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Research Article

A COMPARATIVE STUDY OF LIFE EXPECTANCY AND PERSONALITY TRAITS BETWEEN ATHLETES AND NON-ATHLETES

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ABSTRACT
The aim of the present work was to study the life expectancy and personality traits in athletes and non-athletes.50 sportswomen from Kerman city with 2 years of experience participating in different sports (judo, climbing, volleyball, aerobic and basketball) were selected randomly from sport clubs and 50 non-athletes women was selected from Kerman citizens randomly. For data collection we usedHope Scale Questionnaire and NEO-Five Factor Inventory (NEO-FFI) (short form) questionnaires.Statistical analysis showed that differences between athletes and non-athletes in life expectancy have significance differences, but mean score of life expectancy in non-athletes is lower than athletes'subjects.Statistical analysis showed that a difference between athletes and non-athletes in term of neuroticism, extraversion and agreeableness is not significance, while statistical analysis showed that differences between athletes and non-athletes in term of conscientiousness and openness to experience have significance differences.

Keywords: *of Life Expectancy, Personality Traits, Athletes, Non-Athletes*

INTRODUCTION
Considerable research has been devoted to the analysis of psychosocial factors associated with the development of a variety of health behaviours over the past decade (Bermudez, 1999; Courneya *et al.*, 1999). In the wake of this research, one important point has become clear: the main cause of mortality can be prevented by making certain lifestyle and behaviour changes (Craig *et al.*, 1999). Less attention, however, has been paid to the reasons and mechanisms that explain why individuals keep engaging or disengaging in behaviours that they know is beneficial to their health. Furthermore, why do individuals fail to develop habits that could increase their quality of life and well-being? The association between sedentary lifestyle and all-cause mortality and morbidity is well documented (Craig *et al.*, 1999) and represents one of the most prevalent behavioral health risks in industrialized countries (US Department of Health and Human Services, 1996). The physical benefits of exercise have also been well documented and include a reduced risk of diabetes, heart disease, high blood pressure, bone density loss, premature death, as well as improvement in weight management and overall fitness (Bouchard *et al.*, 1994; Warburton *et al.*, 2006). Research suggests that the benefits of regular exercise extend beyond the primary prevention of chronic physical diseases, as regular exercise has been demonstrated to improve mental well-being and quality of life (Courneya *et al.*, 2000). Despite the health threats posed by inactivity, research indicates that 60% of the population remains insufficiently active to receive health benefits from physical activity and 25% of the population is considered sedentary (Stephens and Caspersen, 1994; US Department of Health & Human Services, 1996). Furthermore, the attrition rates from structured exercise programsremain high. About 50% of exercise participants terminate their involvement within the first six months of enrollment (Craig *et al.*, 1999). Studies in the field of health promotion and exercise psychology have recently focused on determining psychological variables that influence exercise behavior. Little research, however, has been devoted to the psychological mechanisms by which personality traits affect health related behaviors (Bermudez, 1999; Hoyle, 2000). One possible mechanism is motivation. Researchers have examined the association between personality traits and exercise participation motives, but it is hard to discern a consistent pattern in the findings. The study of such surface motives does not in itself reveal much about the underlying motivational processes. By adopting a

self-determination theory perspective it may be possible to elucidate the motivational processes by which personality traits influence engagement in health-related behaviors such as exercise. Moderate, non exhaustive physical activity is thought to have a positive influence on health and life expectancy in both laboratory rodents (Holloszy, 1988; Navarro *et al.*, 2004) and human beings (Lee and Skerrett, 2001; Warburton *et al.*, 2006). Beneficial effects of exercise include lowered body adiposity due, in part, to increased energy expenditure, and a reduced risk of developing the metabolic syndrome and associated diseases (e.g., diabetes mellitus, cardiovascular disease, hypertension, etc.; for review, see Carroll and Dudfield, 2004; Warburton *et al.*, 2006). Beneficial effects of exercise have been shown experimentally in mice and rats by providing them with access to running wheels (Goodrick, 1980; Holloszy *et al.*, 1985; Holloszy, 1993) or by exercising them on treadmills (Navarro et al. 2004). Rats with wheel access show an increase in median (but not maximum) life span of approximately 10% compared with their sedentary counterparts (Goodrick 1980; Holloszy *et al.*, 1985).

Beneficial effects of exercise contrast with expectations from the rate-of-living theory that proposes an inverse relationship between energy expenditure and life span (Rubner, 1908; Pearl, 1928). In principle, this relationship might come about by the production of free radicals (or reactive oxygen species [ROS]), which occurs during aerobic metabolism in mitochondria and that can cause oxidative damage to macromolecules in cells, thereby contributing to senescence (the free-radical theory ofaging (Harman, 1956; Beckman and Ames, 1998). In agreement with these ideas, several intraspecific studies have shown a reduction in life span in exercising animals; for instance, honeybees that were made to carry extra loads while foraging had reduced life spans (Wolf and Schmid-Hempel, 1989), as did kestrels that had increased workloads when caring for enlarged families (Daan *et al.*, 1996). In humans, professional athletes have shorter life expectancies than the general population (Samaras *et al.*, 2002), and a recent study found a negative relationship between basal metabolic rate and life span (Ruggiero *et al.*, 2008). In contrast, other intraspecific studies of rodents, such as those where animals were exposed to cold or exercise (Holloszy and Smith, 1986; Holloszy, 1988; Navarro *et al.*, 2004; Selman *et al.*, 2008; Vaanholt *et al.*, 2009) or where the relationship of individual variation in metabolic rate to life span was examined (Speakman *et al.*, 2004), have failed to find a negative relationship between energy expenditure and life span.

Current research (Li, 1999; Wilson *et al.*, 2002) and commentary (Vallerand and Perreault, 1999) has highlighted the importance of understanding the motivational processes that regulates exercise initiation and persistence. One theoretical approach that holds appeal for understanding exercise motivation is called self-determination theory (SDT) (Deci and Ryan, 1985; Ryan and Deci, 2000). SDT proposes that persistence behavior and psychological wellbeing are regulated via mechanisms reflecting the quality of motivation toward a particular activity (Ryan and Deci, 2000). SDT is founded on the premise that there are innate psychologicalneeds for autonomy, competence, and relatedness and it also recognizes a distinction between intrinsic and extrinsic motivation.

Research aimed at identifying reasons for exercise also occurs in the context of associated personality traits and lifespan. Personality characteristics are individual differences that predispose, or facilitate, the development and preservation of certain patterns of behavior (Bermudez, 1999). In addition, the identification of such variables and the analysis of their association with different kinds of behavior permit researchers to assess an individual's vulnerability and facilitate the identification of variables on which to focus to improve their health. It is valuable to include personality traits when researching exercise motivation because those traits can provide the framework within which motivation occurs (Eysenck and Eysenck, 1985). The Five-Factor Model (FFM) of personality is a version of trait theory that views humans as people with consistent and enduring individual differences (McCrae and John, 1992). The five personality dimensions of the FFM are Neuroticism, Extraversion, Openness to Experience, Agreeableness, and Conscientiousness. One major advantage of the FFM is that it provides a comprehensive yet parsimonious taxonomy of personality traits. Still, it is not believed that thefive-factor factors exhaust personality but rather represent personality at the highest hierarchical level of trait description (McCrae and John, 1992). The FFM is assessed using the NEO-Five-Factor Inventory (NEO-

FFI) developed by Costa and McCrae (1992).However, the aim of present study was to compare the personality traits and lifespan between athletes and non-athletes in Kerman city.

MATERIALS AND METHODS

The method of the present study was descriptive research. 50sportswomen from Kerman city with 2 years of experience participating in different sports (judo, climbing, volleyball, aerobic and basketball) were selected randomly from sport clubs and 50 non-athletes women was selected from Kerman citizens randomly.

Instruments

In order to obtain general demographic data we used The General Demographic Questionnaire.

Hope Scale Questionnaire: A 12-item measure of a respondent's level of hope. In particular the scale is divided into two subscales that comprise Snyder's cognitive model of hope: (1) Agency (i.e., goal-directed energy) and (2) Pathways (i.e., planning to accomplish goals). Of the 12 items, 4 make up the agency subscale and 4 make up the Pathways subscale. The remaining 4 items are fillers. Each item is answered using a 4-point Likert-type scale ranging from Definitely False to Definitely True. Internal consistency was determined using Cronbach's α for Hope Scale questionnaire. The internal consistency of the questionnaire applied in the study was high (Cronbach α=0.80).

NEO-Five Factor Inventory (NEO-FFI) (short form): there are two forms of NEO-FFI, one form S for self-report and the other, form R, for observer rating. The form R starts with the third person pronoun and it is used to rate people by their spouse, peer or an expert. The form R can be used independently or as a complement for self-reports or its validity. This scale has 60 items scored from zero to four. Each item indicates one of the five big factors of personality developed by Costa and McCrae including Neuroticism (N), Extraversion (E), Openness to experience (O), Agreeableness (A) and Conscientiousness (C). Each domain covers 12 items. In relation to validity (Costa and McCrae, 1992) reported the Cronach's α between 0.68 (for agreement) to 0.86 (for neuroticism). Results of Garooci (1998) indicated that Chronbach's α was 0.86 for neuroticism, 0.75 for extraversion, 0.74 for openness to experience, 0.75 for agreeableness and 0.83 for conscientiousness. NEO-FFI was normalized by Garooci (1999) in Iran.

The result distributions are presented and basic descriptive parameters (arithmetic mean ± standard deviation) were calculated. The differences between the groups were tested t test. The level of statistical significance was set at $P<0.05$ and we used SPSS software ver 16 for data analysis.

RESULTS AND DISCUSSION

Results

Age of athletes are 28, 54 and 18% in 16-25, 26-35 and 36-45 categories, respectively; while are 32, 52 and 16% for non-athletes (Table 1).

Table 1: Age distribution of athletes and non-athletes subjects

Variable (age)	athletes		non-athletes	
	Frequency	Percent	Frequency	Percent
16-25	14	28	16	32
26-35	27	54	26	52
36-45	9	18	8	16
Total	50	100	50	100

Education status of athletes and non-athletes participants showed in table 2.

Table 2: Education level of athletes and non-athletes

Age (Year)	athletes		non-athletes	
	Frequency	Percent	Frequency	Percent
Diploma and lower	16	32	14	28
Associate degree	4	8	5	10
Bachelor's degree	29	58	30	60
Masters	1	2	1	2
Total	50	100	50	100

Statistical analysis showed that differences between athletes and non-athletes in life expectancy have significance differences, but mean score of life expectancy in non-athletes is lower than athletes subjects (Table 3).

Table 3: Compare of life expectancy between athletes and non-athletes

Variable	N	Mean	Std. Deviation	t	df	sig
Athletes'	50	23.87	1.77	3.93	198	0.036
Non- Athletes'	50	22.70	1.55			

Statistical analysis showed that a difference between athletes and non-athletes in term of neuroticism is not significance, but mean score of neuroticism in non-athletes is higher than athletes subjects (Table 4).

Table 4: Compare of neuroticism between athletes and non-athletes

Neuroticism		N	Mean	Std. Deviation	t	df	Sig
	Athletes'	50	18.26	4.877	-0.289	98	0.773
	Non- Athletes'	50	18.52	4.072			

Statistical analysis showed that a difference between athletes and non-athletes in term on extraversion is not significance, but mean score of extraversion in non-athletes is lower than athletes subjects (Table 5).

Table 5: Compare of extraversion between athletes and non-athletes

		N	Mean	Std. Deviation	t	df	Sig
Extraversion	Athletes'	50	19.90	5.775	1.286	98	0.201
	Non- Athletes'	50	18.52	4.920			

Statistical analysis showed that a difference between athletes and non-athletes in term of agreeableness is not significance, but mean score of agreeableness in non-athletes is lower than athletes subjects (Table 6).

Table 6: Compare of agreeableness between athletes and non-athletes

Agreeableness		N	Mean	Std. Deviation	t	df	Sig
	Athletes'	50	21.8	4.494	1.259	98	0.211
	Non- Athletes'	50	20.58	5.174			

Statistical analysis showed that differences between athletes and non-athletes in term of conscientiousness have significance differences, and mean score of conscientiousness in non-athletes is lower than athletes subjects (Table 7).

Table 7: Compare of conscientiousness between athletes and non-athletes

Conscientiousness		N	Mean	Std. Deviation	t	df	Sig
	Athletes'	50	24.60	2.934	2.22	98	0.029
	Non- Athletes'	50	22.64	5.509			

Statistical analysis showed that differences between athletes and non-athletes in term of openness to experience have significance differences, and mean score of openness to experience in non-athletes is lower than athletes subjects (Table 8).

Table 8: Compare of openness to experience between athletes and non-athletes

		N	Mean	Std. Deviation	t	df	Sig
Openness to experience	Athletes'	50	32.30	3.748	2.20	98	0.030
	Non- Athletes'	50	30.56	4.151			

Discussion

It can be concluded that the difference in life expectancy between the Athlete and non- athletes is significant, and our hypothesis is confirmed. It can be seen that life expectancy among athletes is higher. Also based on the findings, it is suggested that training on a regular basis and documented life expectancy during the school year, students and staff offices and institutions will be taught to improve their performance. The findings across the epidemiological studies indicate that long-term vigorous exercise training can positively impact mortality and longevity. Specifically, endurance and mixed-sports athletes tend to survive longer than the general population.This is all very interesting, however there needs to be more research done in order to further delve into the reasons why this may be the case. Being physically active indeed appears to be associated with a higher life expectancy. Samitz *et al.,* (2011) as well as Warburton *et al.,* (2010) reported a mean reduction of mortality of 31% to 35% in persons who participate in regular leisure-time or daily life physical activity compared to that in inactive persons. Assuming a 40% lower mortality corresponding to a 5-year higher life expectancy (Farahmand *et al.,* 2009), regular physical activity should increase mean life expectancy by approximately (31% to 35%)/40% ×5 years or by 3.9 to 4.4 years. Indeed, the few articles that presented data on life expectancy in physically active individuals reported a 0.43- to 6.9-year higher life expectancy. High-quality studies considering confounding factors that could affect mortality reported a 0.43- to 4.21 year's higher life expectancy in physically active compared to inactive persons. The wide range of years added cannot be explained based on the published data. The studies that standardized extended life estimates for confounding factors (Byberg *et al.,* 2009; Jonker *et al.,* 2006; Nusselder *et al.,* 2009; Wen *et al.,* 2011) virtually calculated a net gain in life expectancy by being physically active. However, the actual increase in life expectancy should be much higher because of favorable effects of physical activity on other risk factors for mortality such as arterial hypertension, glucose and lipid metabolism, coronary heart disease, stroke, or malignancies. In fact, nonsmoking, normal weight, and physically fit men live on average 12 years (95% confidence interval, 8.6 to 14.6 years) longer than smoking, overweight, and physically unfit control subjects (Lee *et al.,* 2011). Subjects who never smoked, follow a healthy diet, are adequately physically active, and consume only moderate alcohol have a mean life expectancy that is 11.1 years longer than those who practice none of these healthy life behaviors (Lee *et al.,* 2011). In addition, regular physical activity increases the endurance of cells and tissues to oxidative stress, vascularization, and energy metabolism (Radal *et al.,* 2010). According to the results of the meta-analysis on allcause mortality in relation to physical activity performed by Samitz *et al.,* (2011), vigorous physical activity (>6 metabolic equivalents (MET)) reduces mortality slightly, but this reduction is significantly more pronounced than that for moderate activity (3–6 MET). A greater life expectancy is not associated with more years of being frail and depending on assistance. In contrary, Nusselder *et al.,* (2008) reported a gain of disability-free years of life with a higher life expectancy.

Statistical analysis showed that a difference between athletes and non-athletes in term of neuroticism is not significance. Statistical analysis showed that a difference between athletes and non-athletes in term on extraversion is not significance. The extraversion personality domain describes one's comfort level with relationships. Extraverts tend to spend much of their time maintaining and enjoying a large number of relationships. Extraverts are inclined to lead, talk, and exert themselves physically more often than other people. They also tend to be friendlier and more outgoing, thus the association between extraversion and

the SDT psychological need of relatedness. The need for relatedness concerns the universal propensity to interact with, be connected to, and experience caring for other people (Baumeister and Leary, 1995). Because the need for relatedness is essential, individuals tend to orient toward those situations that allow satisfaction of the need and away from those that thwart the need (Deci and Vansteenkiste, 2004). However, in many cases, an individual's behavior is not specifically intended to satisfy their basic needs. Rather, they do what they find interesting and personally important and they experience need satisfaction in so doing. Various researchers have suggested that exercise may be linked with dispositional characteristics of the individual, such as personality.

Courneya and Hellsten (1998) reported that exercise behavior was positively linked with extraversion. Personality factors were related to the different types of exercise behaviors that participants adopted. Extraverts preferred to exercise with others rather than alone thus fulfilling their need for relatedness or satisfying an inherent desire to maintain and enjoy their relationships.Statistical analysis showed that a difference between athletes and non-athletes in term of agreeableness is not significance. Statistical analysis showed that differences between athletes and non-athletes in term of conscientiousness have significance differences. Statistical analysis showed that differences between athletes and non-athletes in term of openness to experience have significance differences. openness personality domain addresses one's range of interests.

Openness to experience describes a dimension of personality that distinguishes imaginative, creative people from downto-earth, conventional people. Open individuals are intellectually curious, appreciative of art, and sensitive to beauty. This explanation of openness helps to clarify the association between openness and the SDT psychological need of autonomy.

The need for autonomy concerns people's universal urge to be causal agents, to experience volition, to act in accord with their integrated sense of self, and to endorse their actions at the highest level of reflective capacity (deCharmes, 1968). It also reflects a desire to engage in activities of one's choosing and to be the origin of one's own behavior. To be autonomous does not mean to be independent of others, but to feel a sense of willingness and choice when acting.Motivation is one of the many correlates of openness. Although the word openness may suggest a kind of passive tolerance of new experiences, in fact open individuals are characterized by an active pursuit of novelty. Autonomy is embedded with freewill and choice and thus an open individual's ability to adapt to a new situation is fundamental. This is a positive attribute when it comes to exercise and adherence. Open individuals are more likely to try new activities and are thus more likely to find one that they enjoy.

They are also not afraid of pursuing new situations and have more flexible attitudes.Conscientiousness is the trait of being painstaking and careful, or the quality of acting according to the dictates of one's conscience. It includes such elements as self-discipline, carefulness, thoroughness, organization, deliberation (the tendency to think carefully before acting), and need for achievement. Conscientiousness concerns the way in which individuals control, regulate, and direct their impulses. The benefits of high conscientiousnessare obvious. Conscientious individuals avoid trouble and achieve high levels of success through purposeful planning and persistence.

They are also positively regarded by others as intelligent and reliable. This description of conscientiousness helps to explain the association between conscientiousness and the SDT psychological need of competence.The need for competence concerns people's inherent desire to be effective in dealing with the environment (White, 1959).

Throughout life, people engage their world in an attempt to master it and to feel the sense of effectiveness when they do. It also implies that individuals have a desire to experience a sense of competence in producing desired outcomes and to prevent undesired events (Deci and Ryan, 1985). In the area of physical activity this might include feeling confident enough to engage in an activity or to pursue an exercise goal. For a conscientious individual this may also include trying to prevent an undesired health condition (i.e. heart disease or becoming overweight) through being physically active. Thus, conscientious individuals are able to feel motivated in a self-determined fashion because exercise can satisfy the need for competence.

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