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Anthropometric Parameters, Lower Limb Functionality and Quality of Life After High-Intensity Interval Training in Healthy Young People Versus Older Adults

Parámetros Antropométricos, Funcionalidad de Miembros Inferiores y Calidad de Vida Posterior al Entrenamiento Interválico de Alta Intensidad en Jóvenes Versus Personas Mayores

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SUMMARY: The aim of this study was to determine the effects of High-intensity interval training (HIIT) on the quality of life in healthy young people (YNG) and older adults (OLD)and its correlation with physical health status (anthropometric parameters and lower limb functionality) YNG (21 ± 2 years, BMI 26.37 ± 2.69 n = 12) and OLD (67 ± 5 years, BMI 27.16 ± 3.04 n = 12) groups underwent 12weeks of HIIT. Before and after the HIIT, anthropometric assessments, lower limb functionality tests,and SF-36 quality-of-life questionnaire were performed. There were no significant changes in the SF-36 dimensions (P>0.05). After HIIT, there were improvement percentage changes in Mental Component Summary (MCS) (YNG, +8.51 ± 25.80 % vs. OLD, +2.30 ± 9.05 %) and in Physical Component Summary (PCS) (YNG, +2.66 ± 20.54 % vs. OLD, +4.34 ± 22.71 %). Negative correlations were observed between body mass index (BMI) with PCS (R=-0.570, P=0.009) and with MCS (R=-0.649, P=0.002) in OLD as well as between MCS and waist circumference (R=-0.557, P≤0.001) in both groups. Also, correlations were observed between PCS and the sit-to-stand test (R=-0.424, P=0.006) in both groups and gait speed (R=0.458, P=0.042) only in YNG. HIIT promotes positive percentage changes in quality of life, with YNG showing better results in PCS and OLD in MCS. Quality of life and physical health status were correlated in both groups.

KEY WORDS: High intensity interval training; Healthy aging; Anthropometry, functional ability; Quality of life.

INTRODUCTION

Aging process is complex (Rowe & Kahn, 1987), and age-related physiological changes are not only responsible for triggering reductions in functionality, independence and quality of life in the older population (Boutros *et al*., 2019). The impact of healthy behaviors and lifestyles on aging and health status in the general population has been underestimated. An optimal emotional and nutritional state, and adequate levels of physical activity will provide physical, mental and social well-being, contributing important physiological reserves for the course of a person's life (Rowe & Kahn; Boutros *et al*.).

Being sedentary as part of those lifestyles has been related to cardio-metabolic, physical and mental disorders, such as stress, depression and anxiety, that deeply affect self-reported well-being and quality of life, mainly in the young university population (Chang *et al*., 2016). In the same way, sarcopenia and being sedentary have been linked to the main risk factors associated with the development of non-communicable chronic diseases and reduced musculoskeletal physical function after 60 years (Bouchard *et al*., 2011). Physical disabilities and comorbidities affect the level of per-

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sonal satisfaction and quality of life in older adults, key components of healthy aging (Awick *et al*., 2017).

With changes in physical and mental health, aerobic exercise and resistance-exercise training have been demonstrated to partially counteract the cardio-metabolic and functional changes (Nelson *et al*., 2007; Dalmazzo *et al*., 2019). However, the beneficial effect of exercise on quality of life is related to the intensity of the training, both in young people and older adults (Snedden *et al*., 2019).

Therefore, high-intensity interval training (HIIT), characterized by brief periods of exercise of vigorous intensity interspersed with inactive recovery phases or low intensity of varying duration (MacInnis & Gibala, 2017), has been proposed as an efficient therapeutic alternative, with intracellular effects that improve body composition, cardiorespiratory capacity, insulin sensitivity and cardiovascular risk (Liu *et al*., 2019). However, current research on HIIT in the healthy older adult population is limited, and proposes this type of training as a complete intervention in the improvement of physical and functional conditioning (García-Pinillos *et al*., 2019). Yet little it is known about the effects of HIIT on the quality of life in the healthy young or older population. Essentially, the studies that have assessed quality of life after HIIT have focused on the pathological population: diabetes mellitus (Mangiamarchi *et al*., 2017),Parkinson's Disease (Cancela *et al*., 2020) and ischemic cardiopathy (Villelabeitia Jaureguizar *et al*., 2016), finding favorable metabolic and quality-of-life outcomes in the physical and mental health components (measured through the SF-36 questionnaire) (Villelabeitia Jaureguizar *et al*.; Mangiamarchi *et al*.; Adams *et al*., 2018). Consequently, and based on the aforementioned, the purpose of the following study was to determine if HIIT is beneficial as a multidimensional health intervention to improve quality of life in healthy men.

We hypothesize that after 12-week of HIIT, improvements will be observed in the quality of life through the SF-36 questionnaire in young people and older adults. In addition, significant correlations will be presented between quality of life and physical health assessment parameters (anthropometry and lower limb functionality).

MATERIAL AND METHOD

This study is secondary to a wider project that determined the effect of HIIT on several health parameters between young people vs. older adults, which already has a publication (Marzuca-Nassr *et al*., 2020).This research was approved by the Scientific Ethics Committee of the Universidad de La Frontera (Minutes Nº069_18, Page 025_18).

Subjects. Twenty four subjects all, twelve young people (YNG; age, 21 ± 2 y; weight, 77.16 ± 9.96 kg; body mass index [BMI], 26.37 ± 2.69 kg·m-2) and twelve older adults (OLD; age, 67 ± 5 y; weight, 76.86 ± 11.33 kg; body mass index [BMI], 27.16 ± 3.04 kg·m-2) were recruited to participate in the current study, who complied with the inclusion criteria (males between 18-35 and 55-75 years of age; sedentary; BMI above 18.5 or below 30 kg·m-2), and the exclusion criteria (surgery within 3 months prior to the screening; use of anticoagulants; musculoskeletal or orthopedic injuries; type 2 diabetes mellitus (determined by fasting blood glucose >100 mg/dl or HbA1c-values >6.5 %); uncontrolled high blood pressure; use of nutritional supplementation that can regulate skeletal muscle mass or cardiorespiratory capacity; smoker; thrombosis event in the family; and/or severe cardiac problems) and who also provided an informed consent in writing.

Subjects completed a routine medical screening and general health questionnaire to ensure their suitability to take part in the study, one week before the study. Later, separate tests were performed (test 1, PRE and test 2, POST) on two occasions.

Forty-eight hours before the first session and 48 hours after the last training session, a series of measurements was taken, which included an anthropometric parameter, lower limb functionality assessment and self-reported quality-of-life questionnaire (SF-36).

Anthropometric Parameters. Weight was measured on a SECA® platform scale (Madison, WI, USA) with a graduation of 0.1 kg and height was measured to an accuracy of 0.5 cm using a stadiometer coupled to the scale, with the subject barefoot. Body mass index (BMI) was also calculated using the formula proposed by Rolland-Cachera *et al*. (1991) (weight in (kg) /height2 in (m)). Waist circumference was measured with a SECA® tape measure graduated in centimeters (Madison, WI, USA). The evaluation was performed in exhalation at the midpoint between the lower rib and iliac crest of the right half of the body.

Lower limb functionality. Sit-to-stand test and gait speed were included as key assessments in lowerlimb functionality, assessed by the Short Physical Performance Battery (SPPB) (Guralnik *et al*., 1994).

The sit-to-stand test was performed in an armless chair. Subjects were asked to sit with their arms crossed in front of their chest during execution of the test. The best time of 5 repetitions was recorded.

Gait speed was evaluated in a long, unobstructed hallway with a non-slip surface. Subjects walked a distance of 4 meters at their usual speed on two occasions, recording the shortest time. With this result, each participant's gait speed was determined in meters (m) /seconds (s).

Quality of life questionnaire: The Short Form-36 Health Survey (SF-36). SF-36 quality-of-life questionnaire was used (Ware & Sherbourne, 1992). The present self-reported generic scale provides a profile of the overall state of health, validated for users with concomitant pathologies or the general population, with an estimation of reliability using a Cronbach's alpha greater than 0.70 in both dimensions (physical and psychological) (Ware & Sherbourne). The questionnaire consists of 36 items; 8 dimensions: physical function (10); physical role (4); bodily pain (2); general health (5); vitality (4); social function (2); emotional role (3); mental health (5), one item on health transition (1) and 2 component summaries of Physical Component Summary (PCS) and Mental Component Summary (MCS).

The score goes between 0 to 100 %, where a higher score implies a better health-related quality of life (Ware & Sherbourne).

High-intensity interval training. HIIT was done for 12 weeks (3x/week) on a stationary bicycle (Oxford®, BE2700) under personalized supervision and continuous heart rate monitoring (Polar T31 transmitter, Finland). A resistance that caused muscle fatigue after 1 minute of exercise at a speed between 30-40 km/h was applied in each session. This was done using the heart rate observed during the VO2maxtest as a reference. After this, there were 2 min of inactive rest, repeating each interval of exercise/rest 10 times (Marzuca-Nassr *et al*.).

Statistics. All the statistical analyses were performed using the SPSS software (version 25.0, Chicago, Illinois, USA).The level for statistical significance was set at $P<0.05$. All the data are expressed as mean ± standard deviation (SD) to describe the variables. The data before and after the intervention were analyzed using a repeated measures ANOVA with time (PRE vs. POST) as the intra-subject and group (YNG vs. OLD) as the inter-subject factor. In case of a significant interaction, pair wise t-tests were performed to determine the effects of time within the groups and independent t-tests for the group differences in the PRE and POST intervention values. Also, the delta percentage(D%) between the PRE and POST intervention of each of the subjects was calculated in relation to the SF-36 dimensions and analyzed with an independent t-test. Finally, the Pearson test was used to determine the correlation between the changes in anthropometry parameters, lower limb functionality and SF-36 questionnaire central components.

RESULTS

Subjects. Basal characteristics of the subjects are shown in Table I. At the beginning of the intervention, there were significant differences between YNG and OLD only in age ($P=0.009$).

Table I. Basal characteristics of the subjects.

	YNG (*n*=12)	OLD (*n*=12)
Age (y)	21 ± 2	67 ± 5**
Weight (kg)	77.16 ± 9.96	76.86 ± 11.33
Height (m)	1.71 ± 0.06	1.67 ± 0.06
BMI ($kg·m^{-2}$)	26.37 ± 2.69	27.16 ± 3.04
Waist circumference (cm)	89.75	97.65
SBP (mm Hg)	126.67 ± 5.61	127.67 ± 9.35
DBP (mm Hg)	79.58 ± 6.58	79.83 ± 7.87
HR (lpm)	71.17 ± 12.63	68.83 ± 10.10

YNG: young group; OLD: older group; BMI: body mass index; SBP: systolic blood pressure; DBP: diastolic blood pressure; HR: heart rate. Values represent means ± SD; ** Significantly different from YNG at the<0.01 level.

After 12 weeks of HIIT training, 2 young people and 2 older adults were lost, who withdrew due to personal or physical issues not related to the HIIT. In total, 20 subjects completed the study. Therefore, the following results are based on this quantity (YNG, n=10 vs. OLD).

Anthropometric parameters. Table II provides the anthropometric results between PRE and POST of the subjects who completed the intervention program. There were no significant inter- or intra-group differences ($P>0.05$) between YNG and OLD in body weight, BMI or waist circumference.

Table II. Anthropometric measurements before and after 12-week of HIIT program.

	YNG (*n*=10)		OLD (*n*=10)	
	Pre	Post	Pre	Post
Weight (Kg)	75.76 ± 9.99	75.03 ± 9.62	77.99 ± 11.40	78.06 ± 11.82
BMI ($kg·m^{-2}$)	26.01 ± 2.64	25.89 ± 2.18	27.43 ± 3.12	27.83 ± 3.18
Waist	89.17 ± 9.16	90.10 ± 13.03	99.12 ± 9.82	98.74 ± 9.95

HIIT: high-intensity interval training, YNG: young group; OLD: older group; PRE: Pre-intervention; POS: Post-intervention; BMI: body mass index. Values represent means ± SD.

Lower limb functionality. With respect to lower limb functionality, OLD had a longer execution time in the sit-to-stand test than YNG (PRE, P=0.001 and POST, P=0.05) (Fig. 1A). After the 12-week of HIIT, the OLD group improved significantly (PRE vs. POST, P=0.009). 12-week of HIIT program was beneficial in significantly increasing gait speed in both groups (time effect, P=0.014; YNG ~11 % vs. OLD ~10 %), with no difference between groups (P=0.861) (Fig. 1B).

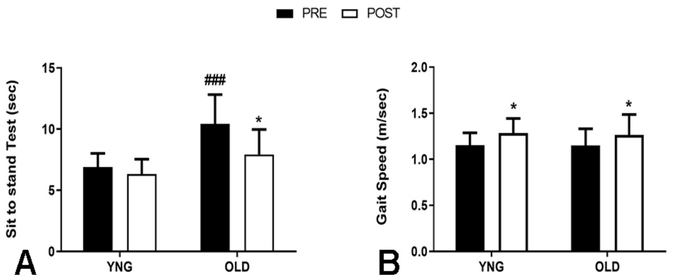

Fig. 1. Lower limb functionality before and after 12-week of HIIT program. Sit-stand changes (A), and (B) gait speed changes after 12 - week of HIIT program: high-intensity interval training, YNG: young group; OLD: older group; PRE: pre-intervention; POST: post-intervention. Sec: seconds; m/sec: meters/seconds. * Significantly different from pre-intervention values at the P<0.05 level; ### Significantly different inter-group at the P<0.001 level.

Quality of life (SF-36). Physical function before and after HIIT presented differences between YNG and OLD (P=0.031), with the YNG subjects scoring higher (Table III).

The remaining domains did not present significant differences (P>0.05), despite the variations in the delta percentage of the PRE vs. POST scores obtained in each domain. However, greater percentage changes were observed in the mental component summary in YNG group (MCS +8.51 ± 25.80 % and PCS +2.30 ± 9.05 %) and in the physical component summary in OLD group (PCS +4.34 ± 22.71 % and MCS +2.66 ± 20.54 %).

Correlations between quality of life with anthropometry parameters and lower limb functionality. Pearson test was performed between quality of life and BMI.A negative correlation was noted between PCS and BMI (R=-0.570, P=0.009) as well as between MCS and BMI (R=-0.649 P=0.002) in OLD (Table IV). Finally, waist circumference in all the subjects was related negatively with MCS (R=-0.557, P=0.000).

PCS also correlated moderate with the lower limb functionality, specifically in the variables gait speed in YNG (R=0.458, P=0.042) and the sit-to-stand test in all the subjects (R=-0.424, P=0.006) (Table V).

Table III. Changes in SF-36 parameters after intervention with HIIT program.

	YNG (n=10)			OLD (n=10)		
	Pre	Post	_ % Pre-Post	Pre	Post	_ % Pre-Post
Physical function	94.00 ± 5.68	95.50 ± 6.43	+0.70 ±6.82%	83.00 ±17.82#	86.00 ± 12.87#	+9.90 ± 25.11%
Physical role	92.50 ±10.12	95.62 ± 7.82	+4.50 ±15.13 %	79.37 ± 19.55	83.12 ± 23.94	+3.96 ± 17.16%
Bodily pain	75.50 ± 25.52	76.25 ± 22.92	+42.29 ±153.74%	70.75 ± 23.45	68.50 ± 29.02	+2.72 ± 41.11%
General health	62.00 ±13.78	62.00 ± 16.02	+2.20 ± 19.77%	68.00 ± 24.85	71.00 ± 24.47	+7.77 ± 18.91%
PCS	81.00 ±10.64	82.34 ± 8.97	+2.30 ±9.05%	75.28 ± 18.20	77.16 ± 21.07	+4.34 ± 22.71%
Vitality	56.87 ± 9.52	56.87 ± 14.26	+1.30 ± 24.92%	70.00 ± 20.16	71.87 ± 21.70	+7.48 ± 33.59%
Social function	76.25 ± 19.05	78.75 ± 25.72	+5.57 ± 34.01%	77.50 ± 20.24	81.25 ± 23.75	+6.19 ± 22.96%
Emotional role	60.83 ± 15.24	74.16 ± 23.39	+24.02 ± 36.33%	80.83 ± 19.66	78.33 ± 21.94	+0.11 ± 28.46%
Mental health	65.00 ± 14.53	68.50 ± 16.34	+8.33 ± 29.23%	76.00 ± 20.11	76.00 ± 20.38	+0.87 ± 12.61 %
MCS	64.74 ± 10.82	69.57 ± 17.40	+8.51 ± 25.80%	76.08 ± 18.48	76.86 ± 20.50	+2.66 ± 20.54 %

SF-36: Health-related quality-of-life questionnaire; HIIT: high-intensity interval training, YNG: young group; OLD: older group; PCS: Physical Component Summary; MCS: Mental Component Summary; Values represent means ± Significantly different inter group #P<0.05; D% Pre-Post: Delta percentage.

Table IV. Relation between SF-36 domains and anthropometric measurements before and after 12- week of HIIT program.

Correlation	**YNG**		**OLD**		**Total**	
PCS	***R***	***P***	***R***	***P***	***R***	***P***
BMI	0.258	0.272	-0.570**	**0.009**	-0.368*	**0.020**
Waist circumference	-0.078	0.744	-0.364	0.115	-0.296	0.064
MCS	***R***	***P***	***R***	***P***	***R***	***P***
BMI	-0.010	0.967	-0.649**	**0.002**	-0.298	0.061
Waist circumference	-0.094	0.693	-0.379	0.100	-0.557***	**0.000**

SF-36: Health-related quality-of-life questionnaire; HIIT: High-intensity interval training; YNG: young group; OLD: older group; PCS: Physical Component Summary; MCS: Mental Component Summary; BMI: body mass index; R: Pearson correlation. The correlation is significant at the level *: P<0.05, **: P<0.01, ***: P<0.001 (bilateral). Bold numbers at the P<0.05 level.

Table V: Relation between PCS and lower limb functionality before and after 12- week of HIIT program.

Correlation	**YNG**		**OLD**		**Total**	
PCS	*R*	*P*	*R*	*P*	*R*	*P*
Gait speed	0.458*	**0.042**	0.256	0.276	0.307	0.054
Sit-to-Stand test	-0.252	0.283	-0.429	0.059	-0.424**	**0.006**

PCS: Physical Component Summary; HIIT: High-intensity interval training; YNG: young group; OLD: older group; R: Pearson correlation. The correlation is significant at the level *: P<0.05, **: P<0.01 (bilateral). Bold numbers at the P<0.05 level.

DISCUSSION

The aim of the study was to determine if HIIT is beneficial as a multidimensional health intervention to improve quality of life in healthy men. We hypothesized that after 12-week of HIIT program improvements would be noted in the quality of life using the SF-36 questionnaire in young people and older adults. In addition, there could significant correlations between quality of life and physical health assessment parameters. Negative correlations were observed between body mass index (BMI) with PCS and with MCS in OLD as well as between MCS and waist circumference in both groups. Also, moderate correlation was observed between PCS and the sit-to-stand test in both groups and gait speed only in YNG.

Our findings showed that after 12 weeks of HIIT on a bicycle, gait speed increased in both groups and the execution time of the sit-to-stand test decreased. There were no significant changes on the SF-36 questionnaire after the intervention, but positive percentage changes were generated in PCS in young people and MCS in older adults. Finally, there were significant correlations between the SF-36 component summaries (PCS and MCS) and anthropometric parameters in older adults, as well as between PCS and gait speed in young people and sit-to-stand in all the subjects.

Based on these results, HIIT not only promotes positive responses in physical health, but also improvements in quality of life (Kell & Rula, 2019). With the above, it is reinforced that the practice of exercise generates benefits on the quality of life.

In this line, Snedden *et al*. demonstrated an inverse relationship between vigorous intensity exercise and self-reported mental health among college students.

An inadequate nutritional status (altered BMI values) in the general population independently decreases the quality of life, as a consequence of increased morbidity and deterioration of functional status (Gariballa & Alessa, 2018).

However, these associations are little explored in the older population and the studies that have shown a direct association between BMI and quality of life in older people living in urban and rural communities are mainly from Central and Eastern European societies (Gariballa & Alessa). However, these results coincide with the correlations observed in the present investigation (Wang *et al*., 2018).

In relation to physical capacity and its association with physical and mental well-being in the older population, it has been linked mainly in subjects with chronic conditions such as heart failure (Ostman *et al*., 2017) and hospitalized older subjects, where lower muscle strength and functionality is associated with a poor quality of health related life (Haider *et al*., 2016). On the contrary, this relationship is less detectable in the healthy young or older population (Dodds *et al*., 2014).

However, none of the young or older subjects who took part in this study presented important health comorbidities or sarcopenia according to the updated recommendations of the European Working Group on Sarcopenia in Older People (EWGSOP2) (Cruz-Jentoft *et al*., 2019), i.e., poor muscle strength, alteration in lower limb functionality or gait speed. Nevertheless, after the intervention of 12-week HIIT on a bicycle, there were significant improvements in lower limb functionality (sit-to-stand in OLD group and gait speed in both groups) and significant correlations between quality of life and physical health status in both groups.

Our results are similar to those published by Jiménez-García *et al*. (2019), who compared the effects of 12 weeks with HIIT (via Total-Body Resistance Exercise – TRX suspension training) vs. moderate continuous training (MCT) in older adults living in the community. The authors observed significantly greater effectiveness for HIIT (TRX) in parameters of BMI and gait speed (Jiménez-García *et al*.).

In addition, they observed similar benefits when comparing HIIT vs. MCT in the improvement of the domains of overall health, vitality and physical functioning on the SF-36 questionnaire. It is important to note that the older adults who took part in the HIIT (TRX) group presented basal lower values (grip strength, ≤28 kg; gait speed, <1 m/sec and quality of life, PCS=71.43 % and MCS=73.16 %) compared to the outcomes in this study. Therefore, we presume that our users are functionally healthier.

In this way, it is widely documented that HIIT is an effective strategy to improve quality of life for the older pathological population. Jaureguizar *et al*. (2016), demonstrated in adults with ischemic cardiopathy that HIIT was superior to MCT in improving the emotional role, mental health and MCS measured by the SF-36 questionnaire (Villelabeitia Jaureguizar *et al*.). Another study (Mangiamarchi *et al*.) integrated HIIT + nutritional education for middle-aged people with diabetes mellitus, showed significant improvements in physical function (+141.7 %), general health (+125.6 %) and the perception of vitality (+128.8 %) compared to the control group that only received nutritional education.

The outcomes were different to those observed in this study, with no significant intra-group results in any of the dimensions of quality of life after 12 weeks of HIIT on a cycloergometer. It is worth noting that the healthy subjects in our study initially presented favorable results (prior to the intervention) and that the self-reported SF-36 quality of life questionnaire has a low perception of significant minimum clinical change, which difficult when the initial result obtained is high; however, the changes in the summary components indicate potential benefits after 12 weeks of HIIT on a bicycle. In PCS, the group of older adults recorded the greatest positive changes after HIIT program, which is favorable considering that the current sphere is involved in the greater capacity for daily activities in everyday life and self-care, central components that give the older population well-being. In the young people, the best outcomes were in the MHC.

Our results are consistent with those reported by Engel *et al*. (2019), worked with young adults for 8 weeks with functional suspension HIIT and also had no significant changes in any of health-related quality-of-life components; however, it is important to emphasize that they used a different self-report instrument (The World Health Organization Quality of Life (WHOQOL-BREF)). In spite of this, the WHO quality-of-life questionnaire (WHOQOL-BREF) also indicated changes in standardized mean differences (SMD) more favorable in the dimensions of psychological health, social relations and environment in the subjects involved in this protocol.

Therefore, it is essential to have interventions that can prevent, delay and treat a sedentary lifestyle and sarcopenia during healthy aging through early and effective interventions (Garatachea *et al*., 2015).

Hence, HIIT is proposed as a health-promoting intervention that contributes to maintaining a healthy population by improving comprehensive assessment parameters closely related to physical and mental well-being, which includes the concept of health.

Within the limitations and due to the study design, we are unable to determine if not performing the intervention (control group) or another training modality is more effective than HIIT. In addition, the use of SF-36 questionnaire in the subjects in this study was limited due to its low sensitivity to perceiving minimum clinical changes in relation to its psychometric properties; however, there is no instrument that exclusively measures quality of life in a healthy population.

CONCLUSION

In conclusion, HIIT for 12 weeks promotes positive percentage changes in quality of life, with YNG showing better results in PCS and OLD in MCS. Finally, there were moderate correlations between quality of life and anthropometric parameters and lower limb functionality.

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RESUMEN: Determinar los efectos del entrenamiento interválico de alta intensidad (HIIT) sobre la calidad de vida en jóvenes sanos (YNG) y personas mayores (OLD) y su correlación con el estado de salud física (parámetros antropométricos y funcionalidad de miembros inferiores). Ambos grupos, YNG (21 ± 2 años, IMC 26,37 ± 2,69 n = 12) y OLD (67 ± 5 años, IMC 27,16 ± 3,04 n = 12) realizaron 12 semanas de HIIT. Antes y después del HIIT, se realizaron evaluaciones antropométricas, pruebas de funcionalidad de miembros inferiores y cuestionario de calidad de vida SF-36. No hubo cambios significativos en las dimensiones del SF-36 (P >0,05). Después del HIIT, hubo cambios porcentuales de mejora en el componente sumario mental (MCS) (YNG, +8.51 ± 25.80 % vs. OLD, +2.30 ± 9.05 %) y el componente sumario física (PCS) (YNG, +2,66 ± 20,54 % vs. OLD, +2,30 ± 9,05 %), correspondientes a la calidad de vida. Se observaron correlaciones negativas entre el índice de masa corporal (IMC) con PCS (R=-0,570; P=0,009) y con MCS (R=0,649; P=0,002) en OLD, así como entre MCS y circunferencia de cintura (R = - 0,557, P≤0,001) en ambos grupos. Además, se observaron correlaciones entre PCS y la prueba de sentarse y levantarse (R = -0,424; P = 0,006) en ambos grupos y la velocidad de la marcha (R = 0,458; P = 0,042) solo en YNG. HIIT promueve cambios porcentuales positivos en la calidad de vida, con YNG mostrando mejores resultados en PCS y OLD en MCS. La calidad de vida y el estado de salud física se correlacionaron en ambos grupos.

PALABRAS CLAVE: Entrenamiento interválico de alta intensidad; Envejecimiento saludable; Antropometría; Capacidad funcional; Calidad de vida.

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