

Quality of Life Determinants in Professional Athletes

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Abstract

Background

The study attempted to answer the question whether the type of practiced sport (individual, team) is a determinant of quality of life in athletes. The study was also intended to identify quality of life determinants in karate practitioners and team sports players from among such socio-cultural variables as age, gender, marital status, financial situation, education, and types of health behaviors.

Methods

The study involved 110 Polish players of team sports and 90 martial arts practitioners. All competitors had high sporting achievements.

A Paper-and-Pen Interview questionnaire was used as a standardized survey method. The Inventory of Health Behaviors by Z. Juczyński was used to evaluate respondents' health behaviors. The Comprehensive Quality of Life Scale by R. A. Cummins was used to measure the quality of life in its objective and subjective components, covering seven domains: material well-being, health, productivity, intimacy, safety, community and emotional well-being.

Results

The assumed research model proved to be statistically significant. However, of the many quality of life predictors only three proved to be statistically significant: proper dietary habits, positive mental attitude and athletes' gender. It turned out that men are statistically more likely to achieve a higher quality of life than women. The type of practiced sport did not turn out to be a quality of life determinant.

Conclusions

The results of the present study shows that it is necessary to intensify activities constituting the educational framework of athletes' training, including the activities of specialists in the area of pro-health behaviors: nutritionists, psychologists, health promoters, as it increases the chances of improving athletes' overall quality of life.

Background

In the context of the development of many mental health problems, including depression, finding ways to improve quality of life has become a cultural challenge in countries with high or satisfactory economic standards. One of the improvement strategies can be increased sporting activity, which may not only provide viewers with entertainment and enjoyment, but also give practitioners feelings of success, joy, community, or a sense of life. Sporting passions, goals and aspirations that trigger motivation to work on oneself help people to achieve their physical and psychosocial well-being [1, 2]. Commercialization of modern sport allows the best athletes to make a living from their passion. However, the

professionalization of sporting activities also entails a number of negative consequences specific to professional work, which may endanger the maintaining of a high quality of life [3–5].

The concept of quality of life has become popular in the perspective of social, economic and cultural development, but so far no flawless definition of quality of life, applicable in interdisciplinary research, has been formulated [6]. Quality of life is associated with a sense of life satisfaction and contentment with life progress, individual achievements, perspectives, perception of one's own potentials and resources found in the social, cultural, or physical environment [7]. According to Cummins [8], quality of life is a psychological state representing an aggregate measurement of seven domains of life satisfaction: material well-being, emotional well-being, productivity, intimacy, safety, community and health. Cummins et al. [9] proposed a model of subjective well-being homeostasis, which includes cognitive and emotional components, whose measurement allows the assessment of subjective quality of life. The model assumes two potential pathways involving the perception of met and unmet needs, which describe the relationships between the objective circumstances of life and perceived well-being. It focuses on a homeostatic system that faces and does not face environmental challenges. Individuals strive to maintain a constant level of life satisfaction, and well-being is controlled by personality and cognitive buffers that maintain a relatively constant balance, i.e. the level of life satisfaction. In the Western European population, the average life satisfaction rate amounts to 75 out of 100 points. The theoretical construct described above, which assumes the recognition of environmental challenges, may be helpful in considering the quality of life in professional athletes.

Research shows that physically active people, including professional athletes, enjoy higher quality of life levels than non-training people [10–13]. This is reflected in many aspects of life such as physical functioning, general health perception, social functioning, and mental health [14]. The positive impact of physical activity on the quality of life is also confirmed by authors of physical exercise programs used for treatment of depression and anxiety states, not only because of the involved release of endorphins but also interactions with other people, which is particularly evident in team sports [13]. Studies indicate that physical activity and fitness are strongly linked to a better quality of life [15]. It has even been proven that the level of sports advancement significantly affects the quality of life and is higher in professionals. Modolo et al. [16] suggest that a higher frequency and volume of training, i.e. a significant feature of professional sport, can have a significant impact on one's quality of life. Also the length of training experience of athletes is associated with increasing levels of life satisfaction, inner peace, sense of security, or personal success [13].

Numerous studies concerned with quality of life and its determinants have been conducted to date on groups of people affected by various physical dysfunctions, diseases, and psychosocial problems. Professional athletes are considered to be healthy people, living out of their own passion, and associated with success. Therefore, it is commonly assumed that their level of mental well-being is high, and they are often subjected to fulfilling the function of role models. However, athletes with a high level of sportsmanship function in a highly stressful environment. Extreme training loads often lead to mental exhaustion, increase professional stress, and reduce quality of life [17, 18]. From the point of view of

public health it is worthwhile to study elite athlete groups with a great power and range of social impact, who are opinion leaders, trendsetters, and ambassadors of such values as health, success, and good quality of life.

Aim

The study attempted to answer the question whether the type of practiced sport (individual, team) is a determinant of quality of life in athletes. The study was also intended to identify quality of life determinants in karate practitioners and team sports players from among such socio-cultural variables as age, gender, marital status, financial situation, education, and types of health behaviors.

Methods

Participants

The study involved 110 Polish players of team sports and 90 martial arts practitioners. The sample selection was purposive and accounted for the athletes' experience level. All competitors had high sporting achievements. The group of sports team players consisted of players from three top-tier Polish divisions of handball, football, volleyball, and basketball, i.e. *Ekstraklasa, I league, and II league*. The martial arts group comprised 90 Kyokushin and Shotokan karate competitors, most of whom were dan-ranked from 1 to 7. The majority of respondents were men (team players – 68.1%, martial arts practitioners – 74.4%) and single (team players – 80.9%, martial arts practitioners – 52.2%). The average age of karate practitioners was 34.67 years, and of team sport players – 23.84 years.

Measures

All respondents were informed about the purpose and course of the study and consented to take part in it. A Paper-and-Pen Interview (PAPI) questionnaire was used as a survey method.

The Inventory of Health Behaviors (IHB) [19] was used to evaluate respondents' health behaviors. It consists of 24 statements describing different types of health behaviors which, depending on their frequency, are assigned a value on a five-point scale. Based on the collected data, an index of overall intensity of health behaviors as well as indices for four individual categories of health behaviors, i.e. proper dietary habits (PDH), prophylactic behaviors (PB), positive mental attitude (PMA), and health practices (HP) were calculated.

The Comprehensive Quality of Life Scale by R. A. Cummins [20] was used to measure the quality of life in its objective and subjective components, covering seven domains: material well-being, health, productivity, intimacy, safety, community and emotional well-being. The respondents assessed first the validity of the domains in the form of statements on a scale from 1 to 5, and then determined the level of their satisfaction with them on a scale from 1 to 7.

Analytical Strategy

The collected data were statistically analyzed using the Statistica 12 software package. Basic statistics were calculated and single multivariate linear regression analysis was used. The non-parametric Mann-Whitney U test was used to assess the significance of differences between the variables, and correlations between the variables were calculated using Spearman's rank correlation coefficient. Effects for which the probability was $p < 0.05$ were assumed to be statistically significant.

Results

Age is a factor significantly differentiating the studied athletes ($p < 0.05$) both by sex (Table 1) and type of practiced sport. The average age in the group of professional team players was 23.8 years, while in the group of karate practitioners – 34.6 years ($Z = 4.84$; $p < 0.001$). The observed significant difference reflects the specificity of career development in different sports. In the group of martial arts practitioners a slightly higher average education level variable was also found ($p < 0.05$). There were no other differences with regard to the type of practiced sport.

Table 1
Analyzed variables in different groups of athletes.

variable	group of athletes	\bar{x}	<i>sd</i>	<i>me</i>	<i>q</i>	<i>z</i>	<i>p</i>
age	women	25.12	8.15	24.00	5.00	-2.18	0.029*
	men	30.19	13.01	24.00	8.50		
education	women	2.20	0.74	2.00	0.50	-0.06	0.948
	men	2.24	0.56	2.00	0.50		
financial situation	women	1.75	0.75	2.00	0.50	-0.53	0.594
	men	1.78	0.59	2.00	0.50		
overall quality of life	women	8.65	3.91	8.57	2.64	-3.30	0.0009*
	men	10.59	3.91	11.42	2.35		
emotional well-being	women	9.58	8.37	10.00	5.00	-1.85	0.063
	men	12.29	5.87	12.00	2.50		
community	women	8.62	6.59	8.00	3.00	2.45	0.014*
	men	6.73	5.92	6.00	4.50		
safety	women	10.32	6.65	10.00	4.50	-2.13	0.033*
	men	12.52	5.40	12.00	2.50		
intimacy	women	9.91	6.59	10.00	5.00	-4.41	0.000*
	men	14.23	5.96	15.00	5.00		
productivity	women	9.91	6.82	6.00	4.00	-1.76	0.077
	men	8.50	6.75	8.00	3.00		
health	women	8.56	6.67	9.50	5.00	-4.12	0.000*
	men	12.67	5.75	15.00	2.50		
material well-being	women	6.60	5.22	6.00	3.00	-0.72	0.468
	men	7.17	4.63	8.00	2.00		
IHB	women	84.24	13.19	85.00	6.50	0.88	0.377
	men	83.28	11.86	83.50	7.50		
PDH	women	3.56	0.69	3.66	0.33	2.01	0.043*

Notes: \bar{x} – arithmetic mean, SD – standard deviation, Me – median, Q – quartile deviation, Z – Mann–Whitney U test for $n > 20$, p – probability value (statistically significant at $p \leq 0.05$ a symbol (*))

variable	group of athletes	\bar{x}	<i>sd</i>	<i>me</i>	<i>q</i>	<i>z</i>	<i>p</i>
PB	men	3.40	0.68	3.50	0.41	1.77	0.075
	women	3.51	0.63	3.50	0.50		
PMA	men	3.33	0.65	3.33	0.50	-2.50	0.012*
	women	3.50	0.68	3.58	0.41		
HP	men	3.76	0.58	3.83	0.33	1,50	0.132
	women	3.45	0.61	3.66	0.41		
				n	%		
gender	individual sports	women	23		25.56		
		men	67		74.44		
	team sports	women	35		31.82		
		men	75		68.18		
marital status	individual sports	single	47		52.22		
		married	43		47.78		
	team sports	single	89		80.91		
		married	21		19.09		
Notes: \bar{x} – arithmetic mean, SD – standard deviation, Me – median, Q – quartile deviation, Z – Mann–Whitney U test for $n > 20$, p – probability value (statistically significant at $p \leq 0.05$ a symbol (*))							

Gender is a factor significantly differentiating the respondents in terms of the analyzed variables. Men scored higher in overall quality of life and in quality of life domains such as health, intimacy, and safety. Women, on the other hand, obtained a higher score in the quality of life domain of community.

Most of the surveyed male athletes (48.59%) are characterized by an average level of health behaviors; a high level was found in 38.03%, and a low level in 13.38% of male athletes. On the other hand, in the group of female athletes, a low level of health behaviors was found in 24.14%, and a high level in 29.31% of respondents.

Although there was no significant difference between women and men with respect to the overall health behavior score, statistically significant differences were found for two out of four studied health behavior categories, i.e. proper dietary habits (PDH) and positive mental attitude (PMA) ($p < 0.05$). The women were characterized by a higher level of PDH, and men by a higher level of PMA.

Overall quality of life is positively correlated with all its domains (Table 2, Table 3) In women, the strongest correlation was noted with emotional well-being ($r_s = 0.721$), and the weakest with health ($r_s = 0.344$); while in men the strongest correlation was with productivity ($r_s = 0.769$) and the weakest with community ($r_s = 0.574$).

Table 2
Correlations between individual quality of life domains in female athletes.

variables	2.	3.	4.	5.	6.	7.	8.
1. material well-being	.016	.234	.004	.195	.583*	.154	.505*
2. health		.284*	.197	.248	-.226	.149	.344*
3. productivity			.319*	.226	.294*	.279*	.616*
4. intimacy				.569*	.041	.451*	.642*
5. safety					.136	.338*	.658*
6. community						.145	.415*
7. emotional well-being							.701*
8. Overall quality of life							
*p < .05							

Table 3
Correlations between individual quality of life domains in male athletes.

variables	2.	3.	4.	5.	6.	7.	8.
1. material well-being	.331*	.434*	.235*	.358*	.183*	.346*	.580*
2. health		.446*	.380*	.486*	.158	.505	.681*
3. productivity			.362*	.345*	.458*	.435*	.769*
4. intimacy				.400*	.266*	.479*	.631*
5. safety					.240*	.571*	.678*
6. community						.263*	.574*
7. emotional well-being							.721*
8. Overall quality of life							
*p < .05							

In order to identify the best predictor of quality of life from among such variables as type of sport, age, gender, marital status, education, financial situation, or health behaviors (PMA, PDH, PB, HP) (Fig. 1) a single multivariate linear regression analysis was carried out. The assumed model proved to be

statistically significant. The coefficient of determination explained 24% of the dependent variable of overall quality of life ($R^2 = 0.245$; $df = 11$; $F = 5.573$; $p = 0.000$). However, of the many quality of life predictors only three proved to be statistically significant: PDH ($B = 0.181$; $\beta = 0.204$; $t = 2.423$; $p = 0.0163$), PMA ($B = 0.814$; $\beta = 0.283$; $t = 3.040$; $p = 0.002$) and athletes' gender ($B = 0.843$; $\beta = 0.191$; $t = 2.646$; $p = 0.008$). It turned out that men are statistically more likely to achieve a higher quality of life than women. The type of practiced sport did not turn out to be a quality of life determinant.

Discussion

Quality of life is a complex construct and all its determinants are rather difficult to establish and, above all, to estimate [21]. Most of them, however, can be grouped into several basic categories: genetic, psychological, social, and economic [22–25]. All these categories of quality of life determinants are represented in present-day competitive sport. Preselection in sport accounts for candidates' genetic and psychological predispositions affecting sporting success and thus the socio-cultural and economic development of the individual.

Sporting activity is manifested by a great diversity of competition types, conditions, and rules of practice. In the present study, athletes representing two different types of sport competition, i.e. individual and team sports, were analyzed. According to Veenhoven [26], individualization in society improves quality of life. However, in the present study this distinction has not proven to have a significant connection with the quality of life of athletes.

In our model, athletes' gender proved to be an important predictor of quality of life. Men achieved a better, significantly differentiated, quality of life score, corresponding with the results of Tanabe et al. [27] and Padrão dos Santos [12].

In the US population, the lower quality of life of women is explained by sociodemographic differences, in particular, by the socioeconomic variation in self-esteem [12, 28]. Perhaps the existing gender inequalities in the world of sport have a similar effect on the obtained results. According to Smith and Stewart [29] sport is still a male domain, and female athletes' careers are somewhat different due to the different culturally established roles of women in a society determined by motherhood.

In the present study financial situation was not a significant quality of life determinant. Material well-being was not a dominant feature of the overall quality of life score either. Numerous studies indicate that although socio-economic status is associated with a better quality of life for Poles, it is not a dominant determinant and guarantee of happiness and life satisfaction [30]. It can also be assumed that the surveyed athletes, especially those representing the martial arts, are not characterized by a purely hedonistic approach, but rather demonstrate an eudaimonic orientation in their lives [31].

Undoubtedly, modern professional sport generates business values but it should also focus on developing social values. It is extremely important to maintain an appropriate balance in this respect [32]. It should not be forgotten that professional sport is, however, a highly specific business activity and, as

Smith and Stewart [29] note, requires a specific approach as it has both commercial and cultural dimensions. This can generate many social benefits for a number of parties involved in sport. Successful sport practitioners are assured of a high level of social status, but not always economic. The latter depends on the type of sport, its mediality, and popularity. Combat sports and martial arts, and especially karate - as in this study, do not offer a business product with such mass spectacular potential as popular team games (football, volleyball, basketball). This often happens, even despite objectively more prestigious sporting successes of athletes of some niche sports. However, sports with both smaller and greater commercial potential can provide space for satisfying experiences for practitioners and thus support their quality of life.

Healthy behaviors are important for improving quality of life. Ge et al. [33] proved that increasing physical activity and promoting adequate sleep duration is a key health promotion strategy dedicated to young people. Researchers stress that sport can be responsible not only for physical well-being, but it also has a great potential for socialisation and contributes to solving problems and improving quality of life, therefore young people should be encouraged to engage in extracurricular sports activities [34]. Professionalism in sport requires practicing pro-healthy behaviors. Appropriate diet, sleep duration, and constructive stress management are necessary to achieve good sporting results [35]. In a well-organized training process athletes receive support from many specialists. Education in this area is also very important [36]. In the tested regression model significant quality of life determinants included not only proper dietary habits, but also a positive mental attitude. Most studies indicate a positive correlation between optimism and sports performance [37]. A well-organized training process is aimed not only at developing physical fitness, but also at strengthening the mental potential of athletes, which is indispensable in both sport competition and training.

Conclusions

The results of the present study shows that it is necessary to intensify activities constituting the educational framework of athletes' training, including the activities of specialists in the area of pro-health behaviors: nutritionists, psychologists, health promoters, as it increases the chances of improving athletes' overall quality of life. The type of practiced sport is not a significant quality of life predictor, perhaps because high-level sports activities are professional in nature, which makes the professional and sports activities uniform. Further research into the quality of life of athletes should take into account their successes and failures, i.e. their career paths. Finally, studies of determinants of athletes' quality of life can help develop optimal strategies for improving the quality of life in society in general.

Abbreviations

IHB
The Inventory of Health Behaviors
PDH
Proper dietary habits

PB
Prophylactic behaviors
PMA
Positive mental attitude
HP
Health practices

Declarations

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Authors' contributions

PFN and CK conceived, designed, and executed the study. PFN analyzed the data. PFN, CK, and DB prepared the manuscript. All authors contributed to the article and approved the submitted version.

Ethics approval and consent to participate

All research activities were reviewed and approved by Opole University of Technology Research Ethics Committee. Written informed consent was obtained from participants prior to study commencement.

Consent for publication

Not applicable.

Competing interests

The authors declare that they have no competing interests.

Availability of data and materials

The datasets generated and analyzed during the current study are not publicly available due to ethical restrictions but are available from the corresponding author on reasonable request.

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Figures

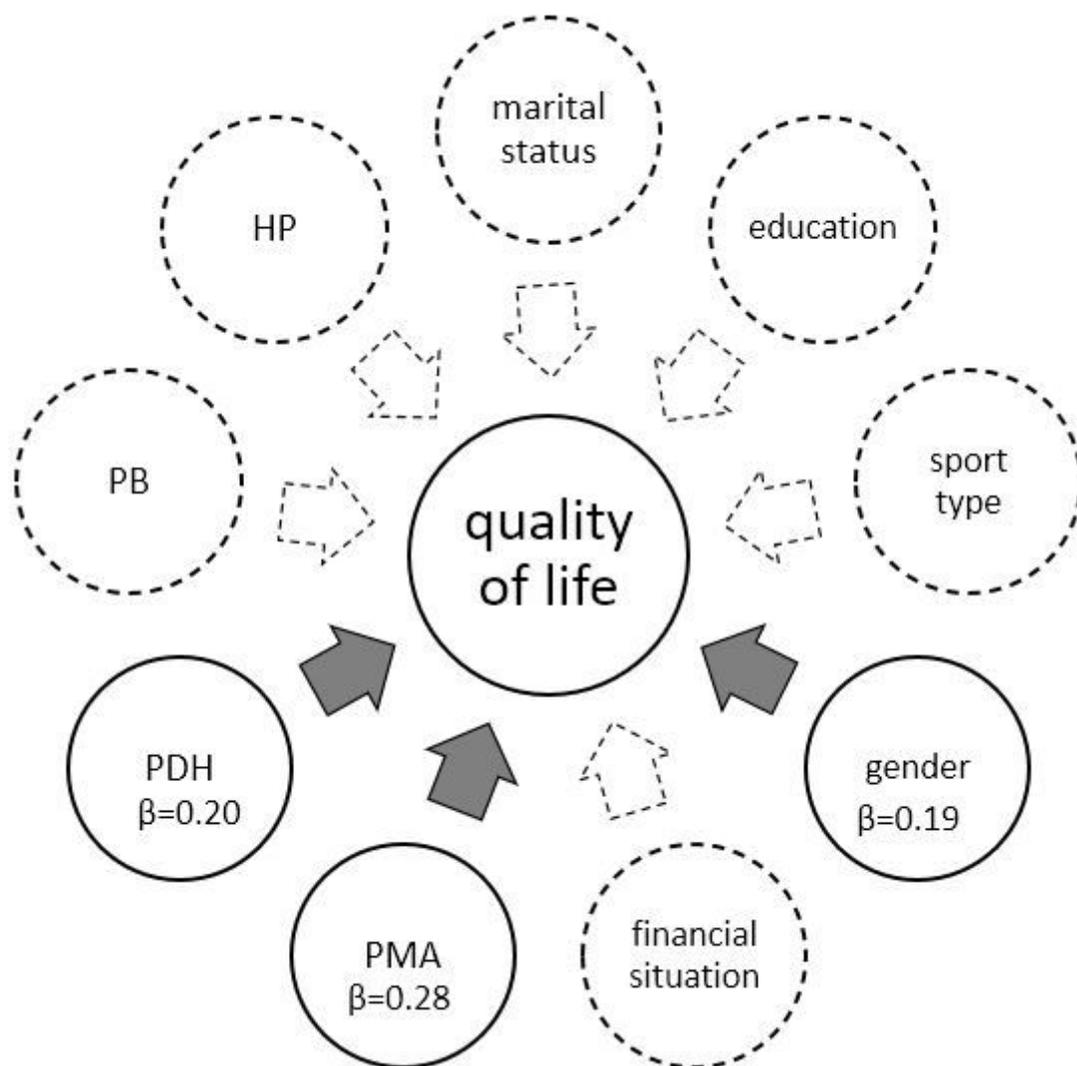


Figure 1

PDH: Properdietaryhabits PB: Prophylacticbehaviors PMA: Positivementalattitude HP: Health practices