

Participation motivations and related elements of collegiate Martial arts athletes from Central China regional

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Abstract

The scientific research literature review showed that collegiate martial-arts athletes' (CMAAs) participation motivations and related elements such as their gender, disciplines, original motivations for them participating, and their health-related behaviors) were barely been studied. The current study employed the 'Self Determination Theory' and an Adapt Questionnaire of Collegiate Martial-arts Athletes' Participation Motivations and Related Elements conducted this research project. Participants were 197 CMAAs came from 16 universities' martial arts teams (wherein females = 113, males = 84); these participants represented their universities regularly attended Martial-arts competitions within the Central region collegiate martial arts league of China. This study examined the CMAAs' Participation-Motivations characteristics and the relationships among these motivations and the five related elements. Data collection was done by using the Adapt Questionnaire of Collegiate Martial-arts Athletes' Participation-Motivations and Related Elements. The main statistics techniques were 2x2x2x 2 x3x3 factorial MANOVA, Exploratory-factor analysis, and Multiple-regression analysis. The primary findings are: 'Finance-Support', 'Disciplines', 'Years in College', and 'Athletic Grades' had significant effects on the CMAAs' participation-motivations, but 'Gender' and 'Origin motivations' did not. Those CMAAs supported by 'parents/myself' had higher participant motivations than those supported by the 'college/team'. Those CMAAs who possessed higher 'Athletic Grade' had higher participation-motivations than those possessed lower 'Athletic Grade'. The characteristics of those participation-motivations factors and the correlations among the motivation variables were identified and could be predicted. The current status of the participants' related elements was also obtained. Conclusions: using multiple statistics approaches and analyses, the characteristics of the CMAAs' participation motivations could be identified/confirmed; how those related elements impact their participation-motivations could be recognized and identified; the CMAAs' participation-motivations are possible to be predicted. Reasons for the findings are analyzed and discussed. Meaningful suggestions for the coaches, instructors, and managers who want to reform/reinforce their collegiate martial arts teams/programs were also provided.

Key Words: Martial Arts, Collegiate Athletes; Practices, Competitions, Coaching, Management

Introduction

Scientific research literature review showed: the researchers (e.g., Cynarski & Zeng, 2011; Kilpatrick et al., 2010; Jeffery & Camiré, 2016; Cynarski et al., 2017; Zeng, 2019; Zeng et al., 2019) whose studies related to youth sports and collegiate athletes have summarized that: the benefits of participation in youth sports and collegiate sports can be induced as the following 10 aspects: 1) academic success; 2) scholarships; 3) higher education; 4) academic and others support services; 5) medical care; 6) elite training opportunities; 7) healthy living; 8) exposure and experiences; and 9) preparation for Life (Cox, 2011; Cynarski et al., 2017; Kilpatrick et al., 2010; Jeffery & Camiré, 2016; Zeng et al., 2018; Zeng, 2019; Zeng & Xiong, 2019; Zeng, 2020). Obviously, a number of psychomotor, cognitive, affective and social inter-actions benefits can be acquired from the collegiate athletes participation; however, those multidimensional benefits of the collegiate athletes are not just through participation, but also by their self-experiences as well. Researchers also indicated that the qualification/qualities of educators' role model and leadership (e.g., Coaches/faculty representatives, and administrators) are also important factors that can maximize those anticipate benefits (Cynarski et al., 2017; Kilpatrick et al., 2010; Jeffery & Camiré, 2016; Zeng & Meng, 2017; Zeng et al., 2018; Zeng, 2019; Zeng & Xiong, 2019; Zeng & Yang, 2019; Zeng et al., 2019; Zeng, 2020).

Over the years, so many collegiate athletes, have perceived the above generous benefits, however, participate in collegiate sports has their own problems as well. Concerns have been expressed regarding the highly competitive nature of collegiate sports and it is often argued that young athletes become injured or burnout as a result of extreme stress and pressure. Still, some others are thought to learn inappropriate behaviors such as aggression or poor sportsmanship from their involvement (Jeffery & Camiré, 2016;). Besides, researchers

based on their studies findings indicated that: over the years, collegiate sports studies have failed to address the influential role of socialization agents in shaping collegiate athletes' motivation processes in the sports they participated in. Recommendations from these researchers included: future researchers who conducting collegiate athletes have to integrate socialization influences, identifies the influence on participates' socialization patterns upon the athletes' self-perception characteristics, orientations toward achievement (both in their athletics and academic success), and the patterns of motivation factors and those related elements (Cynarskiet al., 2017; Kilpatrick et al., 2010; Jeffery & Camiré, 2016; Zeng et al., 2018; Zeng, 2019; Zeng & Xiong, 2019; Zeng, 2020).

The collegiate sports in the PRC. In the People's Republic of China (PRC), with regard to the collegiate sports, although the PRC's university sports started just about 40 years ago, and it might not progress as developed as the collegiate sports in the USA; however, the university sports in the PRC have made incredible progress in their 21 appearances (since 1980) at the Summer Universiade, the highest competitive level of collegiate sports on the earth. The Chinese collegiate athletes have won 1004 medals, in which Gold medal 513, Silver 440, Bronze 402, ranked second among all participated countries (Universiade, 2020).

The establishing for the collegiate high-level sports teams in the university system of the PRC began in the 1980s, and its development process can be approximately divided into three stages: the first phase called the pilot phase (1987-1995); the main task is to encourage, guide and promote the development of extracurricular sports training in universities (Liu, 2018). The long story makes short, in the journey of build up the high-level collegiate athletic teams, by 2001, the scales of the two-level pilot construction of high-level collegiate athletic teams were eventually adjusted to about 120 teams (Liu, 2018; Ma, 2018). The latest stage called the standardization development stage (2006-present); the main task was to continuously improve the collegiate' sports level, undertake the team and the task of the World University Games, establish a multi-channel training method for excellent athletes and strengthen the comprehensive level of high-level collegiate' sports teams (Liu, 2018; Xu et al., 2009); and etc.

Factors that motivated college students took part in physical activities and sports. As to what factors or reasons motivated college students took part in physical activities and sports, according to the researchers in this topic, although active lifestyles have many obvious benefits, lack of physical activity is still a major health problem in the collegiate population (Kilpatrick et al., 2010). A key solution for this issue is to develop an understanding of participation-motivations in physical activity (Kilpatrick et al., 2010). Based upon their assumptions, Kilpatrick et al. (2010) conducted a research project on college students' motivation for physical activities. Their study was tried to differentiate men's and women's motives for sports participation and physical exercise". Major results from this study were: 1) the student-athletes were motivated by intrinsic motivation factors, such as enjoyment and challenge; and 2) for participating in physical activities, the student-athletes were motivated by extrinsic factors, such as appearance, weight control, and reduce life stress.

The Theoretical Framework. Framework. The current study employed the Self-Determination Theory (SDT, Ryan & Deci, 2000) as the framework. Based on the relative resources, the SDT established two different motivation types, intrinsic motivation (IM) and extrinsic motivation (EM); this classification allows for a greater understanding of why athletes want to take part in and continually engage in an activity (exercise or sport) (Gonzalez-Cutre & Sicilia, 2012). These researchers further indicated: human beings possess multiple motivations, one is intrinsic, and the other one is extrinsic; these two types of motivations, however, must simultaneously play and work together to be determined and accomplished the overall quality of motivation (Gonzalez-Cutre & Sicilia, 2012; Stellion & Sinclair, 2013). Therefore, based on their studies, actually, the athletes were motivated by three psychological needs: competence, relatedness, and autonomy (Gonzalez-Cutre & Sicilia, 2012; Stellion & Sinclair, 2013). In the SDT model, the Competence Needs is called effectiveness motivation; while the Relatedness Need refers to people's needs, and belong to feel accepted by others; however, the Autonomy Needs to refer to people's need to feel Self-Determined that is the source of persons' own action (Ryan & Deci, 2000; Stellion & Sinclair, 2013).

The 'Organismic Needs' energize the IM and EM. Researchers further pointed out that: the concept of need is too general and vague to illustrate the participation in particular behaviors and it is hard to guide empirical research (Kaplan, 2017, Pintrich & Schunk, 2002). As a result, a few models on describing how different motivations triggered by need manifest in the IM and EM in specific aspects or activities were developed (Kaplan, 2017, Pintrich & Schunk, 2002; Stellion & Sinclair, 2013).

More specifically, other researchers illustrated that athletes' IM usually predict athletes' attendance and adherence to a particular sport (Chen et al., 2014; Smith et al., 2006). Additionally, the research literature was quite consistent with respect to the benefits of IM to learning and development; that is, engagement based on IM does not need external incentives or rewards and was able to enhance the motivations necessary to engage in the same activity again and again in the future (Smith et al., 2006; Zeng, 2018). In our study, the collegiate martial arts athletes who are intrinsically motivated would be those who went to practice their skills and fitness regularly for fun and for self-satisfaction; whereas those collegiate martial arts athletes who are extrinsically motivated would be those who went to practice their skills and fitness to become better athletes for winning a medal in the competition (Kaplan, 2017; Zeng et al., 2019). It is interesting to know that Intrinsic and Extrinsic Motivations have different effects on collegiate martial arts athletes (Stellion & Sinclair, 2013; Zeng et al., 2019). In our study,

we were trying to find the evidence and factors that really motivated the CMAAs to participate in the sport they choose. Also, this study wanted to explore how the professionals (including coaches, teachers, program managers, even college/university presidents) apply the SDT to enhance and reinforce their coaching, teaching and managing. In the review of literature for the Intrinsic and Extrinsic Motivation, Kaplan (2017) summarized: now we know the variation exists is important, and it has been a widespread consensus among researchers and educators that enhancing intrinsic motivations among athletes or students is beneficial. Youth players' IM will be enhanced when practices promote their sense of personal autonomy when teamwork is challenging and relevant to all team members when social relationships are supportive, and when the environments are physically and psychologically safe (Kaplan, 2017). In order for people better comprehend their points, Kaplan (2017), Pintrich and Schunk (2002) further illustrated that: how practices that promote these environmental characteristics include providing athletes with choices among activities and between ways of completing tasks, encouraging athletes to explore and pursue their ambition, based on their backgrounds and prior experiences developing their tasks, encouraging them to collaborate, incorporating fantasy in activities, providing feedback that is informative and frequent, and reducing external rewards. Moreover, in real training process, collegiate athletes are required to practice the tasks they might not motivate. Under such situations, the EM should be applied for motivating them to execute those tasks (Kaplan, 2017; Pintrich & Schunk, 2002; Zeng, 2019). However, more wisdom physical educators were always pursuing the internalization of athletes' IM for these tasks. Such internalization can be promoted by employing many necessary illustrations to the athletes prior to having them executing those tasks (Pintrich & Schunk, 2002; Zeng et al., 2019; Zeng & Xiong, 2019; Zeng & Yang, 2019). Additionally, coaches/instructors should make the values of these tasks precise and pleasanter. These can be done most effectively through modeling and by providing a clear and pleasanter for the collegiate athletes (Pintrich & Schunk, 2002; Zeng et al., 2019; Zeng & Yang, 2019).

Purposes. With the background and theoretical framework introduced above, one obvious fact is: research studies on the current topic were insufficient and very limited, hence, the purposes of this study were to: (1) examine the motivation factors between the participants' 'Gender' (male/female), 'Discipline' (natural science/social science), 'Financing supports' (by-parents/myself, by-college/team), and 'Years in college' (3 years, 4 or more years); (2) examine if differences exist on 'Athletics-grades' (Grade 1, Grade 2, Grade 3), and 'Original motivations' (For-professional, For non-professional, For extra credits) with their participation-motivations; (3) investigate the current status of those related elements, the relationships, and the impact power on their participation-motivations; and 4) provide meaningful recommendations or suggestions to the professionals who are working in the collegiate athletics arena to improve or reinforce their management levels so that their athletes can succeed in both sport and academic study.

Methods

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Generally speaking, the majority of these participants attended the Martial Arts competitions within the 'Chinese central region collegiate Martial-Arts competitions league', among them only about 20% qualify to attend the National collegiate Martial-Arts competitions. These CMAAs practiced five times per week, depending on the season and coaches' decision the duration for each practice might vary (120 -180 minutes each time). See Table 6 for details.

The procedures of recruiting the participant were as follows: 1) obtained approval for conducting this survey study from the Institutional Review Board (IRB) of the colleges/universities; 2) followed the proposal guidelines for conducting survey study within the colleges/universities of the Federation of University Sport of China (Federation of University Sport of China, 2020); 3) submitted all the necessary documentation to the colleges/universities administrator(s); 4) contact the participants and have the fore of "Inform Consent" be signed. 5) With the help of their coaches, in a scheduled practice day, 250 questionnaires were delivered to the martial-arts athletes. As a result, among these questionnaires, filled/answered correctly were 197 (return rate 78.8%). The participants' general information could be found in Table 1. Generally speaking, the majority of these participants attended the Martial Arts competitions within the 'Chinese central region collegiate Martial-Arts competitions league', among them only about 20% qualify to attend the National collegiate Martial-Arts competitions. These CMAAs practiced five times per week, depending on the season and coaches' decision the duration for each practice might vary (120 -180 minutes each time). See Table 6 for details.

Instrumentation. The instrument for data collection was the Adapt Questionnaire of Collegiate Martial Arts Athlete's Participation Motivations and Related Elements (AQCMAAPMRE, Zeng & Xiong, 2019). This questionnaire contained three parts: Part I asked the participants' general information, contained eight questions. Such as: How long have you officially engage in martial arts? Financially, who supported you engaged in martial arts practices and competitions? Part II asked, "What factors/reasons motivated you to take part in martial arts practices and competitions continually"? With 19 motivation factors (MFs) providing, the participant can respond to each MF in a 5-points type scale (5-points represents "Strongly agree", 4-points represents "Agree", 3-points represents "Some-agree", 2-points represents "Little-agree", and 1-point represents "Disagree".

Part II of the questionnaire contains 10 intrinsic motivation (IM) factors (items 1, 2, 4, 7, 8, 10, 13, 14, 15, and 17), and nine extrinsic motivation (EM) factors (items 3, 5, 6, 9, 11, 12, 16, 18, and 19). In other words, it also included all three basic psychological needs (competence needs, relatedness needs, and autonomy needs) described by Ryan and Deci (2000). Part III examines those critical related elements/behaviors; it contained six sub-categories (with 37 questions/items) that allow the participant to respond in his/her best choice such as A, B, C, and D options (some questions/items even have more options).

Measurement Reliability and Validity. According to an expert in the reliability and validity for an instrument, to explore the possible underlying factor of the structure for a set of measured variables without imposing any preconceived structure on the outcome, using the exploratory factor analysis (EFA) is the best solution (Child, 1990); hence, we performed the EFA as well. Results revealed: the analysis extracted six factors with perfect correspondence to the 19 items with eigenvalues for the reasons or factors ranging from 2.75 to 8.67 and structure coefficients from .78 to .92 and the majority of the fitted residuals reached the pre-set-up significant difference (P .05) level (Child, 1990). The validation process for this adapted questionnaire was through a pilot survey, reviewing the content and items (here omitted the detail to avoid over length). *Research Design.* For optimal results from the current study, the following three research hypotheses and one question were examined: (1) no significant differences exist in the motivation factors between the 'gender' (male, female) 'disciplines' (natural science, social science), 'financing supports' (by-parents/myself or by-college/team), and the 'year in the college' (3 years, or 4 & more years) among the participants. (2) No significant differences would be found on the motivation factors among the 'Athlete-Grades' (Grade one, Grade two, Grade three), 'Original motivation' (for-professional, for non-professional, for extra-credits)? (3) If the characteristics and the relationships among their participation motivation can be identified and predicted? A question needs to figure out was: How the current status of the addressed related elements look like among these participants? To obtain the answers for the above hypotheses and that question, the data analyses methods would need: a) a 2x2x2x2 factorial multivariate analysis of variance (MANOVA), including Gender (male or female) x Disciplines (natural science or social science) x Financing supported (by-parents/myself or by-college/team); Years in college (3 years, 4 or more years). b) A 3x3 MANOVA, including Athlete-grades (Grade one, Grade two, Grade three) x Original-motivations (for-professional, for non-professional, for extra-credits). 3) The exploratory factor analysis, and the multiple regression analyses. The statistical program used for the data analysis was the IBM Statistical Package for the Social Sciences (SPSS) Version 25.

Results

All the Statistics calculation results were summarized in Table 1 to Table 6. The primary aims were to reveal what factors/reasons actually motivated these collegiate martial arts athletes (CMAAs) to engage in the sport of martial arts, and to revealing the status of their related elements/behavior. Among the 250 questionnaires distributed, the numbers of questionnaires that were correctly completed/answered were 197 and submitted to the researchers. Return rate equals 78.8%. Data in Table 1 reflected "General Information of the participants".

Table 1. General Information of the Collegiate Martial Arts Athletes (N = 197, Females = 113, Males = 84)

Number / Questions	Answers / Frequency and Percentage Note
1. What is your gender?	a) Female = 113/57.4% b) Male = 84/42.6%
2. What is your year in college/ university?	a) Freshman 56/28.4% b) Sophomore 86/43.7% c) Junior 50/25.4% d) Senior 5/2.5%
3. How long have you officially been practiced/engage in martial arts?	a) One year = 0/0% b) Two years = 0/0% c) Threeyears = 78/39.6% d) Four and more year = 119/60.4%
4. What is your Height and weight (-transform to BMI)? Note	a) Answer for male: Mean BMI = 21.16 (± 1.81) b) Answer for female: Mean BMI = 21.88 (± 1.15)
5. What is your academic major?	a) Natural-science = 88/44.7% b) Social-science = 109/55.3%
6. Financially, who supported you engaged in volleyball practices and competitions?	a) By my parents or myself = 143/72.6% b) By my college/team = 54/27.4%
7. What is your original goal of engaging in martial arts practices and competitions?	a) For become a professional martial arts athlete = 47/23.9% b) For become an amateur martial arts athlete = 139/70.5% c) For get extra credit for a ideal university/college = 11/5.6%
8. What is your current martial-art athletic grade? Note	a) Grade one = 30/15.2% b) Grade two = 106/53.8% c) Grade three 61/31.0%

Notes. 1) The data of the answer in “Frequency and Percentage” was done by two research assistants; they must reach a consistent rate of 90% or higher, otherwise, the data for any particular answer has to be re-counted. 2) Using the formula of BMI = kg/m². 3) Athlete-grade one included “Master Grade and Grade one”. 4)# the participants reported they have officially engaged in martial arts training at least ‘3 years’ and ‘4 & more years.’

From Table 1, here are some significant information worth concern: 1) these CMAAs had at least three years' training experience, duration less than three years might not reach the standards of a collegiate martial arts athlete; 2) major from the Social-science might have a higher possibility of becoming martial arts athlete, this may be related to martial arts' physical culture components; 3) the ‘Financially-support’ was significantly more ‘by parents/myself’ than ‘by the college/team’; 4) the most significant ‘Original-motivation’ for these participants engaging in martial arts was ‘For becoming an amateur martial arts athlete’.

Table 2. Means score and standard deviations (S.D). The motivation factors/reasons that motivated the collegiate martial-arts athletes. (*N* = 197, *Female* = 113, *Male* = 84)

Motivation Factors (MFs)	Mean ± S.D.	Sum Rank
MF 1. Because martial-arts’ high technical content and unique value.	4.020 ±1.060	792.000 1
MF 2. For the fun and get rid of boredom.	3.888 ± .919	766.000 2
MF 3. For getting healthier whole body.	3.848 ± .855	758.000 4
MF 4. For the enjoyment and fell happy.	3.609 ±1.022	711.000 8
MF 5. In order to meet my friends	3.432 ±1.093	676.000 12
MF 6. In order to make new friends.	3.589 ±1.024	707.000 11
MF 7. In order to contest winners.	3.883 ± .932	765.000 3
MF 8. In order to shape the body.	3.599 ± .998	709.000 10
MF 9. In order to improve physical health.	3.715 ± .974	732.0006
MF 10. For the near future may become a professional athlete.	3.411 ±1.073	672.000 14
MF 11. In order to foster self-esteem.	3.604 ±1.042	710.000 9
MF 12. In order to improve my own reputation	3.736 ±1.005	736.000 5
MF 13. To establish prestige among my friends.	3.355 ±1.027	661.000 17
MF 14. In order to get the recognition from my teacher/coach.	3.366 ±1.124	663.000 15
MF 15. To reduce the learning/working pressure.	3.365 ±1.194	663.000 16
MF 16. To reduce the troubles from learning/work	3.431 ±1.102	676.000 13
MF 17. In order to develop a unique sport skills.	3.629 ±1.151	715.000 7
MF 18. To become a martial-arts coach in near future	3.355 ±1.251	661.000 18
MF 19. In order to satisfy the will of family.	2.680 ±1.345	582.000 19

Note. a) The motivation factor (MF) 1, 2, 4, 7, 8, 10, 13, 14, 15, and 17 are ‘Intrinsic motivation factors’; b) the MF 3, 5, 6, 9, 11, 12, 16, 18, and 19 are ‘Extrinsic motivation factors’.

As showed in Table 2, the top six MFs were MF 1 ‘high technical content and unique value’ (*M* = 4.020); MF 2 ‘For fun & get rid of boredom’ (*M* = 3.888); MF 7 ‘To contest winners’ (*M* = 3.883); MF 3 ‘For healthier whole body’ (*M* = 3.848); MF 12 ‘For improve my own reputation’ (*M* = 3.736); and MF 9 ‘To improve physical health’ (*M* = 3.715). These six factors possessed the highest impact power on these CMAAs’ motivations. The next six factors’ mean scores were at the medium level. These MFs were: MF 17 ‘To develop a unique sport skills’ (*M* = 3.629); MF 4 ‘For the enjoyment and fell happy’ (*M* = 3.609); MF 11 ‘To foster self-esteem’ (*M* = 3.604); MF 8 ‘To shape the body’ (*M* = 3.599); MF 6 ‘To make new friends’ (*M* = 3.589); and MF 5 ‘To make new friends’ (*M* = 3.432). The mean scores were from 3.432 to 3.629. These six factors possess a medium impact power on these CMAAs’ motivations. As to the rest of seven motivation factors that were MF 16 ‘to reduce the troubles from learning/work’; MF 10 ‘become a professional athlete’; MF 14 ‘To get the recognition from my teacher/coach’; MF 15 ‘to reduce the learning/working pressure; MF 13 ‘To establish prestige among my friends’; MF 18 ‘to become a martial-arts coach’; MF 19 ‘To satisfy my family's will’; these seven factors possessed less or lowest impact power on these CMAAs’ motivations.

The results of the 2x2x2x2 and the 3x3 factorial MANOVA for comparing the motivational factors for the collegiate martial arts athletes were summarized and presented in Table 3:

Table 3. Summary of the 2x2x2x2 and the 3x 3 MANOVA of the Participants’ Motivation factors (*N* = 197, *Females* = 113, *Males* = 84)

Source	Wilks’ Lambda	<i>F</i>	Hypo - <i>df</i>	Error - <i>df</i>	<i>P</i>
Gender	.925	1.189 ^b	5.000	116.000	.101
Disciplines	.832	4.677 ^b	5.000	116.000	.001**
Financing supports	.859	3.145 ^b	5.000	116.000	.008**
Years in college	.876	3.278 ^b	6.000	116.000	.007**
Athletic-Grades	.814	4.379 ^b	6.000	116.000	.001**
Original Motivations	.892	2.314 ^b	6.000	116.000	.038

Note. a. Exact statistic; b. Computed using alpha < / = .01** because the need for limiting for two elements.

The results of the 2x2x2x2x3x3 factorial MANOVA in Table 3 showed: 1) significant differences effect were found in the ‘Disciplines’, ‘Financing-supports’, ‘Years in college’ and ‘Athletic-Grades’ elements (*p* < .01). However, ‘Gender’ element, and ‘Original Motivations’ elements did not reached significant difference (*p* >

.01). According to the research design, using *mean ± deviation*, the present study executed the comparison tests for their *Participation- Motivations Scores*. The aim of in this step was to determine what motivation factors or reasons actually motivated these CMAAs engaged in their practices and competitions. The results were presented in Table 4:

Table 4. Comparison of the Collegiate Martial-Arts Athletes’ Participation Motivations Scores after the Significant Difference Effects were found in ‘Disciplines’, ‘Supports’, ‘Years in college’, and ‘Athletic-Grades’ Elements (*N* = 197, *Females* = 113, *Males* = 84) ^{Notes.}

MFs	Disciplines N. S. vs.S. S. 109 -- 88	Supports P/M. vs. C/T 143 --54	Years in college 3 years,4/more years 56 --86	Athletic-Grades AG 3 vs. AG 2 106 --58
MF1.	3.91 ±1.13 4.16 ±.99*	3.94 ±1.14 4.22 ±.82*	4.17 ±1.16 4.13 ±.90	3.93 ±1.07 4.03 ±1.11
MF2.	3.77 ±.99 4.03 ±.79*	3.90 ±.95 3.85 ±.83	3.93 ±.98 3.96 ±.89	3.85 ±.89 4.05 ±.90*
MF3.	3.83 ±.87 3.86 ±.83	3.79 ±.83 3.98 ±.73	4.09 ±.83* 3.79 ±.88	3.92 ±.82* 3.71 ±.81
MF4.	3.69 ±.96 3.51 ±1.08	3.65 ±1.02* 3.48 ±1.00	3.89 ±.98* 3.50 ±1.00	3.70 ±.98* 3.43 ±1.01
MF5.	3.49 ±.94 3.35 ±1.25	.54 ±1.06* 3.12 ±1.13	3.55 ±1.04* 3.35 ±1.15	3.44 ±1.08 3.45 ±1.14
MF6.	3.63 ±.87 3.53 ±1.18	3.64 ±1.03* 3.46 ±1.00	3.75 ±.97 3.63 ±1.01	3.52 ±1.00 3.75 ±1.12*
MF7.	3.75 ±.84 4.04 ±1.02*	3.88 ±.96 3.89 ±.86	3.98 ±.82 4.12 ±.86*	3.88 ±.87 3.90 ±1.03
MF8.	3.66 ±1.03 3.52 ±.94	3.65 ±.95* 3.46 ±1.11	3.58 ±88 3.62 ±1.06	3.62 ±.99* 3.46 ±.88
MF9.	3.59 ±1.073.86±.81*	3.74 ±.99 3.64 ±.93	3.69 ±1.00 3.79 ±.91	3.66 ±.97 3.69 ±.90
MF10.	3.43 ±1.15 3.38 ±.82	3.43 ±1.05 3.35 ±1.11	3.30 ±1.06 3.46 ±1.01*	3.42 ±1.08* 3.08 ±1.01
MF11.	3.47 ±1.043.76±1.09*	3.61 ±1.11 3.57 ±.96	3.45 ±.91 3.91 ±1.07*	3.39 ±1.023.84 ±1.16*
MF12.	3.64 ±.09 3.85 ±1.11	3.79 ±.97* 3.59 ±1.09	3.71 ±.88 3.95 ±.93*	3.64 ±.98 3.88 ±.99
MF13.	3.23 ±.983.51 ±1.06*	3.36 ±1.07 3.33 ±.89	3.34 ±1.08 3.61 ±.94*	3.30 ±.95 3.32 ±1.13
MF14.	3.29 ±.98 3.45 ±1.27	3.33 ±1.15 3.46 ±1.04	3.23 ±1.01 3.77 ±1.09*	3.22 ±1.03 3.36 ±1.24
MF15.	3.38 ±1.083.35 ±1.13	3.40 ±1.09* 3.26 ±1.11	3.39 ±1.23 3.49 ±1.01	3.36 ±1.17* 3.15 ±.89
MF16.	3.34 ±1.06 3.54 ±1.14	3.46 ±1.15 3.35 ±.95	3.46 ±.82 3.65 ±1.01*	3.35 ±1.03 3.41 ±1.22
MF17.	3.66 ±1.05 3.59 ±1.26	3.52 ±1.20 3.91 ±.96*	3.61 ±1.15 3.89 ±1.02*	3.69 ±1.05* 3.36 ±1.33
MF18.	3.36 ±1.19 3.35 ±1.32	3.29 ±1.28 3.54 ±1.14*	3.52 ±1.17 3.63 ±1.11	3.57 ±1.20* 3.07 ±1.29
MF19.	2.73 ±1.31 2.61 ±1.38	2.71 ±1.43 2.59 ±1.09	2.34 ±1.32 2.85 ±1.26*	2.83 ±1.37* 2.39 ±.73

Notes: 1) This table used two decimals only, because no room for three decimals. 2) **MFs** = Motivation factors; **N. S.** = Nature science; **S. S.** = Social science. 3) P/M. = support by parents/myself, C/T = support by college/team. 4) *Mean ± Deviation* were used. 5) In ‘Years in college’ and ‘Athletic-Grades’ presented the significant results only.

The detailed comparison results for the 76 mean scores and deviations have presented in Table 4. Here are some highlights: In ‘Disciplines’ element six out of 19 comparisons reached significant differences level ($* = p < .05$), all six comparisons were social science scored higher than the natural science; in ‘Supports’ element where nine out of 19 comparisons reached significant differences level ($* = p < .05$), wherein six comparisons in 'support by parents/myself' scored higher than the 'support by the college/team', on the other hand, there were three comparisons showed 'support by college/team' scored higher than the 'support by parents/myself'. In the 'Years in college' element, there were a total of 12 out of 19 comparisons reached significant differences level, wherein nine of these comparisons showed the '4/more years' scored higher than the '3years'. Last, in the ‘Athletic-Grades’ element, 11 out of 19 comparisons reached the level of a significant difference level, wherein eight comparisons showed Athletic-Grade 3 scores significantly higher than the Athletic-Grade 2.

Internal Consistencies and Correlation Analyses. Zhu (2012) in “Sadly, the earth is still round ($p < 0.05$)” indicated that the criteria of correlations degree for low correlation is $r = .20 - .39$; for moderate correlation is $r = .40 - .59$; for moderately high correlation is $r = .61 - .79$, and for high correlation is $r \geq .80$. Follow the criteria recommended by Zhu (2012), we did the correlation test among the motivation variables of the collegiate martial art athletes. The results revealed that from the entire 161 correlation coefficients examined, there were a total of 113 correlation coefficients that reached significant levels (at $p = .05^*$ and $p = .01^{**}$ levels separately). Note. Due to this Table exceeds 150 mm width, it has been omitted.

The Predictors of Three Psychological Needs. According to the study findings from two previous research groups, Stelluno and Sinclair (2013) and Chen et al., (2014), adolescents to be motivated to participate in after school physical activities or sports could be effectively predicted through using the techniques of exploratory factor analysis (EFA) and the multiple regression analyses (MRA). Appreciated and accepted their recommendations, the current study also applied these two techniques; the results are present in Table 5. As the result, the EFA determined 12 variables were accepted to enter the regression analyses, the method for making such decision was stepwise selection technique; and the criteria were "F-to-enter = 3.840, F-to-remove = 2.710".

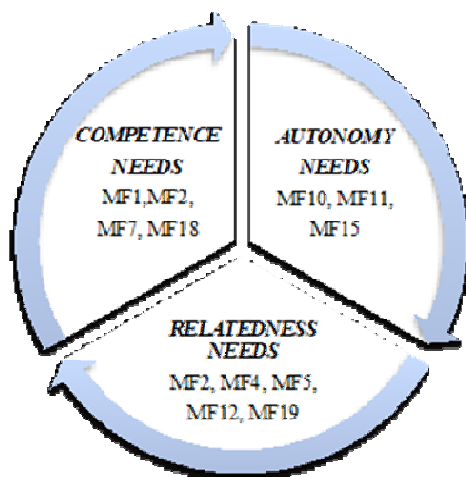
Table 5. Unstandardized Regression Coefficients (*Beta* in parentheses) ^a for Collegiate Martial-Arts Athletes’ Participation-Motivation Factors (MF) Standardized Score (*N* = 197, *Females* = 113, *Males* = 84)

Dependent Variables. Predictor Variables ^{Note}	Model I ‘Discipline’	Model II ‘Supports’	Model III ‘Years’	Model IV ‘Athletic-G’
‘Competence Needs’				
MF1. For the technical content & unique value	-.234 (-.273)	.065 (.157)	-.112 (-.150)	-.112 (-.150)

MF3. For healthier whole body	.069 (.209)	.058 (.137)	-.140 (-.146)	-.115 (-.167)
MF7. In order to contest winners	-.084 (-.157)	.044 (.043)	-.143 (-.166)	-.126 (-.147)
MF18. To become a MA coach	-.125 (.050)	.065 (.129)	-.150 (-.236)	-.153 (-.239)
'Relatedness Needs'				
MF2. Having fun not boredom	.118 (.114)	-.071 (-.056)	.111 (.149)	.051 (.057)
MF4. For enjoyment & happiness	.168 (.139)	.012 (.010)	-.063 (-.071)	-.114 (-.113)
MF5. For meet my friends	.069 (.029)	-.082 (-.202)	-.017 (-.018)	-.065 (-.064)
MF12. To improve my reputation	-.029 (-.033)	-.103 (-.104)	-.158 (-.274)	-.036 (-.102)
MF19. To satisfy the family will	.044 (.043)	-.047 (-.048)	.132 (.137)	.107 (.180)
'Autonomy Need'				
MF10. To become a professional	.072 (.050)	.026 (.027)	.052 (.149)	.083 (.087)
MF11. To foster self-esteem	.001 (.202)	-.044 (-.042)	-.023 (-.024)	.017 (.016)
MF15. To reduce learning pressure	.042 (.041)	-.012 (-.010)	-.158 (-.274)	-.077 (-.076)
Constant	1.879**	1.512*	3.351**	3.133**
Adjusted R Square	.020	.043	.145	.134
F	4.912*	5.327**	9.185**	8.550**

^aInformation above is based on **Stepwise** (Criteria: F-to-enter >= 3.840, F-to-remove <= 2.710). * = $p < .05$, ** = $p < .01$. **Notes:** 1) the results of the exploratory factor analysis, selected these 12 variables enter the multiple regression analysis; 2) 'Gender' and 'Original Motivations' elements were not selected enter the regression analysis.

According to the Self-Determination Theory (Ryan & Deci, 2000), and the findings from our study, from a more objective angle, the characters of psychological needs associate with participation-motivations, these characters can be summarized and illustrated in Figure 1. It may open up a new path/solution for the professionals (e.g., coaches, instructors, and managers) to reinforce their strategy for fostering athletes' participation motivations so that both the professionals and the martial arts athletes can realize their goals.



The keys for what the MFs represent:

- MF1. For high technical content and unique value
- MF2. For fun & not boredom
- MF3. For getting healthier body
- MF4. For enjoyment and happiness
- MF5. For meet my friends
- MF7. To contest winners
- MF10. For become a professional
- MF11. To foster self-esteem
- MF12. To improve my reputation
- MF15. To reduce pressure'
- MF18. To become a coach
- MF19. To satisfy family will'

Note. a) These 12 variables in this figure were selected by the

Figure 1. Characters of three psychological needs and the motivation characters of the CMAAs (N = 197)

The findings from the Part III of the AQCMAAPMRE including six sub-categories: 'Free times and activities', 'Factors related to martial-arts practicing and competition', 'Eating Habits', 'Nutrition Knowledge and Status', 'Risk Behaviours', and 'Hygiene Behaviors' involved a total of 37 related elements/behaviors as presented in Table 6:

Table 6. Survey Results on the Collegiate Martial Arts athletes' Related Elements (N = 197)

Related Factors Investigated	Answers / Fervency and Percentage ^{Note}
Sub-category (S. C.) "Free times and activities"	
1. How much free time do you have in a week day?	a) I don't have any (0 / 0%) b) 1 hour (0 / 0%) c) 2 – 4 hours (108 / 54.82%) d) more than 4 hours (89 / 45.18%)
2. How much free time per day do you have at weekend?	a) 1 – 2 hour (0 / 0%) b) 3-4 hours(0 / 0%) c) 5– 6 hours (99 / 50.25%) d) 7 hours and more (98 / 49.75%)
3. What kind of activities do you do in your free time (besides Martial-Arts training)? (choose as many as it fit your situation)	a) reading books/magazines (28 / 14.21%) b) watching TV/Play Cell Phon (45 / 22.84%) c) computer work (37 / 18.78%) d) listening to music (25/12.69%) e) social meetings (43 / 21.83%) f) physical activity (19 / 9.64%)
4. Do you take part in physical activity willingly in your free time including Martial-Arts (MA)?	a) Yes, recreational, individually, what kind of?Dance (20/10.15%)Swimming 15 / 7.61%). b) Recreationally organised - MA(36/ 18.27%).c) Sport organised - MA (9 / 4.57%).d) No, not willingly. Reason: Just want to relax (118 / 59.90%).

5. Except MA, which physical activities below do you like and participate in most often? (Note. you can circle multiple activities you liked)	a) Swimming 1(5/7.61%) b) jogging (35/17.76%) c) body building (79/10%) d) fitness (11/5.58%) e) Team sports, Soccer (30/15.23% f) Basketball (58/29.44) g) Ride a bike (34/17.26%) h) Windsurfing (3/0.2%)
6. How often do you do physical activity (include MA)?	a) Every day (101 / 51.27%) b) Three times a week (96 / 48.73%) c) Twice a week (0 / 0%)
S. C. "Factors related to Martial-Arts practicing and competition"	
7. Can you access to MA or Sports facilities easily or difficultly?	a) Very easily (96 / 48.73%) b) Easily (101 / 51.27%) c) Difficultly (0 / 0%) e) Very difficulty (0 / 0%)
8. Does your financial situation allow you to participate in MA practice and competition?	a) Yes (116 / 58.89%) b) No (Because I need financing support from my team/college 81 / 41.11%)
9. How often do you attend MA competition during a semester?	a) Once per semester (67/34.01%) b) Twice per year (89/45.18%) c) Three to more times per year (39 / 19.80%) d) Others - be specific: e.g. performances for celebrations, (0 / 0%)
10. Do you attend MA competition in winter/summer vacations?	a) Yes, always (0/0%) b) Once in winter or summer (78/39.59%) c) Usually (0/0%) d) It depends on the regional competition league's plan - 119 / 60.40%
11. Who pay for the travel and registration fee for your MA competition?	a) My parents (28 / 14.21%) b) My college (36 / 18.27%) c) My team / club (59 / 29.95%) d) Myself (74 / 37.56%)
S. C. "Eating habits"	
12. Do you eat regularly?	a) Very regular (18 / 9.14%) b) Regular (89 / 45.18%) c) Unregularly (90 / 45.88%) d) Very unregularly (0 / 0%)
13. How many meals do you eat a day?	a) 3 times per day (95/48.22%) b) 4-5 times per day (86/52.76%) c) Others - no specific (16 / 8.12%)
14. Do you add salt to your dishes?	a) Yes, always (28 / 14.21%) b) Yes, sometimes (21 / 10.66%) c) Most of times no (68 / 34.52%) d) No, I never (42 / 40.61%)
15. Do you try to cut down the amount of sugars you eat?	a) Yes (32 / 16.24%) b) Sometimes - no (67 / 34.01%) c) Sometimes - yes (43 / 21.83%) d) No, I don't (55 / 27.92%)
16. How many glasses of milk or dairy products (yoghurt, juice) do you drink per day?	Yes. a) 1-2 cups (59 / 29.95%) b) 3-4 cups (55 / 27.92%) c) more than 5 cups (0 / 0%) d) I don't drink yoghurt but juice (83 / 42.13%)
17. Do you drink before and after strenuous exercise?	a) Yes (0 / 0%) b) Sometimes I do (0 / 0%) c) I occasionally do (8 / 4.06%) d) I never do that (189 / 95.94%)
S. C. "Nutrition knowledge and status"	
18. How is your knowledge status about nutrition?	a) Very good (109 / 55.33%) b) Good (88 / 44.67%) c) Ordinary (0 / 0%) d) Not so good (0 / 0%)
19. How often do you eat fruit?	a) Once per day (79 / 40.10%) b) Twice per day (73 / 37.05%) c) More than three times per day (0 / 0%) d) Once every other day (45 / 22.84%)
20. How often do you eat vegetables?	a) Once per day (0 / 0%) b) Twice per day (197 / 100%) c) Three times per day (0 / 0%) d) Once every other day (0 / 0%)
21. How often do you eat fish?	a) Once per week (59 / 29.95%) b) Twice per week (71 / 36.41%) c) Three times per week (28 / 14.36%) d) I don't like eat fish (39 / 19.80%)
22. Do you eat wholemeal bread?	a) Once per day (68 / 34.52%) b) Twice per day (0 / 0%) c) Once every other day (91 / 46.19%) d) I occasionally eat wholemeal bread (38 / 19.29%)
23. How many times do you eat dinner with meat in a week?	a) every dinner in a week (131 / 66.50%) c) 3-4 times (0 / 0%) b) more than 4 times (0 / 0%) d) I do not eat meat (66 / 33.50%)
24. What is your favorite meat?	a) Chicken (79 / 40.10%) b) Pork (88 / 44.67%) c) Veal / Calf (21 / 39.88%) d) Mutton / Lamb (19 / 9.64%)
25. Do you eat fried foods?	a) Occasionally eat (43 / 21.83%) b) Sometimes eat (73 / 37.05%) c) Yes, I eat fried food (42 / 21.13%) d) No, I don't (91 / 46.19%)
S. C. "Risk behavior"	
26. How often do you drink alcohol?	a) Never (0 / 0%) b) Once in a while (102 / 51.78%) c) Seldom (17 / 8.63%) d) When I have a reason (78 / 39.59%)
27. Do you smoke cigarettes?	a) Never (97 / 49.24%) b) Once in a while (19 / 9.64%) c) Seldom (18 / 9.14%) d) When I have a reason (63 / 31.98%)
28. Do you use any psychoactive Substances?	a) Never (197 / 100%) b) once in a while (0 / 0%) c) seldom (0 / 0%) d) When I have a reason (0 / 0%)
29. Did you use anabolic steroid?	a) Never (197 / 100%) b) once in a while (0 / 0%) c) seldom (0 / 0%) d) When I have a reason (0 / 0%)
30. Do you know what health consequences to use prohibited anabolic steroids?	a) Yes, I know them well (155 / 78.68%) b) Yes, I know some of them (27 / 21.32%) c) No, I am not sure (0 / 0%) d) No, I don't know them (0 / 0%)
S. C. "Hygiene Behaviors"	

31. Do you use sun cream when you practice MA?	a) Never (125/ 63.45%) b) Once in a while (0 / 0%) c) Seldom (72 / 36.55%) d) When I have a reason (0 / 0%)
32. Do you take a shower right away after practicing or competition?	a) Yes, of cause (99 / 50.25%) b)Most of time I do (0 / 0%) c)No,I want to back to my dorm ASAP (35 / 21.47%) d)No, I want to cold down first (63 / 31.98%)
33. How often do you wash your hands daily?	a) One time (0 / %) b) Before every meal (159 / 80.71 %) c) Two to three times (0/0%)d) Whenever it needs (38 / 19.29%)
34. How many times do you clean your teeth/mouse daily?	a) Twice a day (147/74.62%) b) Three times a day (50/25.38%)c) As many times as I need (0 / %)
35. Do you use extra hygiene mouth? (If 'Yes' circle the ones you used).	a) Dentist's threads(36 / 18.27%) b) Dental floss (38 / 19.29%) c) Teeth liquids rinsing (68 / 34.52%)d) Teeth pick (55 / 27.92%)
36. After an intensive MApractice, how was the quality of your sleep?	a) Very good (36 / 18.27%) b) Good (38 / 19.29%) c)Normal (81 / 41.16%) d) Not so good (42 / 21.32)
37. After an intensive MAcompetition, how is the quality of your sleep?	a) Very good (9 / 5.52%) b) Good (6 / 3.68%) c) Normal (8 / 4.91%) d) Not so good (140 / 85.89%)
38. When sweating, do you drink water or beverages immediately?	a) I drink water immediately (89 / 45.18%) b) I don't drink any of them immediately (28 / 14.21%) c) I drink beverages immediately (56 / 28.43%) d) I drink water but not immediately (24 / 12.18%)

Note. The data of answers in “Frequency and Percentage” was done by two research assistants; they must reach a consistent rate of 90% or higher, otherwise, the data for any particular answer has to be recounted.

Data/information presented in Table 6 revealed and reflected the precious features and the current status of these CMAAs' related elements/behaviors. The researchers believe that this information about the participants' related elements/behaviors are meaningful and possesses important value to the international collegiate martial arts athletics committee. In the meantime, this information also possess a positive relationship with those CMAAs' success rate during they play a collegiate athlete role for their college/university. That is, the more positive of these elements/behaviors, the higher the success rate to become elite collegiate athletes. Likewise, these findings worth coaches, teachers, and administrators who worked for the collegiate athletes to pay closer attention, and gradually figure out more suitable ways to educate/cultivate their collegiate athletes' to develop those positive motivations and behaviors, so that their athletes clearly recognize that, from the day one, they need to gradually develop those correct participation motivations, and positive behaviors are matter on their regular practices and competitions; these two aspects are critical during they play as a collegiate athlete.

Besides what we have described above, the following are some important points that should be highlighted: First, for the ‘Free times and activities and the ‘Factors related to Martial-Arts practicing and competition’ two sub-categories: 55% of them reported they had 2–4 hours free times in each weekday; 50% of them reported they had 5–6 hours free times in weekend each day; 23% of them claimed, besides Martial-Arts Training, the activities they did in their free time was watching TV or play cell phone. Sixty percent of them declared that in their free time took part in physical activity (including Martial-Arts) unwillingly (their reason is “just want to relax”. Except for MA, the physical activities they like to participate in the most often were team sports [Soccer (15%; and Basketball (29%)]. There were 51% of them declared they do physical activity every day. More than 51% of them reported they can access MA or Sports-facilities easily. About 59% of them reported their financial condition can support them to participate in the MA competitions. About 45% of them claimed they attend the MA competitions twice per year. More than 60% of them reported whether or not they attend MA competition in winter or summer vacations that was “depends on the regional Martial-arts competition league's plan”. In the question of “Who pays for the travel and registration fee for your MA competition?” Their answers are 38% paid by their colleges/teams and 52% paid by themselves/parents.

Next, for the rest of the four sub-categories, things that should be highlighted were: about 54% of them eat regularly to very regularly; nearly 53% of them eat 4-5 times per day. About 35% of them add salt to their dishes, and almost 28% of them did not cut down the amount of sugars they eat. About 42% of them claimed they “don't drink yoghurt but juice”; while 4% of them admidd they occasionally eat before and after strenuous exercise. About 45% of them reported they possess good nutrition knowledge; 23% of them said they eat fruit every other day, and 100% of them reported they eat vegetables twice per day. About 36% of them reported they eat fish “Twice per week”, and 44% of them reported they eat wholemeal bread once every other day. Thirty-three percent of them reported they do not eat meat in their dinner. Nearly 45% of them in favor eat pork; while 46% of them reported they do not eat fried foods. However, 52% of them admitted once in a while they drink alcohol; and 49% of them sad they never smoke cigarettes. Seventy-nine percent of them reported they know the health consequences of using the prohibited anabolic steroid, and 63% of them claimed they never use sun cream during their practice, 50% of them said they took a shower after practicing or competition. Eighty-one percent of them reported they wash their hands before every meal, and 75% of them claimed they brush teeth twice per day. Nearly 35% of them said they used teeth liquids rinsing mouth, and about 21% of them claimed their sleep not so good after an intensive practice, and almost 86% of them claimed their sleep not so good after an intensive competition as well. Last, 45% of them reported when sweat they drink water immediately (see Table 6 also).

The present study was designed for: 1) exploring the current status and characters of the CMAAs' participation motivations; 2) examining if differences exist on the MFs among the participants' 'Gender', 'Disciplines', 'Financing supports', 'Years in College', 'Athlete-Grade', 'Original motivations'; and 3) investigating the current status of related elements among the CMAAs from the Central Regional Competition League of China.

First, according to the data exhibited in Table 2, the scores placements can be divided into three groups: 1) The high score factors group, containing MF1, MF2, MF7, F3, MF12, and MF9, these six FMs possessed the highest score and impact power on this collegiate athletes' motivation. Interestingly, among these six MFs, the MF1, MF2, MF7, and MF17 are in the 'Intrinsic factors' category, while the MF12 and MF9 are in 'Extrinsic factors' category. Second, the medium score MFs group with medium-high scores, containing MF17, MF4, MF11, MF8, MF6, and MF5, these six FMs possessed medium impact power on these collegiate athletes' motivation. Different from the first group, this group has two MFs (that are MFs 5, 6 and 11) belong to the 'Extrinsic factors' category; but contain three MFs (that are MFs 4, 8, 6, and 17) belong to the Intrinsic factors' category. Third, the lower score MFs group, consisting of MF16, MF10, MF14, MF15, MF13, MF18, and MF19 (with lowest scores), these seven FMs possessed significantly lower impact power on these participants' motivations. Amazingly, there are four MFs belong to the 'Intrinsic factors' category (MF10, MF14, MF15, and MF13); while the other three MFs - MFs 16, 18, and 19 belong to the 'Extrinsic factors' category.

In summary, 1) with regard to this sample's participation motivation features, both 'Intrinsic factors' and 'Extrinsic factors' possess a quite similar impact power on their motivations; 2) in specific, the 'Intrinsic factors' possess slightly stronger impact power than those of the 'Extrinsic factors'; hence, the ten 'Intrinsic factors' in the AQCMAAPMRE were the core motivation factors for these CMAAs. 3) Although some motivation factors or reasons possessed a higher impact power than the other factors, some motivation factors or reasons also possessed less impact power than the other factors. Based on the findings from the present study, the CMAAs' coaches, trainers, or administrators should diagnose and analyze their athletes' specific situation and implement these findings accordingly.

Note, as to the discussion in the comparison for the participants' participation motivations scores in the 'Disciplines', 'Supports', 'Years in college', and 'Athletic-Grade' four elements, this paper has covered in the results section (details can found in Table 4). Here no longer repeat. Furthermore, Jeffery and Camiré (2016) indicated that student-athletes engaged in the sports they like having a common tendency: first is to satisfy their needs for autonomy, competence, and relatedness. Second, motivations to participate in a sport for certain periods of time are a complex combination of intrinsic and extrinsic motivations and not a simple type of motivation, and participation in sports practices and competition during their college/university years helped the student-athletes gain the knowledge and understanding the need for their future career decisions and able to develop a willingness for long-term participation (Jeffery & Camiré, 2016). First, which are highly consistent with our findings on the three needs: 1) autonomy, 2) competence, and 3) relatedness. Second, the present study also indicated that the selected collegiate athletes were motivated by both intrinsic and extrinsic motivations. Additionally, the present study also provided specific factors/data supported by different 'Disciplines', 'Supports', 'Years in college', and 'Athletic-grades' who need different MFs to drive and maintain them to continually participate in their martial arts practices and competitions.

Differences and similarities between the previous studies and our study did exist. For example: first, Kilpatrick et al., (2010) based on their findings stated that college-students participant in sports was more likely to relate to intrinsic motivations, such as enjoyment and challenge, while for physical exercises were more tend to be extrinsic motivations such as focused on appearance and weight and stress management. The researchers suggest that for motivating collegiate athletes' participation, the coaches or athletics advisers need to do more in deeper understand their needs that may generate more appropriate advice or recommendations (Kilpatrick et al., (2010). As in the findings we presented, collegiate-athletes keeping engaged in the sports they like were similar (see Table 4, and Table 5). Meanwhile, when contrasting the motivation factors of 'feeling important and popular', 'earning rewards', 'team atmosphere' and 'good relationship with coach' from the previous studies 'high technical content and unique value', 'For fun & get rid of boredom', 'To contest winners', 'For healthier whole body'; 'For improving reputation', 'To improve physical health', 'To develop unique sport skills', 'For the enjoyment and feel happy', and 'To foster self-esteem', etc. Many differences between their studies and our study did exist. Second, in a profound review of literature on athletes' eating behaviors, Diehl et al., (2012) summarized that: Many studies reported that the eating behavior of athletes was healthier in some respects than those of non-athletes or less athletic young peoples; and Several large studies demonstrated that athletes self-reported they were in favor eating fruit and vegetable (Diehl, et al., 2012). also summarized that both high-involved athletes and low-involved athletes had macro and micronutrient intakes below recommended levels for essential minerals, carbohydrates, and overall caloric intake. As to the 'performance-enhancing drug use', Diehl et al., (2012) indicated that Performance-enhancing drug use was discussed in 16 articles. The prevalence of ever having used anabolic steroids ranged between 2% and 6% with a combined prevalence of 4%, and the researchers further indicated that the prevalence increased by the level of competition. Diehl et al., (2012) continued, adolescents engaged in strength training football and weight-dependent sports were more likely to use anabolic steroids than athletes engaged in other kinds of sport. Diehl et al., (2012) concluded that: 1) athletes

were more likely to consume alcohol, smokeless tobacco, and steroids than non-athletes; and 2) athletes were less likely to smoke and to use marijuana than non-athletes (Diehl, et al., 2012).

Obviously our findings were highly similar to the findings from their review of literature (Diehl et al., 2012). On the other hand, the investigation in the related elements including the CMAAs' health-related behaviors was an initial try, because of this, in its design, data collection and interpretation are far from perfection. However, these results are worth the researchers who are working on the field of collegiate sports pay attention to. For the findings exhibited in Table 6, when using the four points of "Excellent [4], Very-good [3], Good [2], and Not good [1] assessment scale. Although it is hard to make an accurate conclusion for these CMAAs' current status of related elements (including their health-related behaviors), its position should be a location in between Very-good [3] and Good [2]. What does that mean? It means 1) during they represent their colleges/universities, these CMAAs had experienced or received positive and correct education in that related elements such as 'Free times and activities', 'Factors related to Martial-Arts practicing and competition', 'Eating habits', 'Nutrition knowledge', 'Risk behaviors', and 'Hygiene behaviors'. 2) There is room for improvement regarding these CMAAs health-related behaviors (see Table 6). 3) The results of the assessments have also indirectly reflected these CMAAs' teams have very strict rules to manage their athletes' daily life. From the health education perspective, we believe that is a positive and beautiful thing that deserves to recommend to the other collegiate-athletes teams/programs. Regarding this, it is consistent with the point of a literature review article by Geidne et al. (2013); the researchers indicated that with regard to building healthy public policy, youth sports teams should recognize and match up with the changes in regulations at upper levels, and then carry out these regulations to different kinds of teams. In brief, in all legislation, organization, or policies there is one thing in common: that is, put health as the first priority (Geidne et al., 2013).

Discussion

The present study was designed for: 1) exploring the current status and characters of the CMAAs' participation motivations; 2) examining if differences exist on the MFs among the participants' 'Gender', 'Disciplines', 'Financing supports', 'Years in College', 'Athlete-Grade', 'Original motivations'; and 3) investigating the current status of related elements among the CMAAs from the Central Regional Competition League of China. First, according to the data exhibited in Table 2, the scores placements can be divided into three groups: 1) The high score factors group, containing MF1, MF2, MF7, F3, MF12, and MF9, these six FMs possessed the highest score and impact power on this collegiate athletes' motivation. Interestingly, among these six MFs, the MF1, FM2, MF7, and MF17 are in the 'Intrinsic factors' category, while the MF12 and MF9 are in the 'Extrinsic factors' category. Second, the medium score MFs group with medium-high scores, containing MF17, MF4, MF11, MF8, MF6, and MF5, these six FMs possessed medium impact power on these collegiate athletes' motivation. Different from the first group, this group has two MFs (that are MFs 5, 6, and 11) that belong to the 'Extrinsic factors' category; but contain three MFs (that are MFs 4, 8, 6, and 17) belong to the Intrinsic factors' category. Third, the lower score MFs group, consisting of MF16, MF10, MF14, MF15, MF13, MF18, and MF19 (with lowest scores), these seven FMs possessed significantly lower impact power on these participants' motivations. Amazingly, there are four MFs belong to the 'Intrinsic factors' category (MF10, MF14, MF15, and MF13); while the other three MFs - MFs 16, 18, and 19 belong to the 'Extrinsic factors' category.

In summary, with respect to the hypotheses that guided the current study, the findings revealed that: (1) No significant difference in 'Gender' ($p > .01$), and 'Original Motivations' ($p > .01$), however, significant differences were found in the 'Disciplines' ($p < .001$), 'Financing supports' ($p < .008$), 'Years in college' ($p < .007$), and the 'Athletic-Grades' ($p < .001$). (2) Regarding "what would be the current health-related behaviors status of the participant? Table 6 has provided descriptive evidence. In conclusion, 1) 'Gender' and 'Original Motivations' are not the determining elements; but the 'Disciplines', the 'Financing supports', the 'Years in college', and the 'Athletic-Grades' elements are. 2) Martial arts athletes from social science majors had higher participation motivations than those of from natural science majors. 3) Financing supported by the parent/myself had higher participation motivations than those supported by the colleges/teams (there are also three specific aspects revealed supported by the colleges/teams had higher participation motivations). 4) Those CMAAs who had longer years represent their college/team possessed higher participation motivations than those of CMAAs who had shorter years represent their college/team. 5) The CMAAs who possess higher 'Athletic-Grade' possess higher participation motivations than those of CMAAs who possess lower 'Athletic-Grade'. 6) As to the types of motivations, those 'Intrinsic factors' possess objectively higher impact power than those of the 'Extrinsic factors', hence, the 10 intrinsic motivation factors (items 1, 2, 4, 7, 8, 10, 13, 14, 15, and 17) in the AQCMAAPMRE should be regarded as the core motivation (see Table 2). Last, 7) With regard to the 'Related Elements', a qualitative conclusion should be: the grand mean score for the total of 38 items is 2.5, which is in the middle of 'Very good' [3] and 'Good [2]' when using a four points assessment scale (see Table 6).

Endnotes

The current study explored the CMAAs' participation motivations and related elements from one selected collegiate martial arts athletics league, the key 12 motivation factors for these CMAAs' engaged in their practices and competitions are: For high technical content and unique value; For become a professional; For fun

& not boredom; To foster self-esteem; For getting a healthier body; To improve my reputation; For enjoyment and happiness; To reduce pressure'. For meet my friends; To become a coach; To contest winners; and To satisfy family will (See Figure 1). Moreover, although the values of collegiate athletes' participation motivations have been recognized by the previous sports researchers (e.g., Jeffery & Camiré, 2016; Kilpatrick, Hebert & Bartholomew, 2010; Xu, Wang & Gong, 2009; Zeng & Xiong, 2019; Zeng & Yang, 2019). Further studies, however, are definitely needed, e.g., how intrinsic motivation and extrinsic motivations work differently in different types of martial arts; athletes who financing supported by their parents or themselves, vs. supported by their college or team they represented for, and etc. Due to the sample size of the current study was relatively small, the future study can be improved by enlarging the sampling size, extend your survey/investigation to more collegiate martial arts associations and recruit more CMAAs.

Conflict of interest - The authors declare no conflict of interest.

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