



Archery in Korea

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Introduction

The Republic of Korea is undoubtedly the most successful nation in the history of competitive archery, having won 19 of the 36 Olympic gold medals on offer since archery was re-introduced into the Olympic Games in 1972. The Korean women's team has been particularly successful, winning 14 of the 15 Olympic gold medals contested during the period stretching from the 1984 Los

Angeles Olympic Games to the 2012 Olympic Games in London; a record of unparalleled success in any Olympic sport. The dominance of Korean archers has been reflected in similar levels of success at the World Championships, World Cup events, and the Asian Games.

In 1992, the Fédération Internationale de Tir à l'Arc (FITA; International Archery Federation) revised the style of competition for Olympic archery from the Grand FITA style where everyone shoots at once, to the Olympic round in the form of head-to-head, single-elimination contests. FITA's rationale for this change was to make the sport more



Olympic Team Gold in London 2012

appealing for television audiences, although some people in the sport have expressed the view that the revised competition format also represented an attempt to break Korea's domination of the sport. If that were truly part of the rationale, then the rule change has clearly not served its purpose. Korea has remained the dominant force in international archery, winning at least two gold medals of the four events (team and individual for males and females) in each Olympiad since the rules were changed.



Korean Male Team's Eighth Consecutive Victory at the 2010 Guangzhou Asian G<mark>ames</mark>



view video: Inspiring Landscapes of Korea



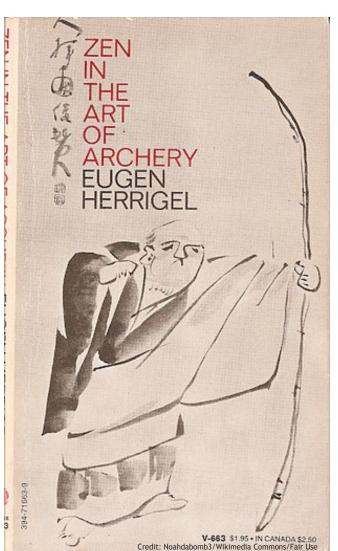
One undoubted consequence of the revised format has been to alter the psychology of Olympic archery competition. Archery has always been considered to be a predominantly mental challenge,

given that physical considerations are not critical and that the techniques of the sport, although very precise, are not overly complex. In Olympic round competitions, the rigid head-to-head format tends to intensify the psychological stress placed upon individual archers. Rather than releasing each arrow in the

a predominantly mental challenge

relative anonymity of a long line of competitors in the Grand FITA format, the spotlight falls very acutely on each competitor alternately, providing much greater awareness of the prevailing match score, and thereby encouraging more of an outcome orientation than a process orientation.

The closed-skill nature of archery and the absolute requirement for calmness during competition, demands an almost Zen-like state of mind. This was described by Herrigel (1948) in his classic text, Zen in the Art of Archery, as when "The archer ceases to be conscious of himself as the one who is engaged in hitting the bull's-eye which confronts him. This state of unconscious is realized only when, completely empty and rid of the self, he becomes one with the perfecting of his technical skill." This characterisation of the optimal psychological state for the sport has led many to conclude that the achievements of Korea's archers are closely related to their superior mental



control. However, to date, little information has been published or made available internationally about the development of archers in Korea. In this chapter, we chronicle some of the potential reasons for the success of Korean archery. We first provide a brief historical overview of archery and the establishment of the Korean Archery Association. Then we propose some of the factors that underpin Korea's international success. Finally, we explain the psychological techniques used by elite archers in Korea, including lessons learned from interviews with Olympic champions.

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A Brief History of Archery

Archery is one of the oldest sporting arts still practiced. The earliest indication of human use of a bow and arrow comes from the Ahrensburg valley north of Hamburg, Germany, dating from the late Paleolithic period, about 10,000-9,000 BC (Haywood & Lewis, 1997). In China, archery dates back to the Shang dynasty (1,766-1,027 BC). A war chariot of that time carried a three-man team of driver, lancer, and archer. Ancient Korean civilizations, such as the Silla, Baekje, and Goguryeo, were well known for their regiments of exceptionally skilled archers, and following the domestication of the horse, Mongol armies were renowned for their mounted archers (Duvernay & Duvernay, 2007).



Korean Horseback Archery



view video: Traditional Korean Archery Documentary Archery as a sport appears to have its origins in England. The first documented competition was the Ancient Scorton Silver Arrow, first held in Yorkshire in 1673 and still contested today. In the United States, sport archery was established when a group of Philadelphia gentlemen founded the United Bowmen Club in 1828. As the sport became widely accepted, the National Archery Association was founded in 1879. Archery was first included in the Olympic Games in 1900 in Paris, retained in 1904, 1908, and 1920, and then reintroduced in 1972 after a uniform set of rules had been established.

Modern archery has been organized internationally since FITA was founded in 1931 but traditional archery, known as Gungdo, retained its popularity in Korea. Modern archery was introduced to Korea by American soldiers after the Korean War and in 1963 the Korean Gungdo Association (KGA)

joined FITA having amended its constitution to include modern as well as traditional forms of archery. In 1978, Korea participated in the archery competition at the 8th Asian Games, in Bangkok Thailand, its first participation in international archery. In 1983, modern archery split from the KGA and the Korean Archery Association (KAA) was established. One year later, Korea competed in the Olympic archery competition for the first time, returning from the 1984 Los Angeles Olympic Games with a gold medal in the women's event.



Gungdo Master Heon Kim

Reasons for the Success of Korean Archery

The success of Korean archers in international competition has prompted many inquiries about training and performance strategies from coaches and athletes worldwide, and theorising about the secrets of their success. Some have hypothesised that the key to Korea's domination lies in the highly attuned sensitivity in their hands, "The theory suggests that Korean women excel at feel sports such as archery and golf because of heightened sensitivity and dexterity in their hands and fingers. This sensitivity supposedly developed generations ago through the traditional method of making the national dish kimchi, where women use their hands to lovingly squeeze cabbage leaves for hours on end" (Rutherford, 2012). There is, however, no scientific evidence to support this theory and, of course, it does not explain the success of male Korean archers.



Information about the cognitive and behavioural strategies used by elite archers in Korea during practice and competition may provide valuable training guidelines for coaches and athletes from other nations. It is clear that many different factors have contributed to Korea's international success, including large numbers of participants in the sport, a rigorous training system, significant extrinsic rewards, collective intelligence, great persistence among competitors, and cohesiveness between athletes and coaches. In this chapter, we will focus on three contributing factors: the challenging selection procedure, support from the KAA and the Korean Olympic Committee (KOC), and world-class scientific support from the Korea Institute of Sport Science (KISS).

Challenging Selection Procedure

It is said that it is necessary to "penetrate the hole in a needle if you want to be a Korean archery delegate." This saying captures how difficult it is for a Korean archer to become a national team member. Only three among hundreds of excellent competitors in domestic tryouts are selected as Olympic team members. The selection process involves diverse environments, a variety of

competition arenas, and different scoring systems. Received wisdom suggests that if an archer can survive the Korean process of selection, then (s)he deserves to be a gold medallist in the Olympics. A by-product of the rigorous selection procedure is the enhancement of an archer's self-confidence.

to strengthen mental toughness

After selection to the national team, special training sessions designed to strengthen mental toughness, concentration, and self-confidence are implemented. Archers are prepared for a range of competition scenarios by training at night, in the rain, in extreme temperatures, in front of a full stadium at a baseball game, and particularly by establishing detailed simulation of forthcoming

international competitions. The photograph below shows the Korean national team practicing in an elaborate mock-up of the Beijing archery stadium constructed at the National Training Centre in Korea prior to the 2008 Olympic Games. The simulated Olympic environment, available to the Korean team more than a year in advance of the Beijing Games, included an artist's impression of the Chinese crowd along the side of the archery arena, complete with crowd noises in Chinese played over the loudspeaker system. Such sophisticated simulation strategies gave the Korean archers an opportunity to develop a sense of feeling at home in the forthcoming Olympic environment, and therefore less likely to experience the same levels of anxiety that often occur in an Olympic competition.



Simulation of the Beijing Olympic Archery Stadium at the Korean National Training Centre

After securing the women's team gold medal, archer Joo HyunJung, one of the victorious Korean trio in Beijing, recalled how well the team had been prepared for the event and, in particular, for the vociferous and partisan Chinese crowd, "We had various types of mental training to prepare. We knew China and the spectators would be very loud and the attention level would be very high. Mental training helped me because I felt nervous" (British Broadcasting Corporation, 2008a).



view video: Korea vs China - Archery -Women's Team Event - Beijing 2008 Summer Olympic Games

Part of the victorious Korean Olympic men's team in 2008, archer Park KyungMo shot the gold medal-winning arrow in Beijing. He spoke of the crucial benefit of simulation training for when the critical moment in competition arrives, "Any one of us could have made that shot, any time. Of course I was very tense, I was under pressure and I was nervous. But that's part of the game.

When we were training for the Olympics in Korea we recreated these kinds of situations" (British Broadcasting Corporation, 2008b).

Somewhat controversially, the mental toughness sessions have often involved extreme activities such as bungee-jumping and platform diving, which were seen by some KAA administrators and coaches as a means of enhancing self-confidence and developing mental strength, based on the principle that if the archers could cope with the stress of a bungee jump then the Olympic environment should by comparison seem less threatening. This approach was also extended to include participation by the national archers in boot camps and survival courses usually reserved



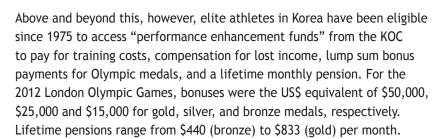
Korean Archer Bungee Jumping



view video: London 2012: Im Dong-Hyun's journey to the Olympics for Korean military special forces personnel such as the Black Berets. Survival courses ran for 3-7 days, in rugged mountainous terrain, with the archers passing through cemeteries on pitch-black moonless nights where they might encounter soldiers in ghost costumes, and sleeping rough where they might share their makeshift bed with a snake. Although a few of the archers enjoyed these extreme experiences, most didn't. Such activities have now been discontinued for the Korean archery team primarily due to safety concerns and lack of evidence of a causal link with enhanced performance. Some coaches and KAA executives regard the demise of these activities as a retrograde step.

Support from the KAA and the KOC

The KAA and the KOC both support Korean national archery delegates in many ways. The KAA is responsible for the selection process of the national archery team. Once the archers are selected as the national delegates, the KOC then manages the remaining procedures for international competitions. As with most sports in many countries, the KOC convenes the national team including archers and coaches at special training camps prior to departure for the Olympic Games, and provides world-class facilities to assist them to train efficiently.



In addition, the KAA also pay bonuses to Korean archers and coaches. After the London Olympic Games the KAA, sponsored by HyunDai and KIA Motors, paid about US\$1.4 million to the national archery team. Ki BoBae, who won gold medals in both the women's individual and team event. received around \$210,000, while the other two female archers who won team gold were paid \$100,000 each. Oh JinHyuk, who won gold in the men's individual event and team bronze, received \$170,000 dollars. Besides the archers, the coaches and some support staff members also received significant performance bonuses. Although other countries may have paid much larger bonuses for Olympic success (Italy, for example, offered \$175,000 per gold medal, and Singapore dangled a \$1 million carrot for any athlete who became the country's first Olympic champion) the significant financial incentives available to Korea's archers exert a powerful motivational force on their relentless pursuit of excellence. It is acknowledged that much of the research in sport psychology emphasizes the benefits of intrinsic motivation (e.g., Cerasoli & Ford, 2014) but the extrinsic rewards available to successful international athletes certainly play their part in motivating athletes to greater efforts.



Ki BoBae, 2012 Olympic Champion



Oh JinHyek, 2012 Olympic Champion



view video: Korea Win Women's Team Archery Gold - London 2012 Olympics



view video: Furukawa v Oh - Archery gold medal match highlights



Scientific Support

The Korea Institute of Sport Science (KISS; http://www.sports.re.kr/eng/) is a government-funded organisation, established in 1980 and supported by the Korean Sports Promotion Foundation. KISS provides a range of sport science support services for Korea's national team athletes and those who show promise. Attention to detail lies at the heart of the KISS ethos. Services include physical strength and conditioning programs, sports technique analysis and technical improvement programs, and psychological counselling and technique improvement. Although the KAA appointed a full-time sport psychology consultant to the national archery team for the 2004 Olympic Games in Athens, that was a rare occurrence because typically the KISS sport psychology team provides ongoing support for archers and coaches to assist their program for addressing the mental aspects of the sport.

this goal was comfortably exceeded

One of the main functions of KISS is to improve athletes' and coaches' chances of winning in international games through their support and research activities. As a macro goal-setting exercise for the 2012 London Olympic Games, KISS established a 10-10 Gold Medal Project to help to maximise the number of medals won by Korean athletes across all sports. The specific aims of the project were to help Korea's athletes secure at

least 10 gold medals and to finish in the top-10 of the medal table. Given that Korea won 13 gold medals and finished 5th in the medal table in London, this goal was comfortably exceeded.

Archery requires highly-developed concentration, emotional control, and other psychological skills, because a single errant arrow in competition can significantly affect the psychological equilibrium of an archer and ultimately determine the outcome of a contest. In an important event such as the Olympic Games, many external factors serve as potential distractions. Thus, archers must develop strategies to deal with distractions, organisational problems and irregularities, performance errors, jet lag, media pressure, expectations of others, and all the other pressure situations that might occur. They must be able to stay confident, avoid negative thinking, and maintain faith in their ability to achieve the goal of victory.

Psychological skills training (PST), defined as a range of diverse strategies to overcome stress in competition and achieve best performance, is provided for all archers. The skills taught include concentration, motivation, imagery, confidence, anxiety regulation, goal-setting, and relaxation. Empirical research has shown that concentration is the psychological skill that most significantly discriminates successful archers from their unsuccessful counterparts (Kim, 2010; Um, 2003). In terms of the relative importance of psychological skills for competition, Korean coaches rank concentration at the top of the list, whereas athletes consider concentration to be the third most important factor behind confidence and goal-setting. Thus, both coaches and athletes perceive the ability to concentrate effectively to be a critical factor that contributes to competition success in archery.



EEG During Meditation

Given the high priority placed on concentration by archers and coaches, strategies designed to develop the concentration skills of national team members form a significant part of the support provided by KISS. One such strategy involves meditation training using electroencephalography (EEG; http://en.wikipedia.org/wiki/Electroencephalography) in which graphical representations of brain activity are provided as feedback to the individual archer (see photograph *EEG During Meditation*). This strategy forms an important component of the mental training activities for all members of the Korean archery team in order to improve their ability to concentrate and stay relaxed in competition.

Athletes in all sports use a diverse range of strategies to help maintain concentration during competition. The typical cognitive and behavioural strategies used to maintain concentration in competition include self-talk, positive thinking, imagery, thought stopping, and performance routines. Research on Korean elite archers has provided evidence that to maintain concentration they typically use positive self-talk, maintain positive attitudes throughout events, adopt successful imagery, and carry out consistent performance routines (Kim, 2010; Um, 2003). Three-time Olympic gold medallist, Yun MiJin, summed up the challenge of concentrating so intently on the task that conscious thought ceases completely, with her words, "I leave my mind somewhere else during archery competitions."

Director of the KAA, Seo GeoWon, has identified mental training as a critical component of Korea's international success. He has especially praised use by national team archers of visualisation techniques, such as shooting rounds with an unloaded bow and scoring themselves on how they feel they would have done, and then shooting and scoring a round with arrows, with the tallies for the two often being just a few points apart (Monaghan, 2012).

Several scientific studies have been conducted to assess if PST produces benefits for elite Korean archers. For example, Han (1998) evaluated the effects of PST on competition anxiety, mood



Yun MiJin

states, and performance scores in elite female archers, concluding that PST was effective in enhancing performance scores as well as psychological responses. He strongly recommended the regular use of the PST program simultaneously with physical skill training for the top archers. Other researchers (Han & Lee, 1997) have developed an online system for assessing psychological variables, for the convenience of Korean archers and other athletes who want to check their psychological states remotely, especially when travelling to international competitions. The system allows access to eight different standardised questionnaires, including Korean-language versions of the Sport Competition Anxiety Test (SCAT; Kang, 2000), the Competitive State Anxiety Inventory - 2 (CSAI-2; Kang, 2000), the Profile of Mood States (POMS; Yun, 1993), the Test of Attentional and Interpersonal Style (TAIS; Yun, 2006), and the State-Trait Anxiety Inventory (STAI; Han, Lee, & Jeon, 1996).

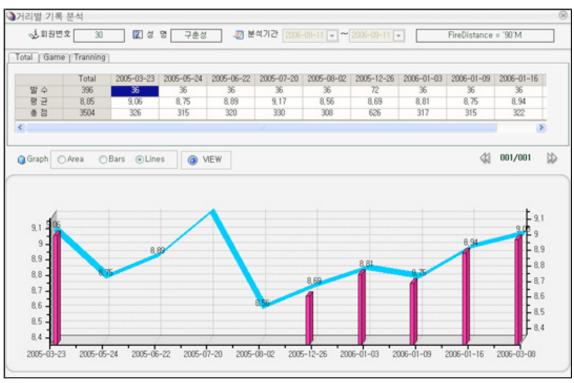


Figure 1. Record of Monthly Variations in Shooting

Another example of KISS-generated technology for archery has seen Jang and Han (1997) and Jang (2006) develop a computer-based performance analysis system, which can be used in the field and has many features for the benefit of archers and coaches. For example, every shot taken by an archer in practice and competition can be recorded and analysed to identify individual performance tendencies. Figure 1 shows the monthly fluctuations for a national team archer over a 1-year period. Output can show past or present performance classified by many variables of interest to archers and coaches, including inter-round and intra-round fluctuations, arrow groupings and individual pattern tendencies (see Figure 2 on page).

As well as facilitating detailed analysis of individual performance, the program assists selection of the order of archers in the team event, based upon each archer's shooting styles and patterns. Prior to using this program, the order of archers for the team competition was determined primarily by the instincts of the coach rather than objective data, which sometimes resulted in less than desirable outcomes. After assessing the effectiveness of the program, the KAA distributed this program to all Korean coaches.

Figure 2. Analysis of Shot Groupings

In addition to the use of EEG, psychological skills training, archery-specific research, and resource development, the KISS sport psychology team also provides individual counselling sessions for archers to address personal issues that may influence competition performance and/or personal well-being. The range of issues raised by the archers is as varied as the personalities of the individuals concerned but includes such things as poor performance, selection concerns, and relationship issues.



view video: Kim SooNyung -FITA Athlete of the Century

Lee KiSik, Head Coach of the Korean archery team from 1981 to 1997, has publicly praised the contribution of KISS, "I began working closely with the Sports Science Department in 1983 and we studied very hard to make our archers' technique as efficient as possible. It was also important to emphasise that mental preparation was just as important for success, and I tried to create a

concept of thinking which would help our archers shoot arrows in an extremely efficient way" (Monaghan, 2012).

Four-time Olympic and World Championship gold medallist, Kim SooNyung, who was voted FITA's Athlete of the Century, believes that the standard of mental preparation among Korean archers is even higher now than it was in her heyday from 1988 to 2000, "The archers are prepared and conditioned mentally for a high level of competition. I think Korean archers concentrate even better nowadays" (Monaghan, 2012).



Psychological Counselling Session

Lessons from Olympic Champions

For the past two decades, Korean archers have achieved huge success in international competition. With such an elite pool of archers available to us, we took the opportunity to investigate the psychological experiences of Korean champions and to explore the strategies they applied in major competitions. Hence, we invited two Olympic gold medallists, Park SungHyun and Park KyungMo, to share insights into their success. Their responses to our questions are summarised below.



view video: South Korea's Park SungHyun hits the target for gold



Park SungHyun in Action

MAJOR CAREER ACHIEVEMENTS:

- 2 gold medals in the 2004 Athens Olympic Games
- 2 gold medals in the 2006 Doha Asian Games
- 1 gold and 1 silver medal in the 2008 Beijing Olympic Games
- The world's first 1400 points scored in a single round

In international competition, what psychological factors influence performance? Among those psychological factors, what is the most important?

PSH: The Korean national archery team feels psychological pressure even before a competition begins, because many Koreans take it for granted that Korea will win a gold medal in the competition. In my experiences, I felt even heavier psychological burdens when other Korean archers who participated in the same individual competition with me had dropped out of the tournament. I thought I had to do even better to make up for them.

PKM: As a representative of the Korean national team, I think that the most important psychological factor for athletic performance is a strong belief in myself. This belief comes

from the exhaustive preparation for important competitions. To make and maintain such beliefs, I try to practice self-management and discipline in regular everyday life. In addition, I think that believing in one's coach is another important factor influencing athletic performance. Both archers and coaches need to trust each other, not only in practice, but also in competition, to be able to optimize athletic performance.







Park KyungMo in Action

MAJOR CAREER ACHIEVEMENTS:

- 1 gold medal in the 2003 World Archery Championship
- 1 gold medal in the 2004 Athens Olympic Games
- 1 gold medal in the 2006 Doha Asian Games
- 1 gold and 1 silver medal in the 2008 Beijing Olympic Games

What negative psychological factors have you experienced during competition? What sorts of strategies have you used to overcome them?

PSH: I have sometimes experienced negative thoughts (e.g., "the competition result might not be good") during competition because I am not able to know the competition result in advance. I think that such negative thoughts might impede the flow of my shooting. When a negative thought comes into my mind, I try to think only of my shooting posture (although this is not easy!!).

PKM: In international competition I have experienced psychological weaknesses and confusion due to excessive muscle tension and unnecessary worry. When this happens, I try to think of a time when my performance was perfect and to shoot an arrow with the feeling and posture of that time. I think that environmental changes in archery ranges (e.g., weather, competition delay) are other negative factors that can influence the competition. In this case, I keep telling myself that all the other archers are in the same situation and then I focus on my performance.

What psychological techniques have you typically used during competition?

PSH: I try to think positive thoughts before the competition. For example, when I participate in international competition, I say to myself that "I am a very lucky archer" because many Korean archers wanted to be selected for the national team, but they did not make it.

PKM: I have applied various psychological skills during competition. Among them I think that positive self-talk is the most effective method that I have frequently used. Examples of my self-talk are "Fighting! KyungMo," I can fully do it," and "Concentrate just on me."

What sorts of psychological skills training have you practiced in the national archery team?

PSH: A professional mental trainer has personally consulted with me, and provided psychological skills training suitable to me. I think that imagery (e.g., an image of shooting), effective order simulation (i.e., a computer simulated order to prepare for team competition), building up courage, and competition simulation have been especially useful.

PKM: Regular psychological skills training has been offered by the mental trainer, which was really helpful in improving my concentration. From this training, I have tried to recall the things that helped me in winning a gold medal and that help me to be able to sustain an optimal posture and feeling while shooting.

As an Olympic champion, is there any unique training you have ever practiced?

PSH: There is nothing special about my training. However, I think that the mental consultation and the psychological skills training that I practiced with the international team is the best driving force that made me who I am.

PKM: I always tried my best and trained harder than other archers no matter how tired I was. Through these efforts I have maintained the strong belief and confidence that I am the best archer in the world.

Are there specific reasons why Korean archery has maintained its domination of international competition?

PSH: I think there are several reasons. The Korean archery team maintains a strong trust between archers and coaches and the Korean Archery Association fully supports the national team. Systematic and science-based coaching and state-of-the-art facilities are other reasons why the Korean team is almost unbeatable.

PKM: More than anything else, I think that former senior archers have done a great job of passing on their know-how. Korean archers have great role models to watch and therefore they learn how to cope with psychological burdens, to perform well, and to win.





Summary

Although the history of archery may date back to 10,000 BC, modern Korean archery only began in 1983. In spite of this short history, Korea has achieved a lot in world archery. For example, Korea has earned 19 gold, 9 silver, and 6 bronze medals between the1984 Los Angeles Olympics, where modern archery was first adopted in the Olympics, to the 2012 London Olympics. On average, Korea has won at least two gold medals out of the four Olympic archery events. Korean female archers are especially dominant,

having never relinquished the Olympic team title and having won seven of the past eight individual gold medals.

As there are many factors that contribute to excellence, we

they always imagine the best performance



view video: Archery review - South Korea achieves its aims chose to focus on only three factors underlying Korea's archery success; the challenging selection procedure, support from the KAA and the KOC, and scientific assistance from the KISS. The KAA and the KOC provide administrative and financial support, while KISS generates scientific methods to provide a decisive edge over opponents. KISS researchers in the sport psychology section have continuously worked with the archers to add the finishing touches to Olympic Games preparation by providing appropriate psychological skills training, which is individually tailored to each athlete.

It is clearly reported in the interviews described above that not even Korean Olympic gold medallists are immune from psychological burdens. However, they are not negatively influenced by those burdens and know how to deal with adversities. For example, they always imagine the best performance even when the conditions are not good, and they concentrate only on what they have to do right now instead of being distracted by negative thinking or excessive worries. Through their regular psychological skills training with the help of a sport psychology consultant, they develop the skills to successfully cope with environmental changes such as wind, rain, competition delay, and noise. In addition, they strongly believe in themselves and their coaches. This self-confidence and mutual trust usually results in a synergistic effect leading to higher self-confidence and the reduction of unnecessary anxieties, worries, or negative thoughts. As a collective result of these psychological characteristics, the Korean archers continue to be the best in the world.

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