



## TAKRAW SPORT WORLD INNOVATION: HOW TO BE RECOGNIZED THE OLYMPIC GAMES FRONTIER SUPPORTED TAKRAWDIGITAL AND TAKRAWRANKING: A SYSTEMATIC REVIEW

Chaiyasith Pavilas<sup>1</sup>, Chalerm Chaiwatcharaporn<sup>1</sup>, Gongsak Yodmani<sup>2</sup>,  
and Kittikun Sangnin<sup>1</sup>

<sup>1</sup>Faculty of Sports Science, Kasem Bundit University

<sup>2</sup>Sports Authority of Thailand, Ministry of Tourism and Sports

### Abstract

The purpose of systematic review was to investigate Takraw Sport world society, innovations and technology that how to be recognized the Olympic Games frontier in the first time that was supported by the global TakrawDigital, TakrawRanking and Accredited Takraw Ball testing for a new sports event. In Sepaktakraw (ST) games, especially, ST-Summit 2019 updates widely, many countries around the world in which the ST game are enrolled and actively playing organized by ISTAF. These information databases were searched and extracted via indexed publications in SEMA. Scholar, SciELO and SportDiscus. The results showed that the social interaction, innovation and phenomenon involved the evolution and development of the new traditional sport and culture in the events, materials, games and organizations era. The schematic sport events of the World Takraw Sport society consensus and movement of ISTAF which ST-games over 40 years shown as stimulation for a tentative Olympic frontier, nearly. By the main goals of ISTAF, currently, are to spread ST into 75 different countries of four continents and ultimately make it an Olympic Games. Moreover, these innovations may enhance sport participation and standardization of games that support to recognition of the Olympic sports frontier in strategy, leading to the sustainable development of the World Takraw's society, including others, in future.

**Keywords:** Takraw Sport, Systematic Review, Olympic Games, TakrawDigital, TakrawRanking



## Introduction

Sepaktakraw (ST) is an acrobatic volley game has evolved into an art form in sports (Kader, & Lorhipipat, 2008). Any motive or action will serve those who truly adore this art and wish for its international recognition. They must transcend personal and local considerations when it comes to this game, especially if they are detrimental to this quest. As a result, we must claim ST's international standing in sporting events as part of our sporting cultural heritage.

To date in the world Takraw sport society, Sepaktakraw Summit 2019 (ISTAF, 2019), many countries around the world in Asia, Europe, North-South of Americas and Africa where Malaysia, Thailand, Indonesia, Japan, China, France, Switzerland, England, Brazil, and Colombia are just a few of the countries in which Sepaktakraw is enrolled and being played. In recent year, the Takraw Association of Thailand and the International Sepaktakraw Federation (ISTAF) jointly conducted the 35<sup>th</sup> King's Cup World Championship 2022, an international ST-tournament. So vast is its development, technology and innovations, it is indeed a noble achievement.

Augustyn A., editor of Encyclopaedia Britannica reported that a sport must be widely practiced by men in at least 75 countries across four continents and by women in at least 40 countries across three continents in order for it to be recognized by the Olympic Charter. Recognition as a sport by the International Olympic Committee is the first stage in the process of becoming an Olympic sport (IOC). The IOC mandates that the activity be managed by a global nongovernmental body that is in charge of at least one sport. Following recognition, a sport gains International Sports Federation (IF) status.

Moreover, to encourage continent / global sport and standardization of games, the 3 innovations supplement, in the first world TakrawDigital platform and TakrawRanking, including the accreditation ISO 17025 ball testing laboratory were collaboration with ISTAF via 4 bodies of Takraw Sport sociology. The academic organizations include Sports Authority of Thailand (SAT), Faculty of Sports Science, Chulalongkorn University (SPSC, Chula) and Faculty of Sports Science, Kasem Bundit University (SS, KBU). The systematic conceptual model of Takraw World Sport involves in the literature review details as.

## Literature Review:

### International Sepaktakraw Federation (ISTAF, 2022)

As all Sepaktakraw (ST) sport balls now in use or production are made of synthetic and synthetic rubberized composition materials. These balls must first receive approval before being used in ISTAF sanctioned games and competitions, much alone for any other type of regular play. Therefore, due to international games standardization, the sport ball previously made of rattan shall be spherical in shape, but right now it's made of synthetic fiber of one woven layer. Moreover, Asian Games 2018 in Indonesia, officially known as the 18<sup>th</sup> Asian Games, the new synthetic Sepaktakraw ball model was delivered for the continental competition and challenge game calling that was held from 18 August to 2 September 2018.

In addition for the standardization, these factory producers will be required to submit their ST - balls for testing by an ISTAF-certified testing and certification laboratory in accordance



with ISTAF specifications (Panu Chuentawat, 2008; Chalerm Chaiwatcharaporn, 2012; ISTAF, 2022; Britton, Roger, & Rein, 1998, and Chaiyasith Pavilas, 2010). This is a letter designating TRECS of SPSS, Chula, as the official ISTAF certified testing and certification laboratory for capabilities and qualifications in technology, personnel, and equipment in accordance ISTAF criteria.

#### **Accreditation Laboratory for Ball Testing (TRECS, 2020)**

A facility called TRECS, or Testing Research Center for Sports Material and Equipment, is situated at SPSC - Chula in Thailand for the local and international sporting goods makers, the center will cover testing, researchwork and certification of sports materials and equipment. TRECS to be the only official Testing and Certification Laboratory for ST - ball on July 1, 2008, will there be after certified, which could met the requirements of ISO/IEC 17025 (2005), the Thai laboratory accreditation scheme's accreditation number: Testing 0285 (August 5, 2010) demonstrated the quality management and systematically improved technical conditions.

#### **First World TakrawDigital Platform (Kader, & Lorhpiapat, 2008)**

TakrawDigital Application software development and invention were the goals of the studies. For the Professional Takraw Thailand League events in 2021, use version 0.3 (18) of the Sports Promotion Lotto Model of Thailand-SPLMT by using TakrawDigital platform in online with Takraw Association of Thailand. (Chaiyasith Pavilas et al., 2021, and ISTAF, 2022). The unique SPLMT project was officially launched by SAT and KBU universities with the assistance of stakeholders through the organization of workshop. This suggests that by taking part in fund raising from fans club of these sports as the approach is likely to be effective in promoting and developing the national sports .The SPLMT feasibility project was eventually financed by SAT and reviewed by the KBU (code P002/63X) Human Research Ethics Committee, Thailand.

#### **First World TakrawRanking (The Roon Ba., 2021)**

The International Tennis Federation (ITF) and the Federation International de Football Association (FIFA) both recognize the significance of the ball bounce and have set standards for playing fields for both vertical and oblique ball bouncing (Allen et al., 2011; Choppin et al., 2011; Haake et al., 2007; and Elliott et al., 1995). The ISTAF is also another governing body (ISTAF, 2019) too. As a result, ISTAF, whose headquarters are in Thailand, is an organization that regulates the ST game globally. Sepaktakraw National Federation has been created and is affiliated with ISTAF in more than 30 nations, including ST - Summit 2019 update: The current issue in Thailand's Takraw as first world sports ranking, the Roon Ba (2021), has also been selected by SAT in collaboration with KBU, consequently, to support Takraw tend towards the world sports professional, Takraw Thailand League 2021, and leading to sustainable developments of the nation's sports events, as ST sport games, culture and society in future.

#### **How Are Sports Chosen for The Olympics ?**

Since the Olympic Games were first revived in Athens with the 1896 Games, they have grown from 241 to more than 10,000 competitors. Since 1896, the Olympic schedule has seen



dozens of additions and modifications, with around 100 new events being added since 1980 alone while many hobbyists desire to see their pastimes become Olympic sports, only a select few are awarded one of the coveted spots on the Olympic schedule.

Recognition as a sport by the International Olympic Committee: IOC (The Olympic Charter, 2022) is the first stage in the process of becoming an Olympic sport. The IOC mandates that the activity be administered by a global nongovernmental body that manages at least one sport. Following recognition, a sport gains International Sports Federation (IFs) status. However, the sport's IF must submit a competition to the IOC outlining its eligibility requirements in order to be admitted to the Games. A new sport, a discipline, or an event may have slightly different admission requirements, but the goal is always the same. Several laws and regulations govern whether a sport will be included to the Olympic Games after an IFs has submitted its competition. Therefore, the IOC has recently sought to control the size of the Olympics by only allowing new sports in conjunction with the concurrent abolition of others. Sports that have already participated in the Games are assessed on a regular basis to see if they should be kept. The IOC must balance managing expenses with considering media and public interest when deciding which sports to include in the schedule because these factors are crucial to the Olympic Games' success.

#### **How can a new sport be included in the Olympic Games program?**

The IOC appreciates the excitement of the numerous sports fans who share this wish (The Olympic Charter, 2022). As a result, it makes an effort to keep the Games' schedule from deviating from the specified parameters. In accordance with the Bye - law to Rule 45 of the Olympic Charter (1.3.2), only sports "governed by other IFs recognized by the IOC" are eligible for inclusion in the program in addition to those currently regulated by Olympic IFs. It should be noted that if this requirement is satisfied, the chance to suggest additional sports for inclusion in the program is entirely up to the discretion of the respective organizing committee for the Olympic Games and is contingent upon the final decision of the IOC Session *Bye - law to Rule 45: Olympic Charter 85: (1.3.1) The sports, governed by the following IFs, which are currently included in the programme, namely: International Volleyball Federation (FIVB).*

#### **What are the conditions required for a sport to be recognised by the IOC ?**

According to The Olympic Charter (2022) A sport must first be run by an International Federation requirement in order to be recognized by the IOC (IFs)The Olympic Movement Code on the Prevention of Manipulation of Competitions, the World Anti - Doping Code, and the Rules of the Olympic Charter all require this to be in compliance.

#### **Objectives**

The purpose of systematic review was to investigate Takraw Sport world society, innovations and technology that how to be recognized the Olympic Games frontier in the first time. Data reviews and synthesis were supported by the global TakrawDigital, TakrawRanking and Accredited Takraw Ball testing for a new sports event, as focusing in detail.



## Methods

The experiential (qualitative) systematic review technique (Rezaei et al., 2011, and Taylor et al., 2017) was to analyze cultural and social phenomena, including summarization in the results of relevant studies via Campbell collaboration of culture and social interventions. But not only statistically combined, that involved evolution and development of the new sport event as Sepaktakraw, materials, games and organizations era. (Munn et al., 2018). Reviews via qualitative evidence and intervention may focus on the engagement between the games activity development and the evolution sport social participation. For instance, a qualitative review of an intervention might focus on the question of how sport participation, conference proceedings, and statistics pooling fit within the context of a larger phenomenon.

### Literature Search Strategy:

An online search was performed between October 1<sup>st</sup>, 2020 and December 9<sup>th</sup>, 2021 in scientific database of SEMANTIC Scholar, NCBI Literature Resources / PubMed, SportDiscus, ScienceDirect, Web of Science, Scientific Electronic Library Online (SciELO) and WIKIPEDIA Encyclopedia. Three blocks of key words were adopted using the different combinations: (a) block 1 (“Takraw”, “world ranking”, “digital platform”); (b) block 2 (“international federation”, “Sepaktakraw sport”, “sports promotion lotto”); (c) block 3 (“ISO/IEC 17025”, “accreditation laboratory”, “world championship/games”). Selective Protocol was utilized in the articles to broaden searches by using variants on the initial search words and by combining descriptors with the Boolean operator (Baptista et al., 2019). In order to find more potential eligible studies, no filters or search restrictions were applied to the references of the original and review research. There were no limitations on language. Two reviewers independently conducted the search and identification of the publications, rated the included studies, and reached agreement on each reviewer's individual scores (Pagea et al., 2021, and Taylor et al., 2017)

Inclusion Criteria: This review included studies that: described investigation of (a) the world Takraw Sport innovations for a new sport event, especially in Sepaktakraw games. (b) originator of accreditation ISO 17025 TakrawBall testing laboratory and (c) the first world TakrawDigital platform, TakrawRanking and an Olympic Games frontier.

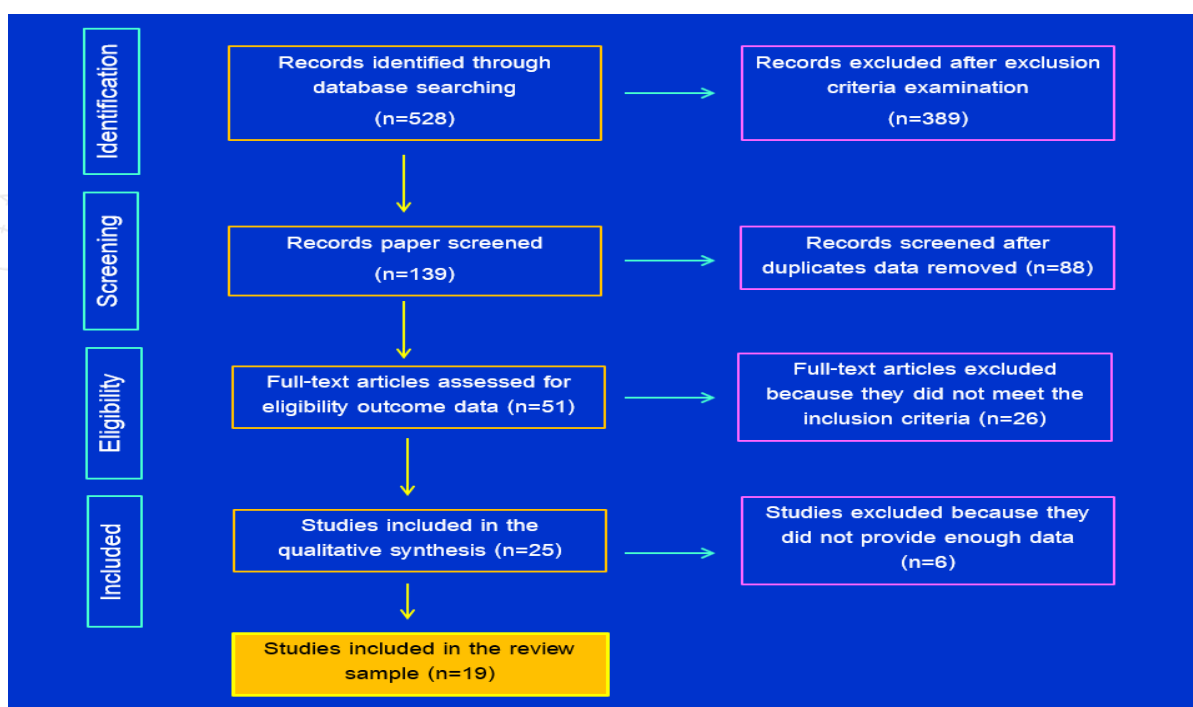
Exclusion Criteria: Studies were excluded from this review if they: (a) were in the format of a monography daily, the abstract published exclusively news; (b) non - characterized as review and meta - analysis studies, including quantitative systematic review; and (c) were duplicated during the electronic search in the different databases.

Extraction of Data: The following information was taken out: The first world reports using SportsDigital and SportRanking; the study design in Takraw sport, innovation and accreditation laboratory; the study source (name of the authors, academic institutions, and country); the sports of games (Asian Games, Olympic Games, and World Championship); and the professional sports competitions (Sports Leagues, Super Leagues etc.).

## Search Results

The following flow chart, which is depicted in Figure 1, describes how 528 articles were

initially discovered. 389 articles were eliminated after duplicate data was removed and studies were taken an event, which is a competition inside a discipline. For instance, triathlon was approved as a sport and made its debut at the Sydney Olympic Games in 2000. In the Wrestling competition at the Athens Games, women's wrestling debuted. A new sport, a discipline, or an event may have slightly different admission requirements, but the goal is always the same. Several laws and regulations govern whether a sport will be included to the Olympic Games after an IFs has out of the title and the abstract. After selecting 139 articles, 51 items were left after the accounting duplicates. Additionally, 26 were disqualified because they failed to meet the requirements for inclusion. The remaining 25 referrals to the qualitative synthesis in the flow diagram were further reviewed in their entirety.



**Figure 1.** The Strategy Flow Diagram of article selection process for the studies.  
(Created on 2022 October, 5)

Study characteristics: The 25 controlled trials that were chosen for this study were all published in English. The interventions of “international federation” and “Sepaktakraw sport” as the evolution and development of a new sport event, a total of 8 trials had supervised sessions. The 10/12 (excluded 2 articles) studies included in the “ISO/IEC 17025” and “accreditation laboratory” interventions review is available. A more explicit description of “TakrawRanking” and “world championship /Olympic games” of Sepaktakraw intervention was carried out in 4/7 (excluded 3 articles) studies. Moreover, the interventions of “TakrawDigital” and “professional league” and “sports lotto” were extracted into the 3/5 (excluded 2 article) studies review occurring, especially in total of 19 samples.

## Results and Discussion

The perspective views of Takraw Sport Society in experiential (qualitative) via systematic



review was shown in Figure 2, according to international ST - tournament the King's Cup world championship and ST - Summit 2019 conference proceeding (ISTAF, 2019). Moreover, the 3 - innovations such as first-world TakrawDigital, TakrawRanking and Accred. TakrawBall testing Lab. stimulate to enhance global sport culture and social participation, and standardisation of games to support Takraw Sport as ST - games going to Olympic Games frontierby the tentative model predicted in 2028 (en.Wikipedia.org; ISTAF: Sepaktakraw Summit, 2019) expectation.



## The Systematic and Innovation Review Research



**Figure 2.** The Perspective Views of World Takraw Sport and Society.  
(Created on 2022 October, 5)

The schematic sports events of the world Takraw Sport society consensus and the movement of ISTAF to recognised into Olympic Games frontier was shown in Table 1. by experiential systematic review, the new ST - sport (in Takraw main category) event. Governing body established ISTAF in 1988 era. Moreover, ST - Summit 2019 by ISTAF: Olympic channel welcomes six - sports governing bodies including ISTAF Law of the game 2016 v 1.0 going on.

Secondly issues, international/ continent games, the 11<sup>th</sup> Beijing Asian Games (AG) 1990, was initiated first lunch ST competition, and in recent year the 18<sup>th</sup> Asian Games 2018 in Indonesia, officially known as, the synthetic ST-ball model was delivered for the continental game, as the event update. In future, Hangzhou is host in the 19<sup>th</sup> Asian Games 2022 being in China again. The 34<sup>th</sup> King's Cup global championship competition was launched in Thailand in the first week of 2019, whereas the first - ever ISTAF World Cup was held in Malaysia in 2011.



**Table 1.** The Schematic Sport Events of World Takraw Sport Society Consensus and Movement of ISTAF recognized into Olympic Games Frontier from 1988 to 2028.

Category of Consensus	Year of Occurrence	Movement Checklist
1. International Sepaktakraw Federation (ISTAF), Governing sport body.	1988	<ul style="list-style-type: none"> <li>- Sepaktakraw National Federation has been established affiliating with ISTAF in 1988.</li> <li>- ISTAF Sepaktakraw Summit 2019: Olympic channel welcomes six sports governing bodies including ISTAF Law of the game 2016 v 1.0, ISTAF Anti-doping rules 2015 and ISTAF Congress 2016, 2019.</li> </ul>
2. The First World Asian Games in Sepaktakraw competiion, Beijing, China, 1990. Wikipedia Encyclopedia	1990	<ul style="list-style-type: none"> <li>- The 11<sup>th</sup> Beijing Asian Games 1990 was initiated first lunch Sepaktakraw Sport competition.</li> <li>- The 18<sup>th</sup> Asian Games 2018 in Indonesia, officially known as, the synthetic Sepaktakraw ball model was delivered for the continental game, event update.</li> </ul>
3. First World TakrawRanking reported by the Roon Ba.	2019	<ul style="list-style-type: none"> <li>- The first-ever ISTAF World Cup is held in Malaysia in July 2011.</li> <li>- The 34<sup>th</sup> King's Cup championship of Sepak takraw tournament was kicked - off in Thailand in first, 2019.</li> <li>- The Roon Ba (2021) had reported Thailand 's Men team of Sepaktakraw is first world Takraw ranking present.</li> </ul>
3. First World TakrawRanking reported by the Roon Ba.	2019	<ul style="list-style-type: none"> <li>- The first-ever ISTAF World Cup is held in Malaysia in July 2011.</li> <li>- The 34<sup>th</sup> King's Cup championship of Sepak takraw tournament was kicked - off in Thailand in first, 2019.</li> <li>- The Roon Ba (2021) had reported Thailand 's Men team of Sepaktakraw is first world Takraw ranking present.</li> </ul>
4. First World TakrawDigital Platform for SPLMT of Sports Authority of Thailand for Professional Takraw Thailand League.	2021	<ul style="list-style-type: none"> <li>- The TakrawDigital app. version 0.3 (18) software of the Sports Promotion Lotto Model of Thailand for prof Takraw Thailand League 2021 events.</li> <li>- Sports Authority of Thailand collaboration with Kasem Budit University to carry out the Sports Promotion Lotto Model of Thailand 2021 research project.</li> </ul>
5. First World TakrawRanking reported by the Roon Ba.	2019	<ul style="list-style-type: none"> <li>- The first - ever ISTAF World Cup is held in Malaysia in July 2011.</li> <li>- The 34<sup>th</sup> King's Cup championship of Sepak takraw tournament was kicked - off in Thailand in first, 2019.</li> <li>- The Roon Ba (2021) had reported Thailand 's Men team of Sepaktakraw is first world Takraw ranking present.</li> </ul>

Thirdly, The Roon Ba website, upcoming fixtures between international representative teams in 80 team sports, the world sports ranking is available for each sport based on an archive of international results data of the games competition, including the new ST - sport. According to Thailand's Takraw team is the first world ST - sports ranking that accomplish to peak performances (Suwat Sidthilaw, 2001, and Chaiyasith Pavilas et al., 2001). Therefore, the sports ranking boosts Takraw World social and popularity via the 19<sup>th</sup> Asian Games 2022 being in China again, the Games were originally scheduled to take place from September 2022 to 2023. Currently, the 35<sup>th</sup> edition





of international ST - tournament King's Cup world championship 2022 also was performed in Thailand (ISTAF - Offers Takraw World, 2022) plus.

Moreover, in fourthly, the mega sports event management as Olympic sport may benefit greatly from digital platforms (Xiao et al., 2017). The most significant effect is the incorporation of numerous administrative functions into a comprehensive information and communication technology (ICT) service through multiple channels, including websites and mobile applications, as part of sports digitalization. Gamification technologies are also utilized to enhance supporters' digital experiences. This is in line with the IOC's principles of increasing popularity and building engagement, which popularity will draw, sponsorship and media interest to compete with the Olympics frontier.

In Table 2., The summary of the evolution and development of the new traditional sport, Takraw Sport society and culture, in the events and the phenomena. Sepaktakraw National Federation has been established affiliating with ISTAF in 1988 as shown in the schematic sports events. According to the publication 2008 in ST-sport of the brave: A global challenge by Kader, A. and Lorhpiat, 1<sup>st</sup> ed., 2008. As a result, the first Asian Games were held in 1990 at the 11<sup>th</sup> Beijing, China, as stated in Table 1's Schematic Sport Events. In addition, Takraw Association of Thailand and the ISTAF recently are co-organizing the 35<sup>th</sup> King's Cup world championship ST-tournament, which will take place in 2022. In these summary and analysed data, the first world TakrawRanging (The Roon Ba., 2021) via the 34<sup>th</sup> world championship King's Cup of ST - games had reported in 2019 (ISTAF, 2019), consequentially.

Thirdly, the University of Chula's ST-sport ball testing, Chalerm Chaiwatcharaporn published in the third International Conference on Sports and Exercise Science (ICES) 2012 was the most appropriate and effective method used in TRECS, including Panu Chuentawat (2008) presented ISO/IEC 17025: 2005 - based management system improvement for ST - ball in 2008 in Faculty of Engineering at Chulalongkorn University.





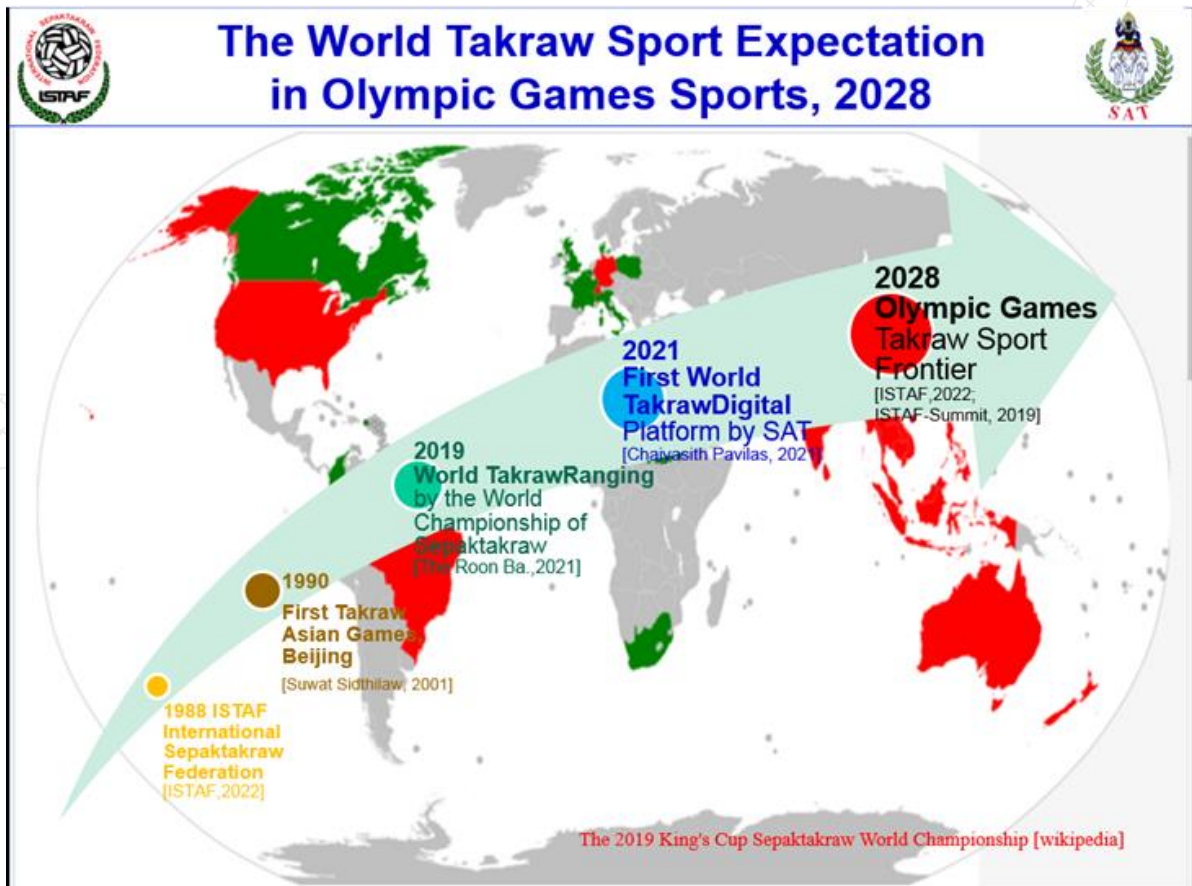
**Table 2.** The Summary of Evolution and Development of Takraw Sport, culture and society in the events, materials, games and organizations eras.

Main Themes	Specific Event Examples	No of Studies
1. The Evolution and Development of the new ST - sport (Takraw) event into governing body, established International Sepaktakraw Federation (ISTAF) era.	<ul style="list-style-type: none"> <li>- International Sepaktakraw Federation offers Takraw world, a journal of Sepaktakraw movement, 2021.</li> <li>- ISTAF Sepaktakraw Summit 2019: Olympic channel welcomes six sports governing bodies including ISTAF together and ISTAF Congress 2016, 2019.</li> <li>- Kader, A and Lorphipat, B. 2008. Sepak takraw sport of the brave: A global challenge. 1<sup>st</sup> ed., 2008.</li> </ul>	8
2. World Takraw ST-Ranking and Championship of Sepaktakraw  The Roon Ba had reported Thailand's Men team of Sepak takraw is the first world Takraw ranking sports by Sepak takraw world championship, 2021.	<ul style="list-style-type: none"> <li>- In recent year, the 35<sup>th</sup> edition of international ST - tournament King's Cup world championship 2022, by (ISTAF) 2022.</li> <li>- The Roon Ba (2021) had reported Thailand's Men team of Sepaktakraw is the first world Takraw ranking sports at present.</li> <li>- The 34<sup>th</sup> King's Cup championship of Sepak takraw tournament was kickedoff in Thailand as the first, 2019.</li> <li>- Sidthilaw, S. 2001. 3D kinematic analysis of Sepaktakraw male servers in 13<sup>th</sup> Asian Games. ISBN 974-7866-75-7, Bangkok, Thailand, 1990.</li> </ul>	10
3. In Originator of Accreditation ISO 17025 Sepak takraw Ball testing laboratory by TRECS, Chulalongkorn Univ., Thailand.  To achieve the requirement of ISO/IEC 17025, accreditation number: testing 0285 (2010).  The plastic Sepak takraw ball, has been appointed by ISTAF to be only neutral official Testing and Certification Lab. of ISTAF.	<ul style="list-style-type: none"> <li>- Testing Research Center for Sports Material and Equipment (TRECS), ChulaUniversity: <a href="https://www.chula.ac.th/academic/faculty-of-sports-science">https://www.chula.ac.th/academic/faculty-of-sports-science</a>, 2020.</li> <li>- Chaiwatcharaporn C et al. The first sports science and technology centre, the 3<sup>rd</sup>. Inter Conference on Sports and Exercise Science (ICSES) 2012.</li> <li>- International recognition in originator of accreditation ISO 17025 Takraw Ball testing laboratory by TRECS, Chulalongkorn University: accreditation number 0285 (2010).</li> <li>- Chuentawat P. Improvement of management system for sports material testing research center: Sepaktakraw ball by using ISO/IEC 17025: 2005, Faculty of Engineering, Chulalongkorn University, 2008.</li> </ul>	4
4. First World TakrawDigital Platform for Professional Takraw Thailand League 2021 events.	<ul style="list-style-type: none"> <li>- The TakrawDigital app. version 0.3 (18) software of Sports Promotion Lotto Model of Thailand for professional Takraw Thailand League 2021 events.</li> <li>- Takraw Thailand League (TTL) which has been running at first 2002. Therefore, TTL was s officially launched in Putrajaya, Malaysia 2014.</li> </ul>	3

The fourth in competition is the TTL, which debuted in 2002, was formally introduced by the Malaysian Minister of Youth and Sports Khairy Jamaluddin on November 7, 2014, in Putrajaya (ISTAF - Offers Takraw World, 2022). According to the First World TakrawDigital Platform by SAT, the SPLMT 2021 research project will be carried out using the TakrawDigital app. version 0.3 (18) software in collaboration for professional TTL 2021 events (Pawares Phantayuth, 2022).

Finally, in Figure 3. shown that the expectation model of World Takraw Sport Society and

the 3 - innovations may encourage to enhance in sport participation and standardisation of games that support the recognition of the tentative predicted Olympic Games frontier in 2028 or more than, which will be leading to sustainable development of the World Takraw's sport, culture and society as sports for all and sports for excellence in competition. According to the Olympic Charter, a sport must be widely practiced by men in at least 75 countries across four continents



**Figure 3.** The Expection Model of World Takraw Sport Society and the innovations supporting to 2028. (Created on 2022 October, 5)

across three continents for it to be allowed. Recognition as a sport by the International Olympic Committee is the first stage in the process of becoming an Olympic sport. Although, as of April 2020, The ISTAF federation has roughly 50 member national associations, the majority of which are in Asia - Oceania, with 13 of those national members having provisional status.

Therefore, ISTAF - President, currently, reported that the main goals ISTAF, conference proceeding, are to spread Sepaktakraw into 75 different countries and on four continents around the world, nearly. This implies that may occur predicted in the next couple Summer Olympic Games (officially the Games of the XXXIV Olympiad) by 2028 in Los Angeles, California, United States, or more than that, after Olympic Games in Paris, France in 2024. In addition, it should be noted that if this criterion is met, the opportunity to add additional sports to the program is entirely up to the discretion of the respective organizing committee for the Olympic Games and is, therefore, subject to the final decision of the IOC Session in the following step.



In contrast, the ST - sport federation has roughly 50 member national associations as of April 2020, the majority of which are in Asia-Oceania, with 13 of those national members having still provisional status (ISTAF - Offers Takraw World, 2022). In order to fulfill the criteria of The Olympic Charter, the ISTAF committee should be organized and ready to draw up special an agenda for the canvas business model that is now in development topic. The ST - sport must first be overseen by an International Federation in order to be accepted by the IOC (IFs). Furthermore, this is necessary to comply with the World Anti-Doping Code and the Olympic Movement Code on the Prevention of Manipulation of Competitions as well as the Rules of the Olympic Charter. Eventhough, the COVID - 19 pandemic still are spread and postpone among many countries of the world, the World Takraw Sport also moves to play role and goes on in social and acts as cultural sports, including to achieve the ultimate competition goal make it's an Olympic sport frontier in nearly future.

## Conclusion

These information databases were searched and extracted via indexed publications in SEMANTIC Scholar, NCBI/PubMed, SciELO and SportDiscus. The results showed that the social interaction, innovations and phenomenon involved the evolution and development of this new traditional sport, culture and society in the events, materials, games and organizations eras. Consequentially, ST-games was introduced in the 3<sup>rd</sup> SEA Games 1965 and the 11<sup>th</sup> Beijing AG 1990 was initiated, including the first-ever ISTAF World Cup is held in 2011 towards the 35<sup>th</sup> King's Cup World Championship 2022 conducted. These issues may enhance in sports participation and standardization of games that support to recognition of the Olympic Games frontier in strategy, leading to the sustainable development of the World Takraw's Sport and Society, including sport others as Volleyball (FIVB), in the future.

## Acknowledgement

The authors are appreciative that KBU' s gave them permission to publish this paper. The writers want to thank the committee of the ISTAF body from the bottom of their hearts. The TRECS, Chula offered the SAT and Accredited Takraw Ball Laboratory, which is also acknowledged by the writers.

## References

- Allen, T., Haake, S. & Goodwill, S. (2011). Effect of tennis racket parameters on simulated groundstroke. *Journal of Sports Science*, 29(3), 311 - 325.
- Baptista, J. G., Costa, P. N. & Porretti, M. F. (2019). Exercise dependence: An updated systematic review. *Journal of Exercise Physiology online*, 22(5), 105 - 125.
- Britton, R., Roger, N., & Rein, P. (1998). Swimming flume Otago University, Institution of Professional Engineers New Zealand (IPENZ). *Transactions*, 25(1), 212 - 216.
- Chalerm Chaiwatcharaporn. (2012). The first sports science and technology center (ISO 17025) in Thailand: Symposium. (pp. 58 – 59). *The 3<sup>rd</sup> International Conference on Sports and Exercise Science (ICSES)*, The Imperial queen's park hotel, Thailand.



- Choppin, S., Goodwill, S. & Haake, S. (2011). Impact characteristics of the ball and racket during play at the Wimbledon Qualifying tournament. *Journal of Sports Engineering*, 13, 163 - 170.
- Chaiyasith Pavilas, Chalerm Chaiwatcharaporn, & Dom Phumitdi. (2021). TakrawDigital application in sports promotion lotto model of Thailand project: Case study. *Journal of Sports Science and Technology*, 21(2), 110 - 124.
- Chaiyasith Pavilas, & Boonsakdi Lorpipatana. (2001). Analysis of ball velocity and precision of serving player in female Sepaktakraw during the 13<sup>th</sup> Asian Games'98. *Journal of Sports Science and Technology*, 1(2), 129 - 135.
- Chaiyasith Pavilas. (2010). Modern Sports Science in Sepak - Takraw: How to apply sports science in elite Sepaktakraw. (pp. 28 – 29). *International Conference on Sports and Exercise Science (ICSES), Symposium: Pre - ASEAN University Games Conference 2010*, Chiangmai, Thailand.
- Elliott, B., Marshall, R. & Noffal, G. (1995). Contributions of upper limb segment rotations during the power serve in tennis. *Journal of Applied Biomechanics*, 11, 433 - 442.
- Haake, S., Allen, T., Choppin, S. & Goodwill, S. (2007). *The evolution of the tennis racket and its effect on serve speed*. (pp. 257 – 271). In: Miller S. (Ed.), London: Inter. Tennis Federation.
- International Standard ISO/IEC 17025. (2005). *General requirements for the competence of testing and calibration laboratories* (2<sup>nd</sup> ed.). ISO copyright office, Switzerland.
- International Sepaktakraw Federation (ISTAF). (2019). *Sepaktakraw Summit 2019: Olympic channel welcomes six sports governing bodies including ISTAF, Law of the game 2016 v 1.0, ISTAF anti - doping rules 2015 and ISTAF congress 2016*. Retrieved from <https://en.wikipedia.org/wiki/Inter>
- International Sepaktakraw Federation (ISTAF). (2022). *Offers Takraw World, a journal of Sepak takraw movement, Sepaktakraw ball requirements*. Retrieved from <https://astafsepaktakraw.com>
- Kader, A., & Lorhipat, B. (2008). *Sepaktakraw sport of the brave: A global challenge with the approved by International Sepaktakraw Federation (ISTAF), Thailand*. Retrieved from <https://www.researchgate.net/publication/317427102>
- Munn, Z., Stern, C. & Aromataris, E. (2018). What kind of systematic review should I conduct? A proposed typology and guidance for systematic reviewers in the medical and health sciences. *Biomedcentral Medical Research Methodology*, 18(1), 1 - 9. DOI 10.1186/s12874-017-0468-4.
- Pagea, M. J., McKenziea, J. E., & Bossuyt, P. M. (2021). The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *Journal of Clinical Epidemiology*, 134, 178 – 189.
- Panu Chuentawat. (2008). *Improvement of management system for the sports material testing research center: Sepaktakraw ball by using ISO/IEC 17025* (Master's thesis), Chulalongkorn University.
- Pawares Phantayuth. (2022). Factors affecting success of business professional takraw management. *Academic Journal of Thailand National Sports University*, 14(2), 1 - 16.





- Rezaei, A., Verhelst, R., Paepegem, W. & Degrieck, J. (2011). Finite element modelling and experimental study of oblique soccer ball bounce. *Journal of Sports Science*, 29(11), 1201 - 1213.
- Suwat Sidthilaw. (2001). *Three dimensional kinematic analysis of sepaktakraw male servers in the 13<sup>th</sup> Asian Games 1990*. Department of Physical Education. Bangkok: Thailand.
- Taylor, J. B., Wright, A. A., & Dischiavi, S. L. (2017). Activity demands during multi - directional team sports: A systematic review. *Sports Medicine*, 47, 2533 – 2551.
- Testing Research Center for Sports Material and Equipment (TRECS). (2020). *Chulalongkorn University*. Retrieved from <https://www.chula.ac.th/academic/faculty-of-sports-science/>
- The Olympic Charter. (2022). *To be recognised by the IOC - A sport must first of all be governed by an International Federation (IF)*. Retrieved from <https://olympics.com/ioc/faq/sports>
- The Roon Ba. (2021). *Men's SepakTakraw world ranking*. Retrieved from <http://www.theroonba.com/sepaktakraw/men/ranking.html>
- Xiao, X., Hedman, J., & Ter, F., (2017). *Sports digitalization: An overview and a research agenda completed research paper: In international conference on information systems, Seoul: South Korea*. Retrieved from <https://www.researchgate.net/publication/321081719>

Received: 2023, May 30

Revised: 2023, October 3

Accepted: 2023, October 11