , mean age = 34±15) [8]. While both HIT and MIT have been shown to elicit positive body composition changes in overweight and obese adults [9], the subjects in this study were classifiable as non-obese (mean male BMI = 25 ± 4.8 mean female BMI = and 27 ± 3.4) by comparison to American College of Sports Medicine standards [10], upon entry to the study. In addition, the majority of the participants were self-reported habitual exercisers and consequently may have been less subject to improvements in body composition created by a new exercise program. Further, the exercise programs did not include a specific dietary component beyond the basic nutritional advice commonly offered by fitness instructors in the field. Finally, the total exercise

duration of 60 minutes per week in these programs falls considerably below the minimum of 150-250 minutes per week advocated by the ACSM position statement on this topic [11], as necessary to maintain present body weight or create minor losses in body weight through exercise.

The improvements in $VO2_{max}$ experienced by both exercise groups was expected based on the most recent meta-analysis of the effect of HIT versus MIT [2]. However, the lack of significantly greater improvement in the Tabata group using a HIT approach was unexpected as Milanovic et. al. demonstrated greater improvements in $VO2_{max}$ following HIT training in comparison to MIT [2]. Our result may reflect the differences which occur in the field versus laboratory application of HIT. Field approaches commonly use group-based work volumes and self-directed work rate intensity while controlled laboratory studies most often use workloads that are individually determined from prior testing and training loads are optimized.

A significant yet largely unexamined experimental question regarding the application of practical exercise programs in the field to improve or maintain fitness relates to the potential for positive psychological changes which may also occur as a function of the type and intensity of exercise program used. This study suggests that the CMIT approach of CXWORX™ may produce more favorable changes in self-perception than the NCHIT approach of Tabata™. This finding parallels the findings of Foster et al. who found that Tabata training protocols were significantly less enjoyable than a moderate intensity continuous exercise approach [12]. Littrel further demonstrated that exercisers with poor body self-image prefer aerobic exercise in comparison with anaerobic exercise approaches [13]. Current ideas about HIT training suggest that they are more time efficient [14], however in the group setting this concept may be less relevant than the potential for enjoyment and positive psychological change.

Consequently, the improved self-perceptions reported by the CXWORX group may simply be due to the idea that the approach is less strenuous and as a result, more enjoyable, a finding which parallels the results of several other studies examining the affective responses to HIT versus MIT approaches in adults [15-17]. However, by contrast Olney et al. found that younger adults (mean age = 24±3.3 yrs.) did not report aversive affective responses for HIT approaches [18].

A more nuanced explanation for our findings may be that participants in the CMIT CXWORX™ program perceived the nature of this approach to exercise as less outcome oriented than the highly directed NCHIT approach embodied in Tabata™, reducing their social physique anxiety levels accordingly. Sicilia et al demonstrated that high social physique anxiety associates with less favorable outcomes in exercise programs by inhibiting autonomous motivation and basic psychological need fulfillment [19]. Further, Ntoumanis and Biddle found that self-mastery focused climates in exercise programs associate with more adaptive motivational patterns than performance-oriented exercise climates [20]. It may be that the non-choreographed, highly structured and intense nature of Tabata™ inhibited the development of a positive and intrinsically motivated self-view among participants in comparison to the choreographed and less intensive nature of the CXWORX™ approach, which may have allowed a more intrinsically motivated view to emerge as clients mastered the dance oriented choreography in a less physically adverse environment.

As with any field based experimental trial, our study has several limitations. First is that while the participant's self- selection of exercise time without prior knowledge of the exercise program format created a natural randomization, the available times may still have exerted a bias on subject group assignment. Second is that while the use of small, gender mixed, heterogenous sample, created though the natural selection process inherent in studying such phenomena in the field, reduced our statistical power, it also improved the study's external validity. Third is our choice of relatively simple field based measures for the dependent variables, which may have potentially reduced our power as they are inherently more variable than more controlled laboratory based approaches. However, using such common practice measures also enhances the ability of practitioners to easily understand and apply the results we obtained. In addition, an examination of the non-significant results does not suggest that Type II errors occurred, in spite of the nature of the sample or the dependent measures used.

5. Conclusion

In conclusion, while both CXWORX™ and Tabata™ group exercise programs produced significant increases in $VO2_{max}$, and no significant

effects on BMI or body composition, in experienced and moderately fit subjects; CXWORX™ also produced positive changes in body image while Tabata™ did not. Participants in the CXWORX™ self-reported significant improvements on MBSRQ scales for appearance orientation, appearance evaluation, fitness evaluation and the body area assessment satisfaction as a result of their participation in the exercise program. This study suggests that a choreographed moderate intensity approach to group exercise may produce more favorable changes in the exercisers body self-image than a non-choreographed high intensity interval training approach, while conferring similar improvements in physical fitness.

References

[1] Joanne Hudson, Jonathan R.Males, John H.Kerr, Reversal theory-based sport and exercise research: A systematic/narrative review." *Psychology of Sport and Exercise* 27 (2016): 168-179. https://doi.org/10.1016/j.psychsport.2016.08.008

[2] Zoran Milanović, Goran Sporiš, Matthew Weston, Effectiveness of High-Intensity Interval Training (HIT) and Continuous Endurance Training for VO2max Improvements: A Systematic Review and Meta-Analysis of Controlled Trials, *Sports medicine (Auckland, N.Z.)* vol. 45 (2015) 1469-1481. https://doi.org/10.1007/s40279-015-0365-0

[3] Romeo B Batacan Jr, Mitch J Duncan, Vincent J Dalbo, Patrick S Tucker, Andrew S Fenning, Effects of high-intensity interval training on cardiometabolic health: a systematic review and meta-analysis of intervention studies, *British Journal of Sports Medicine*, 51 (2017) 494-503. https://doi.org/10.1136/bjsports-2015-095841

[4] T.F. Cash, Multidimensional Body–Self Relations Questionnaire (MBSRQ), In Encyclopedia of feeding and eating disorders 2015 (pp. 1-4).

[5] Thomas F Cash, Multidimensional body-self relations questionnaire (MBSRQ), *Norfolk, VA: Author* (2000).

[6] M. Cao, M. Quan, J. Zhuang, Effect of High-Intensity Interval Training versus Moderate-Intensity Continuous Training on Cardiorespiratory Fitness in Children and Adolescents: A Meta-Analysis, *International Journal of Environmental Research and Public Health.* 16 (2019) 1533. https://doi.org/10.3390/ijerph16091533

[7] Hunter Bennett, Gaynor Parfitt, Kade Davison, Roger Eston, Validity of Submaximal Step Tests to Estimate Maximal Oxygen Uptake in Healthy Adults, *Sports medicine (Auckland, N.Z.)*, 46 (2016) 737-50. https://doi.org/10.1007/s40279-015-0445-1

[8] William D McArdle, Frank I. Katch, and Victor L. Katch. *Exercise physiology: nutrition, energy, and human performance*. Lippincott Williams & Wilkins, 2010.

[9] M. Wewege, R. van den Berg, R.E. Ward, A. Keech, The effects of high-intensity interval training vs. moderate-intensity continuous training on body composition in overweight and obese adults: a systematic review and meta-analysis, *Obesity Reviews : An Official Journal of the International Association for the Study of Obesity*, 18 (2017) 635-646. https://doi.org/10.1111/obr.12532

[10] Bushman, Barbara, and American College of Sports Medicine. *ACSM's Complete Guide to Fitness & Health, 2E*. Human Kinetics, (2017).

[11] Joseph E Donnelly, Steven N Blair, John M Jakicic, Melinda M Manore, Janet W Rankin, Bryan K Smith, American College of Sports Medicine Position Stand. Appropriate physical activity intervention strategies for weight loss and prevention of weight regain for adults, *Medicine and Science in Sports and Exercise*, 41 (2009) 459-471. https://doi.org/10.1249/MSS.0b013e3181949333

[12] Carl Foster, Courtney V. Farland, Flavia Guidotti, Michelle Harbin, Brianna Roberts, Jeff Schuette, Andrew Tuuri, Scott T. Doberstein, and John P. Porcari, The Effects of High Intensity Interval Training vs Steady State Training on Aerobic and Anaerobic Capacity, *Journal of Sports Science & Medicine*, 14 (2015) 747-755.

[13] Littrell, Ashley, The Relationship Between Body Image and Exercise Type, (2017). https://dc.etsu.edu/honors/366/

[14] Martin J Gibala, High-intensity interval training: a time-efficient strategy for health promotion?, *Current Sports Medicine Reports*, 6 (2007) 211-213. https://doi.org/10.1097/01.CSMR.0000306472.95337.e9

[15] Sarah J. Hardcastle, Hannah Ray, Louisa Beale and Martin S. Hagger, Why sprint interval training is inappropriate for a largely sedentary population, *Frontiers in Psychology,* 5 (2014)

1505.
https://doi.org/10.3389/fpsyg.2014.01505

[16] Jung, Mary E., Jessica E. Bourne, and Jonathan P. Little, Where does HIT fit? An examination of the affective response to high-intensity intervals in comparison to continuous moderate-and continuous vigorous-intensity exercise in the exercise intensity affect continuum, *PloS One,* 9 (2014) e114541. https://doi.org/10.1371/journal.pone.0114541

[17] Bruno R. R. Oliveira, Fabian A. Slama, Andréa C. Deslandes, Elen S. Furtado, Tony M. Santos, Continuous and high-intensity interval training: which promotes higher pleasure?, *PloS One,* 8 (2013) e79965. https://doi.org/10.1371/journal.pone.0079965

[18] Nicole Olney, Timothy Wertz, Zachary LaPorta, Adam Mora, Jasmine Serbas, Todd A Astorino, Comparison of Acute Physiological and Psychological Response Between Moderate-Intensity Continuous Exercise and Three Regimes of High-Intensity Interval Training, *Journal of strength and conditioning research* vol. 32,8 (2018) 2130-2138. https://doi.org/10.1519/JSC.0000000000002154

[19] Álvaro Sicilia, Piedad Sáenz-Alvarez, David González-Cutre, Roberto Ferriz,, Social Physique Anxiety and Intention to Be Physically Active: A Self-Determination Theory Approach, *Research Quarterly for Exercise and Sport*, 87 (2016) 354-364. https://doi.org/10.1080/02701367.2016.1213351

[20] N. Ntoumanis, S.J. Biddle, A review of motivational climate in physical activity, *Journal of Sports Sciences,* 17 (1999) 643-665. https://doi.org/10.1080/026404199365678

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Conflict of interest

None of the authors have any conflicts of interest to declare.

Informed consent

All participants gave written informed consent to participate in this study.

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