

# A Study on Retired Athletes' Security Policy Optimization Based on the Capability

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**Abstract**—Based on the research data of Liaoning province and constructing logistic econometric model, it studies the influencing factors of retired athletes' life satisfaction with Amartya.Sen' capability theory. The result shows that five instrumental freedoms have great impact on retired athletes' life satisfaction, including rights security, political freedom, economic situation, social mechanism, transparency assurance, protective security. It puts forwards suggestions: optimizing the retired athletes' security policy, building up security policy idea based on capability and focusing on the athletes' development; setting up available right expressing channels to ensure retired athletes' rights; perfecting retirement compensation mechanism and building up retired athletes' economy foundation; improving human capital investment and accumulation to provide more chances for retired athletes; developing the supportive function to achieve maximum effectiveness of help resources; perfecting social security system and enhancing retired athletes' protective security.

**Keywords**—athletes; capability; logistic model

## I. INTRODUCTION

In China, professional athletes devote a lot to national sports development. In 2008 Beijing Olympic Games, they won 100 medals, heading the medal table. All that set up a brand new sport imagery in the world. However, as a special group, athletes' career is limited. After retirement, they have a single choice for their professions, which will not defend the social risks. Although there are series of policies, it cannot meet the needs or solve the problems, such as athletes' education, employment, security and so on. Because a number of athletes retire every year and the enforcement of settlement policy is limited. All these challenge the nation in the process of transformation. Therefore, it is urgent to enhance the athletes' capabilities and solve the retired athletes' career development and long-term livelihoods[1-3].

## II. THE THEORY ANALYSIS

In 1990s, welfare economist Amartya.Sen (Sen, 1992) suggested that welfare could not only be measured on material, but also on the immaterial substance. He proposed the theory of capability and approach, which is about individual welfare evaluation and development situation. Capability is the collection of possible multifunctional activities. However, the individual capability depends on five instrumental freedoms: political freedom, economic situation, social opportunity, transparency security and protective security. Political freedom refers to political participation, self-benefit expression and

freedom; economic situation refers to the opportunity of having and using the economy resources; social opportunity is the system of education and health care, which affects the individual freedom of sharing life; transparency security refers to the information transparency, which is the foundation of the dealing with issues. Protective security is the social safety web for vulnerable groups. The five instrumental freedoms transform into capability influenced by personal characteristics, individual differences and external elements. To obtain capability not only sets an important goal for evaluating individual development, but also becomes the core security for realizing development.

Amartya.Sen' capability theory and approach provides a new perspective for analyzing vulnerable groups' poverty problem, improving this groups' far development and security policy. Based on Amartya. Sen's capability theory and retire athletes' characteristics, the paper constructs the retired athletes capability analysis structure. The retired athletes' capability depends on political freedom, economic freedom, social opportunity, transparency security and protective security. Political freedom refers to retired athletes' rights security, including rights expressing channel and rights expressing ability; economic situation includes financial compensation and income; social opportunity includes education, professional development training, physical and psychological health, family relationship web and information channel; transparency security includes the concern from society to retired athletes and the knowledge about the policies; protective security includes retired athletes' settlement and social security participation[4-5].

Retired athletes' capability analysis structure has advantages: first, it focuses on the origin of retired athletes' weakness and poverty, which means freedom lack and capability shortness. It seizes the essence of the retired athletes' security. Second, it can improve the efficiency. From the perspective of the instrumental freedoms realization, it can solve the retired athletes' security with a definite propose. Adopting retired athletes' capability analysis structure and survey data, this paper analyzes retired athletes' life optimization policy[6-7].

## III. MODEL STRUCTURE AND DATA RESOURCE

According to Sen' capability theory, capability is the crucial standard of evaluating welfare level and its development situation. The five instrumental freedoms: political freedom, economic situation, social opportunity

transparency security and protective security are the significant elements for capability. Provided that the athlete is an economic man, he can judge the life reasonably. At the same time, it supposes that retired athletes' characteristics, rights security, economic situation, social opportunity, transparency security, protective security have great influence on life satisfaction. Setting up an empirical model about retired athletes' life satisfaction:

Retired athletes' life situation =  $f$  (personal characteristics, political freedom, economic situation, social opportunity, transparency security and protective security).

In the paper, the explained variable 'retired athletes' life is dichotomous variable. The athletes need to choose one item, 'satisfaction' or 'dissatisfaction'. 'Satisfaction' is defined as  $y = 1$ , 'dissatisfaction' is defined as  $y = 0$ , the probability is  $y = 1$ ,  $y$  function is:

$$f(y) = p^y (1 - p)^{1-y}; y = 0,1 \tag{1}$$

The probability  $P$  is depended on athletes' instrumental freedoms, probability function obeys cumulative logistic probability function. Therefore, it uses binary Logistic probability model to evaluate the retired athletes' satisfaction with the life, as following:

$$p_i(y = 1) = \frac{e^{\beta_0 + \beta_1 x_{i1} + \dots + \beta_n x_{in}}}{1 + e^{\beta_0 + \beta_1 x_{i1} + \dots + \beta_n x_{in}}} \tag{2}$$

$$p_i(y = 1) = \frac{1}{1 + e^{-(\beta_0 + \beta_1 x_{i1} + \dots + \beta_n x_{in})}} \tag{3}$$

$$= \frac{1}{1 + e^{-\beta_0 - \sum_{j=1}^n \beta_j x_{ij}}}$$

With Logistic transformation, it can linearize as following:

$$\log \hat{it}(P_i) = \ln\left(\frac{P}{1 - P}\right) = \ln p - \ln(1 - p)$$

$$= \beta_0 + \beta_1 x_{i1} + \dots + \beta_n x_{in} \tag{4}$$

$p_i$  stands for the probability of the  $i$  retired athlete' s satisfaction with life, the sample  $i = 1, 2 \dots 176$ ;  $\beta_j$  stands for  $j$  the influencing factor of regression coefficient;  $x_{ij}$  represents the influencing factor of sample  $i$ , which includes the variables, such as education level, benefits demanding channel, interest express ability, retirement settlement allowance, the standard of disability benefits, income, vocational skill training, further study, the knowledge of related policies, social security system, social security participation and so on.  $n$  stands for the number of the variable;  $\beta_0$  is intercept(table 1 ).

TABLE I. VARIABLE, EVALUATION AND EXPECTATION

Variable Type	Variable	Variable code	Evaluation	Expectation	
Explained variable	Retired athletes' life condition	Y	1=very satisfied, rather satisfied, satisfied 0=dissatisfied, rather dissatisfied		
Explanatory variable	characteristics	health	X <sub>1</sub>	1=excellent; 2=better; 3=good; 4=worse; 5=the worst	
		psychology	X <sub>3</sub>		
		Vocation plan	X <sub>3</sub>		
	Rights security	Rights expressing channel	X <sub>4</sub>	1=excellent; 2=better; 3=good; 4=worse; 5=the worst	+
		Rights expressing ability	X <sub>5</sub>		+
	Economic situation	Retirement settlement allowance	X <sub>6</sub>	1=excellent; 2=better; 3=good; 4=worse; 5=the worst	+
		The standard of disability benefits	X <sub>7</sub>		+
		Income	X <sub>8</sub>		+/-
	Social opportunity	The influence of training on knowledge	X <sub>9</sub>	1=excellent; 2=better; 3=good; 4=worse; 5=the worst	-
		The chance of vocational training	X <sub>10</sub>		+
		Further study	X <sub>11</sub>		+
		Family relationship web influence	X <sub>12</sub>		+
		The channel of searching jobs	X <sub>13</sub>		+/-
	Transparency security	The knowledge of relative policies	X <sub>14</sub>	1=excellent; 2=better; 3=good; 4=worse; 5=the worst	+
	Protective security	Social security	X <sub>15</sub>	1=excellent; 2=better; 3=good; 4=worse; 5=the worst	+
		Social security cohesion	X <sub>16</sub>		+
		Social security participation	X <sub>17</sub>		+

The empirical analysis data is from the research of the retired athletes' lives in 2016, which is about the survey of the retired athletes in Liaoning province. There are 176 effective samples in the survey. From the perspective of gender, there are 82 men, taking up 46.6% and 94 women taking up 53.4%.

From the age angle, the age from 16 to 20 takes up 10.2%, the age from 21 to 29 takes up 72.2% and the age above 30 years old take up 17.6%; from the angle of birthplace, 58.0% of the retired athletes are born in the city, 42.0% are born in the country; from the perspective of education, the retired athletes with associate diploma, bachelor degree and above take up 83.5% , those with high middle school or technical secondary school education take up 11.4% and those with middle school education or below take up 5.1%; from the point of sports event, skill event is 68.2% , physical activity is 30.7% and comprehensive sport event is 1.1%; from the rank, international master athlete is 11.4%, master athlete is 43.8%, first-class athlete is 32.4%, second-class athlete and below is 12.4%; on the aspect of training period, most respondents' training period, ranging from 6 to 15 years, takes up 76.1%; from the point of retirement length, retirement less than 1 year takes up 29.0%, 1-3years length takes up 45.5%, 3-5years length is 13.1%, retirement above 5 years is 12.5%; the research data reflects retired athletes characteristics which have some representations(table II ).

TABLE II. RETIRED ATHLETES CHARACTERISTICS (N=176)

Variable	Item	Frequency (n)	Percentage(%)
Gender	Male	82	46.6
	Female	94	53.4
Age	16-20	18	10.2
	21-29	127	72.2
	Above 30	31	17.6
Birthplace	City	102	58.0
	Country	74	42.0
Education	Postgraduate	8	4.50
	University or college	139	79.0
	High middle school or technical secondary school	20	11.4
	Middle school or below	9	5.1
Rank	International master athlete	20	11.4
	Master athlete	77	43.8
	First-class athlete	57	32.4
	Second-class athlete and below	22	12.4
Training period	Less than 6year	10	5.7
	6-10 years	79	44.9
	11-15 years	55	31.2
	Above 15years	32	18.2
Retired period	Less than 1 year	51	29.0
	1-3 years	80	45.5
	3-5 years	23	13.1
	Above 5 years	22	12.5

IV. EMPIRICAL ANALYSIS

By using SPSS19.0 software, the paper is to do Logistic regression analysis on the influencing factors of retired athletes' satisfaction with lives. It introduces explanatory variable to Logistic model, using maximum likelihood method to solve the parameters in the model, the result as follow (tableIII):

The regression coefficients of the independent variables in the model reach very significant levels. The expected results of model are good. The variables, including rights security,

political freedom, economic situation, social opportunity, transparency security, protective security, affect the retired athletes' satisfaction with life significantly. On the aspect of rights security, rights expressing channel and rights expressing ability are related to retired athletes' capability, which have a great influence on capability; on the aspect of economy, retirement settlement allowance, disability benefits and income have great influence on retired athletes' capability; on the aspect of social opportunity, the influence of training on knowledge and retired athletes' capability have negative correlation, which means the more influence on knowledge, the less retired athletes' capability is. Further study, family relationship web influence and the channel of searching jobs have positive effect on retired athletes' capability; on the aspect of transparency security, the knowledge of relative policies has positive influence on retired athletes' capability. On the aspect of protective security, social security system, social security cohesion and social security participation have positive correlation with retired athletes' capability, which have great influence.

TABLE III. LOGISTIC MODEL REGRESSION ANALYSIS RESULTS

Explanatory variable		$\beta$	S.E	Wald	P	exp(B)
Characteristics	Health	2.563	0.226	38.80	0.000	17.085
	Psychology	2.568	0.233	30.00	0.000	13.871
Rights security	Rights expressing channel	2.246	0.486	27.45	0.000	11.027
	Rights expressing ability	2.154	0.379	37.67	0.000	12.158
Economic situation	Retirement settlement allowance	2.078	0.208	29.05	0.000	10.787
	Disability benefits	2.349	0.178	26.58	0.000	12.314
	Income	2.612	0.222	0.459	0.000	11.427
Social opportunity	The influence of training on knowledge	-2.643	0.481	40.36	0.000	12.619
	The chance of vocational training	2.492	0.213	34.72	0.000	14.526
	Further study	2.227	0.238	44.17	0.000	12.138
	Family relationship web influence	2.467	0.223	35.32	0.000	10.575
Transparency security	The channel of searching jobs	2.736	0.226	0.478	0.034	0.823
	The knowledge of relative policies	2.397	0.214	0.038	0.027	10.111
Protective security	Security system	2.442	0.264	45.85	0.000	18.780
	Social security cohesion	2.174	0.206	47.09	0.000	13.051
	Social security participation	2.265	0.214	38.32	0.000	17.064
	Constant	-7.754	2.431	30.11	0.000	12.334
Observation N				176		
Likelihood ratio test (Chi-square)				47.460		
Test of goodness of fit (-2Loglikelihood)				98.111		
Nagelkerke R square				0.579		

## V. CONCLUSION AND SUGGESTION

It proves that retired athletes' rights and benefits security, political freedom, economic situation, social opportunity, transparency security and protective security have great influence on retired athletes' capability. According to the results, it puts forward the suggestions on retired athletes' security policy.

### A. *Setting up Security Policy Based on Capability, Focusing on Athletes' Further Development*

It should set up the idea of improving retired athletes' capability security policy, seeing developing capability as the basic aim and insisting on humanistic concern, sustainable livelihood, to realize the combination of sports and athletes' development, short-term currency compensation and capability boosting, security system and individual response, protecting the long-term effect of retired athletes related policies with various livelihood to boost retired athletes' further development.

### B. *Building up Rights and Benefits Express Channel and Protecting Retired Athletes Rights*

First, the departments should make the group of the retired athletes have their function, improve the rationality of policy and decrease the infringement; Second, it should enhance the law construction to protect retired athletes' rights and transparency security implement; Third, legal aid should be provided to express individual rights and benefits; information platform, as a channel, needed to be set up to get the information and do communication, which is helpful to enhance the motivation of the policy implement observation and the transparency of the policy implement.

### C. *Perfecting Retired Compensation Mechanism, Building up Retired Athletes' Economic Foundation*

It should be focused on developing retired athletes' capability and building up economy foundation. There are some problems in retired athletes' compensation mechanism, such as the standard is low, the items are not reasonable. The retirement compensation should adjust to the economy development level; the compensation should be increased for the weight lifting athletes due to the low marketability. In order to keep fair, appropriate compensation should be given to some athletes at the bottom of pyramid.

### D. *Improving Human Capital Investment and Accumulation and Providing More Social Opportunities for Retired Athletes*

People should help retired athletes make career development plan and grasp the professional training chance; setting up a right career viewpoint, changing the phenomena "without talking about the retirement on training", leading athletes to emphasize education, professional quality and skills to set a good foundation for retirement; providing suitable training service for different stages of professional transformation and adjusting the training methods and contents to encourage retired athletes to career transition, ensure the

retired athletes have sustainable development ability and provide more social opportunities.

### E. *Developing Social Support and Maximizing the Utility of Support-resources*

It is essential to build up a mechanism including government, welfare organization and enterprises and enlarge the cooperation between government and non-government organizations. By using the advantage of non-government organizations, it is going to complement the following aspects, such as social mobilization, training, employment and research on need. Encouraging enterprises to employ retired athletes to achieve win-win is necessary. Management organizations, non-government organizations and research institutions should combine the resources to set up a platform to provide retired athletes' employment, professional training and service. In this way, it can help retired athletes perform potentials and provide the correct information on government making decisions and enterprises employing retired athletes.

### F. *Developing Social Support and Maximizing the Utility of Support-resources*

It is essential to build up a mechanism including government, welfare organization and enterprises and enlarge the cooperation between government and non-government organizations. By using the advantage of non-government organizations, it is going to complement the following aspects, such as social mobilization, training, employment and research on need. It also needs to guide the enterprises to treat retired athletes properly and realize their professional value. Encouraging enterprises to employ retired athletes to achieve win-win is necessary. Management organizations, non-government organizations and research institutions should combine the resources to set up a platform to provide retired athletes' employment, professional training and service.

### G. *Perfecting Social Security System and Enhancing Retired Athletes' Protective Security*

The perfect social security system is the significant security for retired athletes, a special group. Retired athletes' endowment insurance should be distributed into urban endowment insurance to make retired athletes own the social endowment insurance standard which is suitable for the economy development; encouraging some athletes to buy commercial assurance. Helping those who have serious injuries or no work ability get unemployment insurance; helping those who have economy or employment problems achieve the basic life security. The government should set the special foundation to attend to the retired athletes with great contribution and life difficulties. The foundation represents humanistic care. It is necessary to enhance the scientific level of training system, decrease the injury and disability rate in training and competition.

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