

Sports Talent Identification and Selection in Korea

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Abstract

The purpose of this study is to review how Korea Institute of Sport Science (KISS) had carried out sports talent identification and selection for enhancing athletic performance over the last three decades. In the 1980s, KISS had to prepare for the 1986 Asian Games and the 1988 Olympic Games. So, KISS developed test items for sports talent identification for various sports and had identified 4,359 sports talents over 30 sport events. Moreover, KISS developed the standards for elite athlete and had selected talented athletes using them. In the 1990s after the two big sports events, KISS established Talented Athlete Selection Center and constructed the foundation of elite athlete recruitment system. In the 2000s, Korea had suffered a lot of difficulties in recruiting new athletes because of government's birth control policy effect and economic affluence. So, KISS developed an innovative sports talent identification program and had searched about 500 talented children every year. And KISS developed a new talented athlete selection program and had selected 1,682 talented athletes during 2000s. These new sports talent identification and selection programs are flourishing until now and would be the best sources of national team members in the future.

Key words: Sports Talent Identification, Sports Talent Selection

Introduction

Korea's elite sports have been developed with policy support and coordination of the Korean government. Korea started to secure the position as a powerhouse in international sports through 1986 Asian Games and 1988 Summer Olympics. It strengthened its position as an international sports powerhouse retaining its place in the world's top 10 through Barcelona 1992 Olympics. It won 13 gold, 8 silver and 7 bronze medals in London 2012 Olympics to achieve its best-ever results after 1988 Summer Olympics.

It is urgently required to have the systematic identi-

fication, selection and development for an ideal hierarchical for young and national team athletes along with the base expansion for a pool of athletes for the sustainable development of elite sports. In recent years, a decline in athletic performance has occurred as the number of student athletes has reduced due to the shrinkage of school athletic teams and changes in social awareness. In a situation that this decline in athletic performance is presented as a fundamental problem, it is more desperately needed to have the scientific athlete selection and systematic development.

The talented athlete identification and development project in Korea started with the launch of Sports Science Committee affiliated with Olympic Committee (KOC) in the 1960s. Korea Institute of Sport Science (KISS) established as the Sports Science Research

Center of the Korea Sports Council in 1980. And in 1989 KISS became a independent sports science research institute and served as a momentum which brought about a full-scale start of Korea's sport science and played a key role in the support for talented athlete identification and development projects. KISS played an important role in stimulating the application of sport science for Korea national team athletes' scientific training through continuous effort and development. Accordingly, it made a significant contribution to talented athlete development.

KISS has continuously made every effort to provide scientific support for talented athlete identification and development after its name was changed into Korea Institute of Sport Science. The projects implemented by KISS can largely be divided into the following three projects based on a 10 year period: 'Identification Project for New Athletes in Preparation of 1986 Asian Games and 1988 Olympics' promoted in the 1980s as Korea was scheduled to host 1986 Asian Games and 1988 Olympics; 'Talented Athlete Identification Center Project' newly carried forward since 1993 through know-how accumulated from '88 Prospective Young Athlete Project and the supplementation to the problems; and 'Prospective Young Athlete Selection Project' newly push ahead since 2000 and 'Sports Talent Identification Project' carried forward by Korea Foundation for the Next Generation Sports Talent (NEST). This study summarizes the activities and supports that Korea Institute of Sport Science had made related to talented athlete identification and development for the last thirty years.

Spots talent identification and talented athlete selection during 1980s

KISS started 'Sports Talent Identification Project' to support talented athlete identification and development in the 1980s. The project was launched as the opinion that Korea's national team athletes' performance had to be at the level suitable for the status of a host nation

had been emphasized since Seoul was decided as a host city of Seoul 1988 Olympics in 1981. At the initial stage of 'Sports Talent Identification Project', KISS supervised and carried out the identification project for new athletes called 'Identification Project for New Athletes in Preparation of 1986 Asian Games and 1988 Olympics' with the strong support of the Ministry of Sports.

For this project, it first conducted the studies to set up physical fitness test items and standards for the selection of new athletes. After that, it carried out the support project for talented athlete development and the management of 'Talented Athlete Selection Center'.

KISS performed the following functions: identifying new promising athletes with great potential in preparation of '86 Asian Games' and '88 Olympics'; calculating the appropriate age to demonstrate the best performance at '86 Asian Games' and '88 Olympics' with the purpose of expanding the base for a pool of promising athletes; and creating the standards through many different tests and studies related to physique, physical strength, physiology and medicine (Lee et al., 1983).

KISS had established all the plans and completed an education for test administrators between March and May 1982. It prepared a vehicle for a test, made a tour of seven physical education high schools in the country to conduct sample tests in June 1982. The test was administered in a total of 46 items in five sectors: 12 items in the physique factor such as height, weight, and chest circumference; 14 items in physical strength such as running, long jump and pull-ups; 4 items in psychological testing related to a stability, a human nature and self-concept; 13 items in physiology such as EMG (electromyogram), ECG (electrocardiogram), lung capacity and blood; and 2 items in other sectors such as hereditary nature and sporting history. The test had been administered for 1,280 students (901 physical education middle and high school students, 366 champions by event in National Junior Sports Festival and 13 national team athletes) in seven physical education

high schools by city or province between June 9 and July 9, 1982. The test team was composed of five members of Sports Science Committee, seven researchers of KISS, five obligatory personnel and fifty test administrators.

The test to prepare selection standards by event were was composed of compulsory, common and optional sectors. The compulsory sector was made up of twenty items related to physique factors such as physique height, weight and chest circumference. The common standard sector consisted of eight items based on physical strength such as 50m running, standing long jump, grasping power (left and right), sit-up, long-distance running, sit and reach and shuttle run. The optional sector was composed of nine physique items (height, weight, chest circumference, arm length, leg length, thigh circumference, upper arm circumference and forearm circumference), eight physical strength items (pull-ups, back muscle strength, Harvard step test, trunk backward extension, sergeant jump, one legged blind balance, side step test and rolling) and two physiological testing items such as lung capacity. The sector to set up standards was composed of 20 items such as track and field, sprints, middle distances, throwing, jumping, swimming, gymnastics, boxing, wrestling, weightlifting, judo, shooting, archery, cycling, fencing, taekwondo, football, volleyball, basketball, table tennis, handball, hockey, tennis and badminton. The sector to set up application standards was made up of 15 items such as rowing, sailing, canoeing, horse-back riding, modern pentathlon, golf, bowling, baseball, skiing and ice skating. The test items for the identification of new athletes by event are shown in <Table 1>.

The common standards were calculated to evaluate athletes' basic strength. The points were calculated in the six elements of physical strength such as muscle strength (pull-ups, sit-up), explosive strength (50-meter running, standing long jump), quickness (shuttle run), endurance (long-distance running), flexibility (trunk forward flexion, trunk backward extension), counter-balance (one legged blind balance) according to the

results of the factor analysis. The points were differently given by test item.

Table 1. Test items for sports talent identification

Common Sector	Optional Sector
	Height
	Weight
	Chest Circumstance
	Arm Length
	Leg Length
	Thigh Circumference
Grasping Power (Left and Right)	Lower Leg circumference
50-Meter Running	Upper Arm Circumference
Standing Long Jump	Fore Arm Circumference
Shuttle Run	Pull-ups /Flexed Arm Hang
Long-Distance Running	Back Muscle Strength
Trunk Forward Flexion	Harvard Step Test
Sit-Up	Trunk Backward Extension
	Sergeant Jump
	One Legged Blind Balance
	Side Step Test
	Rolling
	Lung Capacity

The standards by event were made in reference to the test item application table prepared according to the results of the factor analysis after evaluation criteria of each test item were made by sex and age on the scale of 1 to 20. In addition, the additional point was given to people who won a prize at a national competition according to their results. The appropriate age was considered in selection.

The identification project for new athletes was divided into three levels to be carried out. The city/provincial board of education and city/provincial athletic association supervised the project at the initial level. At the second level, the city/provincial board of education and city/provincial athletic association supervised the project with the support of Korean Olympic Committee (KOC). At the third level, KISS supervised the project.

For the preliminary selection, the city/provincial board of education and city/provincial athletic association identified talented athletes among about 6.2 million elementary, middle and high school students in the country between July and September, 1982. The director of an athletic association recommended people

with great physical strength among the currently registered athletes as of September 1982, students who were graded as more than the first class in a physical fitness test (a school principal was supposed to recommend them within the limit of one hundredth of students enrolled by school) and people not in school. The expected number of identified athletes for the preliminary selection was 91,357 people, 1.5% of the target population.

The city/provincial board of education and city/provincial athletic association supervised the secondary selection for 91,357 people preliminarily selected with the support of Korean Olympic Committee (KOC) between September 25 and October 12, 1982. The standards in ten items were set up based on physical strength and physique. The criteria in 10 items were based on physical strength and physique. The point on the score scale depended on body height to evaluate athletes' physiques. Meanwhile, physical strength was evaluated in 10 items such as 50-meter running, standing long jump, shuttle run, pull-up, long-distance running, one legged blind balance, rolling, trunk forward flexion and trunk backward extension. The expected number of identified athletes in the second selection was 9,989 of 91,357 athletes preliminarily selected.

KISS supervised the tertiary selection for 9,527 elementary, middle and high school students in the country among people secondarily selected between October 21 and November 24, 1982. The number of

finally identified athletes was a total of 4,359 preferentially identified according to characteristic items and 4,275 identified according to the score ranking by item. The finally identified athletes by school level were 530 elementary (12%), 2,305 middle (53%) and 1,524 high school students (35%). Sports talents identified in the process are organized in <Table 2>.

The Identification of New Athletes and Talented Athlete Selection Center performed two functions such as the identification of new athletes and the selection of talented athletes at the same time. It supported the measurement of talented athletes' physical strength, continuously supplemented athlete selection standards and developed athlete identification test items. It had supported the evaluation of physical fitness tests and training for national team candidates for 88 Olympics between July 25 and August 15, 1986. It had reviewed athlete selection standards by event between October 30 and November 15, 1986 and the plan for the extension of the identification project by year between October 25 and November 5, 1986.

The evaluation of physique and physical strength by event, as the criteria for athlete selection, was made for 1,647 national team athletes participating in training camps at Taereung National Team Training Center and 652 other athletes such as good high school and college athletes, national backup team athletes and national team candidates for 1986 Asian Games and 1988 Summer Olympics between January 1981 and

Table 2. Results of talent identification during 1980s

Sport	Number of Identified Talents	Sport	Number of Identified Talents	Sport	Number of Identified Talents
Track and field	673	Archery	200	Boxing	165
Swimming	349	Shooting	330	Wrestling	300
Football	90	Gymnastics	160	Taekwondo	50
Tennis	75	Field hockey	208	Weight lifting	150
Basketball	120	Fencing	120	Judo	120
Volleyball	120	Badminton	117	Rowing	320
Table tennis	150	Baseball	75	Ssireum	35
Handball	129	Rugby	75	Softball tennis	50
Cycling	140	Winter sports	8	Kendo	30

November 1984. The test items are a total of 27 items including 10 physique-related items and 17 strength-related items. 10 physique-related items are height, sitting height, arm length, leg length, chest circumference, thigh circumference, lower leg circumference, upper arm circumference, forearm circumference and weight. On the other hand, 17 strength-related items are height, sitting height, arm length, leg length, chest circumference, thigh circumference, lower leg circumference, upper arm circumference, forearm circumference and weight.

The selection of test items by event was made through the factor and the discriminant analysis as

shown in <Table 3> (Seon et al. 1988).

As for talented athlete selection and development in the 1980s, athletes were selected by considering their sport starting age and the time of demonstrating their personal best performance. During this period, the systematic talented athlete selection system composed of four steps, the recommendation of schools and city/provincial division, the preliminary selection by athletic associations, potential evaluation and final selection, was designed to prepare the momentum which established the base of manpower development.

Table 3. Test items for talented athlete selection

Item \ Sport/Discipline	Sprint	Middle/long distance	Throwing	Jumping	Swimming	Table tennis	Tennis	Basketball	Volleyball	Handball	Cycling	Archery
Height	○	○	○	○	○	○	○	○	○	○	○	○
Sitting height												
Weight	○		○	○	○		○	○	○	○		○
Chest Circumference		○	○		○	○		○	○	○	○	○
Waist circumference												
Subcutaneous fat												
Arm length			○		○	○	○	○	○	○		○
Leg length	○	○	○	○	○		○	○	○	○	○	
Thigh circumference	○		○	○	○		○		○	○	○	○
Lower leg circumference	○	○	○	○				○			○	
Upper arm circumference		○									○	
Forearm circumference						○	○			○		○
Pull-up					○						○	○
Shuttle run	○				○	○	○	○		○	○	○
Back muscle strength	○	○	○	○		○	○		○			○
Grasping power	○	○	○		○	○	○	○	○	○	○	○
Trunk forward flexion	○	○		○	○	○		○	○		○	○
Trunk backward extension			○	○	○		○	○				
Sargent jump	○		○	○		○	○	○	○	○	○	
Sit-up		○	○	○	○	○				○	○	○
One legged blind balance			○									○
Harvard step test		○		○	○	○	○	○	○	○	○	
Side step test	○					○	○	○	○	○		
Long-distance running		○			○	○				○	○	○
Rolling												○
50-meter running	○		○	○		○				○	○	○
Standing long jump	○	○	○	○		○			○		○	
Lung capacity	○	○		○				○		○	○	○
Number of tested items	14	13	15	13	15	15	13	14	13	16	17	17

Operation of talented athlete selection center during 1990s

The process of selecting athletes with great potential scientifically and systematically is the start-up stage and the basis of the process that sport science is applied to improve athletic performance. In this sense, Talented Athlete Selection Center was established to be managed in Korea Institute of Sport Science. Korea Institute of Sport Science supported Talented Athlete Selection Center based on Talented Athlete Selection Center in the 1990s. ‘Talented Athlete Selection and Development Project’ was a national project implemented to develop talented athletes with growth potential into best national team athletes through the early identification and scientific and systematic guidance/training. ‘Talented Athlete Selection and Development Project’ was carried out in the 1980s and reinstated for three years since 1993. It had continuously been operated until it was integrated with ‘National Team Candidates Development Project’. This project contributed to the expansion of the talented athlete base and the acquisition of national team athletes.

Korea Sports Council/Korean Olympic Committee (KOC), city/provincial office of education, athletic associations, schools and Talented Athlete Selection Center affiliated with Korea Institute of Sport Science constituted the pivot of the athlete selection. Even though corresponding affiliated institutions were supposed to cooperate each other, the corresponding athletic association was the main agent in athlete selection. According to the selection procedures and principles for new talented athletes (Table 4), the corresponding athletic association selected and recommended new athletes who were double the expected selection number among elementary and middle school

students according to athletes’ ages and records in domestic competitions and full-time coaches’ sensibility evaluation. Talented Athlete Selection Center tested physique and strength factors among potential evaluation factors for athletes preliminarily selected.

The selection committee evaluated new athletes’ potential based on test data to finally select new talented athletes. The selection committee is composed of the competitiveness committee of each athletic association, full-time coaches and researchers affiliated with Talented Athlete Selection Center. The selection committee played three roles: determining athletes finally selected; preparing the criteria and the rates of potential evaluation factors for athlete selection by event; and preparing the criteria for detailed test items and rates in athletic aptitude testing (Shin et al., 1991:1992).

In particular, the potential evaluation factor is composed of four factors such as athletic performance, physique, physical strength and kinesthetic sense to select new athletes by event. The selection committee by event considered the special features of each event to determine a separate ratio for each factor finally. Talented Athlete Selection Center athlete took charge of the measurement and evaluation of physique and physical strength factors.

The selection and development of new athletes was mainly made for three major sports/disciplines such as track and field, swimming, and gymnastics in 1993. 8 disciplines such as strategic/prospective events or the events which early discovery was required for according to their special features were implemented preferentially in 1994 and 1995. Since then, the number of items had increased step by step. The basic and strategic sports /disciplines were track and field, swimming, gymnastics, rhythmic gymnastics, synchronized swimming and others. The prospective and early selection sports

Table 4. Process of talented athlete selection

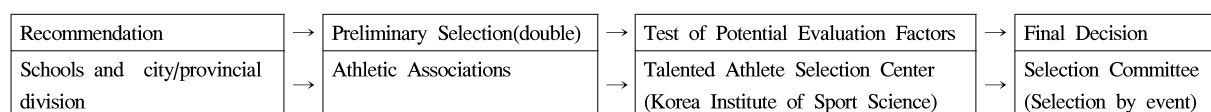


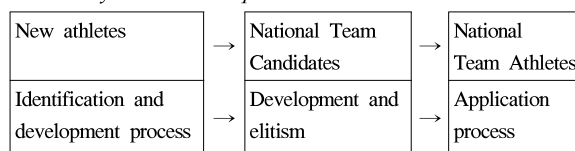
Table 5. Results of talented athlete selection during 1990s

Year	Number of sports	Sport	Number of athletes selected
1993	3	Track and field, swimming and gymnastics	200
1994	8	Track and field, swimming, gymnastics, archery, shooting, table tennis, ice skating and skiing	485
1995	9	Track and field, swimming, gymnastics, archery, shooting, table tennis, ice skating, skiing and badminton	519

were archery, shooting, badminton, table tennis, ice skating speed, short-track speed and figure skating and skiing. The athlete selection was made between January and March every year to consider the connection between team training and summer/winter training camp for athlete efficiency and inculcate the pride of prospective national team athletes into young athletes from the beginning of the year. 1,204 new athletes were selected through the selection project for new athletes implemented for three years between 1993 and 1995(Table 5).

The emphasis placed in the process of establishing the system for talented athlete development in the 1990s was the establishment of the athlete identification-development-management system (Table 6). Greater emphases were placed on the scientification of the talented athlete selection system, the substantialization of the athlete development process, the base expansion for a pool of talented athletes and the establishment of the supply base needed to meet the needs of national teams.

Table 6. System for development of elite athlete



The development and elitism of national team candidates in the youth age bracket, who take a countershaft of talented athletes' management forms a nucleus of talented athlete development in this system. It is considered to be a very import process in managing the support system into national team athletes along with the identification of new athletes mainly for

elementary school students. Korea Institute of Sport Science made greater efforts to continuously maintain and improve national team athletes' athletic performance. It had diagnosed athletes' basic strength and playing techniques for national team candidates who were selected and managed during the winter and summer intensive training period twice a year between 1985 and 1992. It had supported the results to be applied in training.

Korea Institute of Sport Science had planned not only the identification project for new athletes but also the national team candidate selection and development plan and prepared the long-term athlete development plan through the scientification of national team candidate selection process and athlete development since 1993. The selection of national team candidates was intended for middle, high school and college athletes registered at athletic associations. The main targets were the athletes who belonged to the bracket of the appropriate selection age by event, calculated based on the age of demonstrating maximum athletic performance and starting a corresponding sport. The selection procedures and principles for national team candidates were similar to the identification procedure of new athletes. Potential evaluation factors were tested for athletes recommended by a corresponding athletic association, 1.5 times the expected selection number according to athletic performance based on the records in domestic competitions. The selection committee finally selected national team athletes based on test results and the evaluation results of potential evaluation factors such as the results of full-time coaches' athletic performance and sensibility evaluation. It was also composed of the competitiveness

committee of each athletic association, full-time coaches and researchers affiliated with Talented Athlete Selection Center.

According to this selection process, physique and strength factors, potential evaluation factors, were tested by sport/discipline for a total of 618 athletes (351 males and 313 female athletes) in 19 sports/ disciplines (track and field: sprints, middle-long distances, throwing and jumping; swimming: synchronized swimming; gymnastics; archery; badminton; table tennis; judo; weightlifting; modern pentathlon, shooting: pistol and rifle; ice skating: speed and short-track speed skating; and skiing: alpine, Nordic and biathlon) in 1996. These factors were also tested for a total of 413 athletes (210 male and 203 female athletes) in 11 sports/disciplines (track and field: sprints, middle-long distances, throw, jump; badminton; table tennis; judo; shooting: pistol and rifle; taekwondo and field hockey) in 1997. The members of the competitiveness committee at each athletic association, full-time coaches, researchers affiliated with Talented Athlete Identification Center and others have participated in this athlete selection process to keep harmony between field and science. Moreover, new athletes have been combined with national team candidates to be managed according to government policy since 1996. Accordingly, the project for the selection of new athletes was converted into the support project for national team candidates' training to be implemented up to the present.

Innovative sports talent identification and new talented athlete selection during 2000s

Through Korea's elite sports, Korea has taken the position as a powerhouse in international sports with Seoul 1988 Olympics as a momentum. However, it has experience many difficulties in maintaining its position as an international sports powerhouse because of the limit of events in medal contention and low-level performance in basic events such as track and field, swimming and gymnastics. Considering the inter-

national trends in elite sports and national development strategies in the 2000th, the urgent issue of Korea's sports world was the systematic development in elite sports, namely the early identification and development of potential athletes. However, the social reality did not support this. Most parents wanted their children to study hard to succeed, not to become athletes. They preferred only popular sports such as professional sports even though they wanted their children to become athlete. The student-athlete identification mainly depended on coaches' experience. The development process also excessively depended on the unscientific methods and triumphalism-oriented indiscreet time investment. Accordingly, the base of athletes had reduced more and more. Furthermore, it is getting hard to secure athlete resources due to an increase in low birth. Therefore, the systematic development of elite sports based on basic events such as track and field, swimming, and gymnastics is never easy.

In this sense, the innovative and systematic sports talent development was necessary to achieve excellent results in the fiercely competitive international sports world to strengthen national status and enhance national prestige. For this reason, Korea Institute of Sport Science (KISS) started more scientific and innovative 'Sports Talent Identification and Development Project' and resumed 'Prospective Young Athlete Selection Project'.

Korea Foundation for the Next Generation Sports Talent (NEST) carries out 'Sports Talent Identification and Development Project' for elementary students to identify sports talents scientifically and develop their potential in cooperation with a local university, using the sports talent identification system developed by Korea Institute of Sport Science. Korea Institute of Sport Science established the sports talent identification and development system in all parts of the country, the training environment and scientific infrastructure in a local university and the organic athlete identification and training system among a regional sports federation by event, a school and an office of education to push

ahead the project.

The athlete development in track and field, swimming and gymnastics in school physical education, local school teams' use of training facilities and scientific infrastructures in local universities and the best coach development and re-education system by event using the scientific systems of local universities were revitalized based on the revitalization of the sports talent identification and development project. About 500 sports talents have been identified and developed through the sports talent identification and development project every year since 2006. A total of 700 sports talents (400 in track and field, 150 in swimming and 150 in gymnastics) were identified to receive sports talent education at 16 local centers in 2011.

The identification project for new athletes was reorganized as 'Prospective Young Athlete' system to be carried out since 2002. At the initial stage, 'Identification Project for Prospective Young Athletes in Basic Events' was carried out in three sport/ disciplines, the basis of all the events such as track and field, swimming and gymnastics. Ice skating and skiing were added in preparation of Winter Olympics in 2003. Judo, table tennis and handball were added in 2008. Accordingly, the project applies to eight events at present.

On the other hand, 'Prospective Young Athlete Development Project' is carried out in eighteen events in 2013. Korea Institute of Sport Science cosigned by Korean Olympic Committee (KOC) tests and evaluates the project according to evaluation criteria emphasizing the unique and distinctive feature of each event.

The project is divided into three levels such as recommendation, test/evaluation and final selection. The young athletes recommended by each city/ province take the test related to physical strength, physique, athletic performance and psychological factors such as anxiety and concentration to be selected as prospective young athletes according to standard scores. Test items and evaluation rates are standardized according to the distinctive features of each event. The selection committee finally selects prospective young athletes. The selection committee by event is composed of the research director charge of 'Prospective Young Athlete Project' (Korea Institute of Sport Science), researchers specialized in each event (Korea Institute of Sport Science), a person in charge of KOC athlete training, an official from the Ministry of Culture, Sports and Tourism, coaches in each event and others. 1,682 prospective young athletes had been selected and developed in sports/disciplines such as track and field, swimming, skiing, ice skating, gymnastics, table tennis,

Table 7. Results of talented athlete selection during 2000s

Year	Number of sports	Sport	Number of athletes tested	Number of athletes selected
2002	3	Track and field, swimming and gymnastics	352	163
2003	5	Track and field, swimming, gymnastics, ice skating and skiing	232	88
2004	5	Track and field, swimming, gymnastics, ice skating and skiing	263	102
2005	5	Track and field, swimming, gymnastics, ice skating and skiing	240	96
2006	5	Track and field, swimming, gymnastics, ice skating and skiing	367	121
2007	5	Track and field, swimming, gymnastics, ice skating and skiing	317	142
2008	8	Track and field, swimming, gymnastics, ice skating, skiing, judo, handball and table tennis	530	300
2009	8	Track and field, swimming, gymnastics, ice skating, skiing, judo, handball, table tennis	525	300
2010	8	Track and field, swimming, gymnastics, ice skating, skiing, judo, handball and table tennis	649	370
Total			3,475	1,682

judo and handball between 2002 and 2010 (Table 7).

The prospective young athletes selected for national teams have been trained and developed in the systematic and scientific ways provided by athletic associations and city/provincial governments. The record data related to prospective athletes' athletic performance and physiques has been organized and published as booklets to be managed. Moreover, as it tests improvements in prospective athletes selected for national teams after a certain time since they are selected every year to publish the books related to athlete data, Korea Institute of Sport Science has presented training directions for prospective young athletes and provided basic data needed to make educational standards for them.

Discussion

The study on sports talents or athletic aptitude for talented athlete identification began in socialist countries in the 1950s. The developed countries in the free world started the study on athletic aptitude in the 1970s, showing a special interest in the study results and outcomes. While the previous studies focused on physique, physical strength or motor ability, the studies related to athletic aptitude since the 1990s have attempted a multilateral and in-depth approach to not only individuals' physique and strength but also the identification and the development of athletic aptitude such as physiological, psychological and social factors.

Malina (1997) studied the plan to diagnose Australian children's athletic talent and select talented athletes. Hoare (1996) developed a national talent search program for the selection of Australia's sports talents. Kozel (1996) introduced the diagnosis and the development of Germany's sports talents. Rajkovic and Sturm (1992) developed the athletic aptitude evaluation system for Slovenian children. In addition, there had been many studies on talent diagnosis by sporting event. Motor ability testing, physique measurement, a physiological, a social and a psychological testing were

included as the items to diagnose athletic aptitude in these studies (Heck, Mayer & Wasmund, 1995). The differences between talented and ordinary young athletes were analyzed in specific sporting events and aptitude diagnosis items in each event were selected (Hoare, 2000).

Most athletic aptitude diagnosis programs were designed in the form that the final selection was made based on the evaluation of improvements made through training camps for a certain period in addition to the selection based on the initial basic diagnosis (Leskosek et al., 1992).

The sports talent identification model as a systematic model is a model that the sports-related organization or the government actively searches sports talent with an organized and systematic method through nation-wide tests or competitions. In fact, many countries have made efforts to develop more systematic models to minimize the loss of sports talents' potential possibility and secure competitiveness in sports. Most countries (the countries in the East-European bloc and Australia) that developed and implemented sports talent identification and development models have taken the similar development procedure (Javer, 1981; Kozel, 1996; Fisher & Borms, 1990; Karacsony, 1988; Wu, 1992; Rizak, 1986; Hoare, 1996). In other words, they tend to base the search for general abilities in sports in the initial search. They become more sophisticated and stricter, aiming at specific sports or events at a more advanced stage.

Sports talents are determined very complicatedly in heredity, environmental conditions and various structures (Bloomfield, 1995). For this reason, there is no national or international consensus on the theory and methodology related to talent identification, selection and training. Coaches' eyes or specialists' judgment has still exerted a decisive effect on the talent search and selection process in most countries. However, many sports advanced countries have focused on the development and the application of the systematic models in order to identify the features required for elite playing

performance and identify sports talents through sport scientific studies (Malina, 1997; Kozel, 1996; Hoare, 1996). In fact, they have demonstrated athletic performance superior to other countries in international competitions.

The early identification and development of sports talents through the introduction of sport science is necessary not only to improve national sports competitiveness but also to improve youth's health and the quality of life. As sports are standing out as a professional job world, talent discovery is very important for the youth's self-realization. Therefore, it is necessary to promote talented individuals' participations and achievements in sports through the early diagnosis of athletic aptitude and improve the overall playing level of national sports through the expansion of the population participating in sports.

Conclusion

The institutional foundation for talented athlete selection and development was prepared through the talented athlete development plan implemented with the active support of the government in the 1980s. The government emphasized the identification and development of new athletes, the system introduction for the full-time national team coaches and the promotion of sports scientification in preparation of 86 Asian Games and Seoul 88 Olympics along with the long-term development plans for Korea's sports. The prospective young athlete identification and development policy was begun in earnest when the Ministry of Sports was established in 1982. Accordingly, Korea Institute of Sport Science (KISS) pushed forward the identification project for new athletes.

KISS identified new athletes with innate talent and developed them into talented athletes in preparation of 1986 Asian Games and Seoul 1988 Olympics. KISS administered physical fitness tests based on athlete section criteria by event for 100,000 students who had

received the superlative or first class in school physical fitness tests among 6 million elementary, middle and high school students and selected 4,359 prospective young athletes with the support of the Ministry of Sports and the cooperation of the city/provincial board of education. New Athlete Identification and Talented Athlete Selection Center was established for prospective young athletes identified through the procedures mentioned above in KISS. The identified athletes received specialists' training and guidance through camp trainings during winter and summer vacation to follow the elite process. They had regularly received physical fitness tests twice a year (spring and fall) for the continuous identification of sports talents and were placed into appropriate events to develop into talented athletes. The number of talented athletes selected in the elite process through a summer camp training in July 1988 was 976.

The identification project for new athletes not implemented by 1992 had been carried forward again between 1993 and 1995 according to the governmental policy. However, this project was stopped in 3 years due to the difficulty in manpower and fund supply. The government focused on the national team candidate selection and development policy in the 1990s. The primary purpose of selection and developing national team candidates is to substantialize the development process of national team candidates, expand the base for a pool of talented athletes and establish the support base needed to meet the needs of national teams. For this reason, the government pushed ahead athlete selection and training plans under the joint supervision of schools, athletic associations and Korea Institute of Sport Science to settle the problems of selection methods based on athletic performance. It made a connection between new athletes and national team athletes to have them to play a pivotal role in systematizing and structuralizing athlete development.

It implemented efficient joint trainings with the close cooperation between schools and athletic associations and strengthened the continuous support system

to make full use of full-time coaches actively. It also strengthened the cooperative system between athletic associations and Korea Institute of Sport Science for the presentation of appropriate training plans and the scientific identification of training effect analyses.

The support for school athletic teams had rapidly reduced due to the effect of the one-child policy in the 2000s. In particular, athlete resources in unpopular sports were almost exhausted. On the other hand, the value of sports for national health promotion and life quality improvement had increased day by day. The sports have gradually stood out as a promising professional job. Accordingly, the youth who wants to participate into many different sport activities for health or self-realization through sports has increased.

In this situation, Korea Institute of Sport Science developed sports talent identification tool kits to promote individual participation and achievements in sports through the early athletic aptitude diagnosis and improve the overall playing level through the base expansion of the population participating in sports.

Korea Foundation for the Next Generation Sports Talent (NEST) designated local universities/colleges as sports talent centers. As it early identifies sports talent in track and field, gymnastics and swimming with the tool kits to develop athletes, the sports talent center has played an important role in supplying competent athletes in basic sports. 'Prospective Young Athlete Selection Project' which started again in the 2000s is a project that Korea Sports Council/Korean Olympic Committee (KOC) and Korea Institute of Sport Science jointly select potential athletes based on the analysis results related to physique, strength and athletic performance for elementary and middle school athletes to support their trainings. The project started in three sports such as track and field, swimming and gymnastics in 2012 and expanded to 18 sports in 2013. It is evaluated to function as a scientific and systematic source of supplying national team athletes very well up to present.

Korea Institute of Sport Science had dedicated to the

scientific identification and systematic development of talented athletes such as sports talent identification and development, the selection of prospective young athlete and the support for national team candidates for 30 years since it was established in 1980 for the development of Korea's sports and athletic performance improvement. It will continuously make these kinds of efforts in the years ahead.

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