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A model of professional tennis athletes development

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Abstract

Currently, there is no Thai male professional tennis player ranked in the top 100 of the ATP record. These data may indicate that professional player development for Thai tennis players is needed. This study aimed to evaluate issues and possible solutions for professional player development in Thailand. We conducted a semi-qualitative and semi-quantitative study on stakeholders for professional player development in Thailand. In-depth interview, Delphi technique, and focus group discussion were used. There were nine obstacles of being professional tennis players in Thailand including tennis player recruitment, tennis player improvement, using sport sciences, competition experiences, administrative management, supports from organizations, social recognition, incomes, and professional tennis player law.The top three issues according to experts' solutions were tennis player recruitment, professional tennis player law, and using sport sciences.In conclusion, there were at least nine issues that required solutions in professional tennis development in Thailand.

Keywords: Delphi; interview; focus group

1. Introduction

A professional tennis has been introduced to society since 1968 [1]. Being a professional tennis player has several advantages such as income or being idols for younger generations. For example, Novak Djokovic, former world number 1, earns $109,805,403 for his career recorded on August 21, 2017. He is the top professional men tennis players with highest earned prize money by the Association of Tennis Professionals or ATP [2].

There are several factors associated with being a leading or top professional players including professional player development, identification/selection of players, players' physical/psychological factors or socio-cultural factors [3]. Male professional tennis players may be more successful in Grand Slams if they have great muscle mass [4]. While, the top 10 professional women tennis players had been ranked 1.2 years earlier than top 51-100 players [5]. Currently, there is no Thai male professional tennis player ranked in the top 100 of the ATP record [6]. These data may indicate that professional player development for Thai tennis players is needed. This study aimed to evaluate issues and possible solutions for professional player development in Thailand.

2. Material and methods

This study was a semi-qualitative and semi-quantitative study and conducted on stakeholders for professional player development in Thailand. There were three steps combination of qualitative and quantitative methods as follows:

Step 1 Identify obstacles of Thai professional tennis players: In-depth interview on current status of professional tennis players and obstacles of Thai tennis players to become professional tennis players.

Step 2 Delphi techniques to identify solutions for obstacles of being professional tennis players. The participants of this step were another group of tennis experts who have been involved with professional tennis society for at least five years and participated at least international tennis tournament or higher. These experts were selected purposively. There were three rounds of using Delphi technique as follows:

Round 1 all the experts were given open-ended questions regarding obstacles professional tennis players' development from step 1. All potential solutions for all obstacles were used to develop a questionnaire. This questionnaire was tested for content validity by five experts and reliability with 20 professional tennis players.

Round 2 all potential solutions for all obstacles were rated by all the experts using five-level Likert scale. Median, mode, inter-quartile range of each potential solutions were calculated. Difference between median and mode less than 1.00 indicated appropriateness and if equal 0.00 indicated highly appropriateness, while the inter-quartile range less than 1.50 indicated compatibility and if equal 0.00 indicated highly compatibility.

Round 3 solutions were evaluated by the experts again if the solution had median score of 3.5 or more and inter-quartile range of less than 1.50. The appropriateness and compatibility of each solution were calculated.

Step 3 to confirm the solutions of all obstacles. Another group of experts was purposive selected. The experts had to have professional tennis experiences of more than five years. The experts scored each solution by -1. 0, and 1 as not agreed, uncertain, and agreed, respectively. The total score divided by numbers of expert was an Index of Consistency (IOC). These experts were also performed a focus group discussion to confirm the solutions of each obstacle.

3. Results

Step 1 Identify obstacles

There were nine obstacles of being professional tennis players in Thailand from in-depth interview with five experts including tennis player recruitment, tennis player improvement, using sport sciences, competition experiences, administrative management, supports from organizations, social recognition, incomes, and professional tennis player law.Step 2 Solution for obstacles

There were 17 experts participated this step. The characteristics of all experts were shown in Table 1. All experts were male and had age over 41 years with education higher than Master degree. Of those, 8 experts (47.1%) were tennis coach.

Round 1 of Delphi technique: All the experts were given open-ended questions regarding nine factors associated with professional tennis players' development. All potential solutions of each obstacle were shown in Table 2-10. The Alpha coefficient of Cronbach of the questionnaire was 0.877.

Round 2 The highly appropriateness in all nine obstacles were as follows: tennis player recruitment (8/14), tennis player improvement (5/10), using sport sciences (6/11), competition experiences (3/7), administrative management (2/5), supports from organizations (2/5), social recognition (1/3), incomes (2/4), and professional tennis player law (8/13) as shown in Table 2-10. The compatibility scores were less than 1.50 in all nine obstacles.

Round 3 All solutions for all nine obstacles had the highly appropriateness (Table 2-10). Four obstacles had the highly compatibility including administrative management, supports from organizations, social recognition, and incomes. The other obstacles had compatibility score between zero and one.

Step 3 Confirmed the solutions

There were nine experts participated in this step; comprised of two executive tennis directors, two academic specialists, three professional tennis personnel, and stakeholders or professional tennis players. The IOC scores of one were given in all obstacles as follows: tennis player recruitment (11/14), tennis player improvement (7/10), using sport sciences (8/11), competition experiences (5/7), administrative management (5/5), supports from organizations (5/5), social recognition (3/3), incomes (4/4), and professional tennis player law (11/13). The other solutions were given the IOC of 0.89 (data not shown). All solutions in each obstacle were confirmed to be necessary for the development of Thai professional tennis players.

Table 1 characteristics of experts participated in the model for professional tennis players' development by Delphi technique (n = 17).

Factors	Frequency	Percentage
Male gender	17	100
Age group, year		
41 - 50	3	17.7
51 - 60	10	58.8
Over 60	4	23.5
Education: Master/PhD	17	100
Tournament experience		
International	10	58.8
Professional	7	41.2
Experiences with tennis, years		
11-15	9	52.9
Over 15	8	47.1
Status		
Tennis player	4	23.5
Tennis coach	8	47.1
Tennis umpire	5	29.4

Table 2 appropriateness (A; median-mode) and compatibility (C; inter-quartile range) score from round 2 and 3 Delphi technique to develop professional tennis players by the experts in terms of tennis player recruitment.

Factors	Round 2				Round 3			
	Median	Mode	A	C	Median	Mode	A	C
1. Set up criteria for player selection	4.50	4.50	0.00	1.00	5.00	5.00	0.00	0.00
2. Set up qualified committee for player selection	4.50	4.50	0.00	1.50	5.00	5.00	0.00	0.00
3. Clear player selection processes	4.50	4.50	0.00	1.00	5.00	5.00	0.00	0.00
4. Standard devices to assess players' abilities	4.50	4.50	0.00	1.00	5.00	5.00	0.00	0.00
5. Recruit players with sport skills	4.50	4.50	0.00	1.00	5.00	5.00	0.00	0.00
6. Recruit players who love and are interested in tennis	4.50	4.50	0.00	1.00	5.00	5.00	0.00	0.00
7. Recruit players with sport gifts	4.50	4.50	0.00	1.00	5.00	5.00	0.00	0.00
8. Recruit players with good attitude for success	4.50	4.50	0.00	1.00	4.50	4.50	0.00	1.00
9. Recruit players with discipline	4.00	5.00	1.00	1.50	5.00	5.00	0.00	0.00
10. Recruit players with appropriate age group	4.00	5.00	1.00	1.00	4.50	4.50	0.00	1.00
11. Recruit players with experiences at youth national or international games	4.00	5.00	1.00	1.00	4.50	4.50	0.00	1.00
12. Recruit players with experiences of tennis tournament	4.00	5.00	1.00	1.50	5.00	5.00	0.00	0.00
13. Recruit players with good movement abilities	4.00	5.00	1.00	1.50	4.50	4.50	0.00	1.00
14. Recruit players with good eye, hand, foot interaction	4.00	5.00	1.00	1.00	4.50	4.50	0.00	1.00

Table 3 appropriateness (A; median-mode) and compatibility (C; inter-quartile range) score from round 2 and 3 Delphi technique to develop professional tennis players by the experts in terms of tennis player improvement.

Factors	Round 2				Round 3			
	Median	Mode	A	C	Median	Mode	A	C
1. Having good professional coaches	4.00	5.00	1.00	1.50	5.00	5.00	0.00	0.00
2. Having adequate times for improvement	4.50	4.50	0.00	1.00	5.00	5.00	0.00	0.00
3.Having modern and effective equipment for practice	4.00	5.00	1.00	1.00	5.00	5.00	0.00	0.00
4. Having practice plan pre-, during- and post-tournament	4.50	4.50	0.00	1.00	5.00	5.00	0.00	0.00
5.Having continuous practice plan	4.50	4.50	0.00	1.00	5.00	5.00	0.00	0.00
6.Having sufficient budget for practice and tournament	4.50	4.50	0.00	1.00	5.00	5.00	0.00	0.00
7.Having seminars for players and related persons to improve their skills	4.00	5.00	1.00	1.50	5.00	5.00	0.00	0.00
8. Having additional welfare for players	4.00	5.00	1.00	1.50	4.50	4.50	0.00	1.00
9. Having incentive for players	4.00	5.00	1.00	1.50	4.50	4.50	0.00	1.00
10. Having awards for players who are successful in any tournaments	4.50	4.50	0.00	1.50	4.50	4.50	0.00	1.00

Table 4 appropriateness (A; median-mode) and compatibility (C; inter-quartile range) score from round 2 and 3 Delphi technique to develop professional tennis players by the experts in terms of sport sciences.

Factors	Round 2				Round 3			
	Median	Mode	A	C	Median	Mode	A	C
1.Having available centers for practice	4.50	4.50	0.00	1.00	5.00	5.00	0.00	0.00
2. Having sport scientists for each team	4.50	4.50	0.00	1.00	5.00	5.00	0.00	0.00
3.Having sport physicians for each team	4.50	4.50	0.00	1.00	5.00	5.00	0.00	0.00
4.Having counseling center for players and parents to prevent burnout and overtraining	4.50	4.50	0.00	1.00	5.00	5.00	0.00	0.00
5.Players improve their physical fitness	4.50	4.50	0.00	1.00	5.00	5.00	0.00	0.00
6. Using psychological principles during practice and tournament	4.00	5.00	1.00	1.00	5.00	5.00	0.00	0.00
7.Using biomechanical principles to improve players' abilities	4.00	5.00	1.00	1.50	5.00	5.00	0.00	0.00
8.Using nutritional principles during practice and tournament	4.00	5.00	1.00	1.50	5.00	5.00	0.00	0.00
9.Using injuries prevention principles	4.00	5.00	1.00	1.50	5.00	5.00	0.00	0.00
10.Having rehabilitation and treatment players' physical status	4.50	4.50	0.00	1.00	4.50	4.50	0.00	1.00
11. Using sport technologies for players	4.00	5.00	1.00	1.00	4.50	4.50	0.00	1.00

Table 5 appropriateness (A; median-mode) and compatibility (C; inter-quartile range) score from round 2 and 3 Delphi technique to develop professional tennis players by the experts in terms of competition experiences.

Factors	Round 2				Round 3			
	Median	Mode	A	C	Median	Mode	A	C
1.Having continuous tournaments	4.50	4.50	0.00	1.00	5.00	5.00	0.00	0.00
2. Having ranking system for players	4.50	4.50	0.00	1.00	5.00	5.00	0.00	0.00
3.Having tournament planning	4.50	4.50	0.00	1.00	5.00	5.00	0.00	0.00
4. Abilities to manage with tournament pressure properly	4.00	5.00	1.00	1.50	5.00	5.00	0.00	0.00
5.Having complete data collection in terms of tournament environment	4.00	5.00	1.00	1.50	5.00	5.00	0.00	0.00
6.Having data and analysis of competitors	4.00	5.00	1.00	1.50	4.50	4.50	0.00	1.00
7. Collecting data during tournament with the aims of future improvement	4.00	5.00	1.00	1.00	4.50	4.50	0.00	1.00

Table 6 appropriateness (A; median-mode) and compatibility (C; inter-quartile range) score from round 2 and 3 Delphi technique to develop professional tennis players by the experts in termsof administrative management.

Factors	Round 2				Round 3			
	Median	Mode	A	C	Median	Mode	A	C
1.The Tennis Association of Thailand encourages professional tennis players	4.00	5.00	1.00	1.00	5.00	5.00	0.00	0.00
2.The Tennis Association of Thailand has good and effective administration	4.50	4.50	0.00	1.50	5.00	5.00	0.00	0.00
3.The Tennis Association of Thailand has clear policy to have the development of professional tennis players	4.00	5.00	1.00	1.00	5.00	5.00	0.00	0.00
4.The Tennis Association of Thailand should study on how to success for developments of professional players	4.50	4.50	0.00	1.00	5.00	5.00	0.00	0.00
5.The Tennis Association of Thailand should act as the ITF or ATP or WTA	4.00	5.00	1.00	1.00	5.00	5.00	0.00	0.00

Note. ITF**:** International Tennis Federation;ATP**:** Association of Tennis Professionals**;** WTA**:** Women's Tennis Association**.**

Table 7 appropriateness (A; median-mode) and compatibility (C; inter-quartile range) score from round 2 and 3 Delphi technique to develop professional tennis players by the experts in terms of supports from organizations.

Factors	Round 2				Round 3			
	Median	Mode	A	C	Median	Mode	A	C
1. Supports from family	4.50	4.50	0.00	1.00	5.00	5.00	0.00	0.00
2.Supports from government and private sectors continuously and adequately	4.50	4.50	0.00	1.00	5.00	5.00	0.00	0.00
3.Supports from schools, teachers, friends in terms of educatios	4.00	5.00	1.00	1.50	5.00	5.00	0.00	0.00
4. Supports from communites	4.00	5.00	1.00	1.50	5.00	5.00	0.00	0.00
5. Supports from social medias and press	4.00	5.00	1.00	1.00	5.00	5.00	0.00	0.00

Table 8 appropriateness (A; median-mode) and compatibility (C; inter-quartile range) score from round 2 and 3 Delphi technique to develop professional tennis players by the experts in terms of social recognition.

Factors	Round 2				Round 3			
	Median	Mode	A	C	Median	Mode	A	C
1.Using successful tennis players for public relations	4.00	5.00	1.00	1.00	5.00	5.00	0.00	0.00
2.The Tennis Association of Thailand should inform public regards of tennis both national and international levels	4.50	4.50	0.00	1.00	5.00	5.00	0.00	0.00
3 The Tennis Association of Thailand should have media for public relation continuously	4.00	5.00	1.00	1.00	5.00	5.00	0.00	0.00

Table 9 appropriateness (A; median-mode) and compatibility (C; inter-quartile range) score from round 2 and 3 Delphi technique to develop professional tennis players by the experts in terms of incomes.

Factors	Round 2				Round 3			
	Median	Mode	A	C	Median	Mode	A	C
1.Prize money	4.50	4.50	0.00	1.50	5.00	5.00	0.00	0.00
2. Money from sponsors	4.00	5.00	1.00	1.00	5.00	5.00	0.00	0.00
3. Money from advertisement	4.50	4.50	0.00	1.00	5.00	5.00	0.00	0.00
4. Prize money as Thailand tennis team representative	4.00	5.00	1.00	1.00	5.00	5.00	0.00	0.00

Table 10 appropriateness (A; median-mode) and compatibility (C; inter-quartile range) score from round 2 and 3 Delphi technique to develop professional tennis players by the experts in termsof professional tennis player law.

Factors	Round 2				Round 3			
	Median	Mode	A	C	Median	Mode	A	C
1.Implementation the sport promotion act (2012)	4.50	4.50	0.00	1.00	5.00	5.00	0.00	0.00
2. Rights and roles of professional tennis players according to the laws in regards of ID cards	4.50	4.50	0.00	0.00	5.00	5.00	0.00	0.00
3.Rights and roles of professional tennis players according to the laws in regards of supports	4.50	4.50	0.00	1.00	5.00	5.00	0.00	0.00
4. Rights and roles of professional tennis players according to the laws in regards of promotions	4.50	4.50	0.00	1.00	5.00	5.00	0.00	0.00
5. Rights and roles of professional tennis players according to the laws in regards of signing a contract	4.50	4.50	0.00	1.00	5.00	5.00	0.00	0.00
6.Rights and roles of professional tennis players according to the laws in regards of justice and ability to appeal (Law section 13)	4.50	4.50	0.00	0.00	5.00	5.00	0.00	0.00
7.Rights and roles of professional tennis players according to the laws in regards of ethics and punishment	4.00	5.00	1.00	1.50	5.00	5.00	0.00	0.00
8.Rights and roles of professional tennis players according to the laws in regards of foreign personnel	4.00	5.00	1.00	1.50	5.00	5.00	0.00	0.00

Table 10 appropriateness (A; median-mode) and compatibility (C; inter-quartile range) score from round 2 and 3 Delphi technique to develop professional tennis players by the experts in termsof professional tennis player law. (Continue)

Factors	Round 2				Round 3			
	Median	Mode	A	C	Median	Mode	A	C
9.Rights and roles of professional tennis players according to the laws in regards of taxes	4.00	5.00	1.00	1.00	5.00	5.00	0.00	0.00
10. Having laws for professional sport tournaments	4.00	5.00	1.00	1.50	4.50	4.50	0.00	1.00
11. Having laws for professional sport promotion funds	4.50	4.50	0.00	1.00	4.50	4.50	0.00	1.00
12.Praise and glorify the national professional athletes	4.00	5.00	1.00	1.50	4.50	4.50	0.00	1.00
13. Having legal punishment for professional athletes	4.50	4.50	0.00	1.00	4.50	4.50	0.00	1.00

4. Discussion

This study found that there were at least nine issues regarding Thai professional player development (Table 2-10). The top three issues according to experts' solutions were tennis player recruitment (14 solutions), professional tennis player law (13 solutions), and using sport sciences (11 solutions). The numbers of solutions may indicate concerns or impacts of the problems.

Among the tennis player recruitment solutions, appropriate age of recruitment may be one of important solution (item 10 of Table 2). Even though this factor had the median and mode of only 4.50, previous studies showed that age may be a crucial factor for being professional tennis player [3] & [5]. Those female top 10 professional tennis players were first ranked at age of 15.5 years and holding at top 100 ranking until age of 29 years [5]. Similarly, female junior top 20 players at age of 15 years were more likely to be in the later top 20 professsional players significantly than those at age of 16-, 17-, and 18 year (32.1% vs 10.4% vs 6.5% vs 5.4%) [3] or even at younger age at 13 [7]. So, recruitment is encouraged from young or junior players. Additionally, training program should start at a very young age if the aim is being a professional tennis player.

A model for factors associated with sporting success in six countries or the Sport Policy Factors that Lead to International Sporting Success (SPLISS) model showed that financial support is the first pillar [8]. In Thailand, the main financial support is from the government. These processes are required laws or official regulations. As a result, professional tennis player law was the second most important issue raised by the experts. Additionally, high performance director or policy maker are other crucial factors for the professional success [8].

As previously mentioned earlier, muscle and other physical factors are associated with high ranked professional tennis players [4]. The experts participated in this study suggested that using sport sciences are the third-ranked solutions for professional tennis player development in Thailand (Table 4). For example, fitness testing using field-based method may indicate physical fitness of tennis players [9]. The sport sciences tool and technique may be use to improve the players' abilities.

Other than these top three factors, the rest factors (Table 2-10) were important for professional tennis development in Thailand such as parental support [10]. The processes of professional tennis development are complex, multifactorial, and may require long period of time. The main limitation of this study was an expert-base design leading to limited thoughts. Further studies both qualitative and quantitative studies are required.

In conclusion, there were at least nine issues in professional tennis development in Thailand. The top three issues according to experts' solutions were tennis player recruitment, professional tennis player law, and using sport sciences.

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