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**Original Article**

# Correlation between Ethical Sensitivity as Well as Doping Attitude and Dispositions in Taekwondo Kyorugi Athletes: Athlete Career and National Team Moderation Effect

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**Abstract**

**Background:** We aimed to examine the effect of ethical sensitivity on doping attitude and dispositions for Taekwondo athletes, as well as whether there was a difference depending on the athlete's career and national team status.

**Methods:** Overall, 331 Korean adult Taekwondo athletes were enrolled. Data were collected using sports ethical sensitivity and Performance Enhancement Attitude Scale (PEAS) tools as the research tools. For data processing, frequency analysis was performed to confirm demographic characteristics, and the fitness index was calculated by applying the Rasch model to confirm the validity and reliability of ethical sensitivity and PEAS. An independent sample *t*-test was performed to confirm the difference between ethical sensitivity and doping attitude and dispositions according to demographic characteristics. Pairwise parameter comparison values were used using multi-group analysis of path analysis to confirm the effect of ethical sensitivity on PEAS and the moderating effect was calculated.

**Results:** First, according to the demographic characteristics of Taekwondo athletes, there were statistically significant differences in ethical sensitivity and PEAS only by gender. Second, as ethical sensitivity factors, both intentional behavior factors and intentional collusion factors had statistically significant effect on PEAS. Third, in the effect of ethical sensitivity on doping attitude and dispositions, there was no moderating effect of athlete experience and national representative status.

**Conclusion:** Ethical sensitivity has a positive linear correlation with PEAS. In other words, enhancing the ethical sensitivity of sports players will enhance athletes' ethical consciousness and prevent unethical behavior, and furthermore, doping.

**Keywords:** Taekwondo athlete; Ethical sensitivity; Athlete experience; National team status

## Introduction

Taekwondo is based on fairness, and athletes participate in the competition to compete for the level of performance. Therefore, fairness can be said as one of the important aspects of

Taekwondo competition, and athletes' ethics is one of the keywords related to fairness. Ethics for sports athletes is defined as the minimum behavior that must be observed in order to perform the competition (1), which is an essential element that Taekwondo athletes must also observe.

As ethics is emphasized for Taekwondo athletes, many scholars are reporting various studies related to ethics, and recently developed and introduced an ethical sensitivity tool, which is an index that can quantitatively measure the ethics of athletes (2). Ethical sensitivity is the ability to judge ethical problems in a specific situation and to determine what alternatives are possible by interpreting the contents of this situation (3). Studies measuring sensitivity (2, 4) are being conducted. The ethical sensitivity measurement tool consists of three factors: 'intentional act', 'intentional omission', and 'intentional arrangement'. This tool has been developed, considering practicality in terms of what Taekwondo athletes can actually face.

Ethical issues that arise in the field of Taekwondo can be classified into contents such as match manipulation, sexual violence, and doping. In particular, for doping, it is one of the ethical issues that frequently occur to Taekwondo athletes and is therefore a subject of concern in Taekwondo. Common reason for doping by Taekwondo athletes is to improve their performance. (5). Accordingly, the International Olympic Committee (IOC) has strictly banned doping since the 1968 Winter and Summer Olympic Games, and the World Anti-Doping Agency (WADA) also has policies, types, and regulations on prohibited substances etc. to monitor sports athletes from taking prohibited substances (6).

Nevertheless, incidents and accidents related to doping of athletes continue to occur. This is because if athletes achieve their goals through victory, the process is justified by the social atmosphere and the idea that they will not be caught. Therefore, as it is reported that athletes' attitude and dispositions for doping have a direct effect on the taking the prohibited substances (7), the doping field includes not only biological research but also social and behavioral studies. One representative examples is a study that uses the performance enhancement attitude scale (PEAS), a tool suggested by (8), to confirm the doping attitude and dispositions of athletes. This can be confirmed by quantitatively measuring the doping attitude and dispositions of athletes. Efforts are made to prevent doping in advance by conducting research on athletes from various sports at domestically and internationally. (7, 9, 10).

However, looking at the previous studies reported so far, studies on doping attitude and dispositions and ethical sensitivity are being conducted independently of each other. The results from each factor can act as meaningful information, but as described above, since ethical sensitivity and doping attitude and dispositions have a close relationship. It is also important to confirm the relationship between the two contents.

Therefore, in this study, the effect of ethical sensitivity on the doping attitude and dispositions of Taekwondo athletes was investigated, as well as whether there was a difference according to the athlete's career and national team status.

## Methods

### *Research subject*

The entire population of Korean adult Taekwondo athletes including 2826 athletes registered with the Korea Sports Association in 2022 were selected as research subject. With a 95% confidence level and a sampling error of ±5.5, the required number of subjects was 317. In consideration of the research subjects' refusal to respond and inconsistent data, a questionnaire survey was conducted with 350 people, and the number of finally selected research subjects was 331. Data were collected only from subjects willing to participate voluntarily.

This procedure was approved by the Ethics Committee of Korea National Sport University (Research Ethics No.: 1263-202203-HR-012-01).

### *Sports ethical sensitivity*

The first survey tool used in this study was 12 questions on sports ethical sensitivity. This uses a

tool developed by (2), which consists of violating sports integrity or artificially changing the match result. Specific factors consist of three factors: 'intentional act', 'intentional negligence', and 'intentional collusion'. These factors and items were developed in consideration of the International Olympic Committee's OMC declaration. For example, the 'intentional behavior' questions include 'acts of taking diuretics to lose weight' and 'intentional negligence' for the 'intentional negligence' questions, 'intentionally not doing your best in the game regardless of compensation', and 'intentional collusion' for the questions. An example is 'the act of manipulating the match or match order by asking an association official'. In order to confirm the validity and reliability of the sports ethical sensitivity, the Rasch model was applied to calculate the fit indices for the items, Infit and Outfit, and the point-measure correlation coefficient. For the fitness index, overfit and inappropriate items were judged on the basis of 0.5 or less and 1.5 or more, and when the correlation coefficient of point delay measurement was 0.3 or less, validity was judged to be low (11). As a result, 5 out of 12 questions, 4 items were removed because the fit index was not satisfactory for items 8, 10 and 12. Therefore, in the case of intentional negligence factor, out of 3 items (10, 11, and 12). Two items were removed (No. 10, No. 12), and the intentional negligence factor was removed and the final 2 factors were selected for the study The response to sports ethical sensitivity was using a 6-point Likeard scale, and the response was very Respondents ranged from disagree (1 point) to strongly agree (6 points) (Table 1).

**Table 1:** Validity and reliability verification results of sports ethical sensitivity tool

| *No.* | *Item* | *Infit* | *Out-fit* | *P-MCC* |
|---|---|---|---|---|
| 1 | Take banned medication to enhance performance | .90 | 1.11 | .62 |
| 2 | Intentionally underperform for economic benefits | .62 | .58 | .61 |
| 3 | Use banned equipment to enhance performance | .84 | .59 | .64 |
| 4 | Intentionally take diuretics/Lasix/water pill for rapid weight loss | 1.09 | 1.34 | .72 |
| 5 | Deliberately injure the opposing team's star athlete | 1.57 | 2.12 | .66 |
| 6 | Intentionally underperform to face an easier opponent in the next game | .86 | .97 | .72 |
| 7 | Intentionally underperform to benefit opposing athlete or school | 1.05 | 1.22 | .72 |
| 8 | Bribe the judge/referee for favorable call(s) for a team to win the game | .62 | .41 | .63 |
| 9 | Ask the league organizers to deliberately change the tournament or play order | .68 | .75 | .64 |
| 10 | Use substitute/reserve athlete in games after the team qualified for the tournament | 1.57 | 2.32 | .66 |
| 11 | Intentionally underperform without any compensation | .83 | .83 | .71 |
| 12 | Not react to bad call(s) by referee during the game | 1.43 | 2.23 | .61 |

### *Doping attitude and dispositions*

The second research tool used in this study was 17 items on the performance enhancement attitude scale (PEAS). For this, the tool developed already (8) was translated into Korean (4), and the PEAS used a 6-point Likeard scale, and responses ranged from strongly disagree (1 point) to strongly agree (6 points). Rasch model was applied to check the validity and reliability of PEAS. As a result, questions 1, 4, 9, 10, 12, 15, and 16 of 17 questions did not satisfy the fitness index. Questions were removed (Table 2).

**Table 2:** Results of validation and reliability of PEAS tools

| *No.* | *Item* | *Infit* | *Outfit* | *P-MCC* |
|---|---|---|---|---|
| 1 | Doping is necessary to be competitive | 1.30 | 3.17 | .35 |
| 2 | Doping is not cheating since everyone does it | 0.75 | .56 | .46 |
| 3 | Athletes often lose time due to injuries and drugs can help to make up the lost time | 0.86 | 1.28 | .51 |
| 4 | Only the quality of performance should matter, not the way athletes achieve it. | 1.21 | 1.68 | .49 |
| 5 | Athletes (in my sport) are pressured to take performance-enhancing drug | 0.75 | .75 | .49 |
| 6 | Athletes who take recreational drugs, use them because they help them in sport situations. | 0.73 | .57 | .50 |
| 7 | Athletes should not feel guilty about breaking the rules and taking performance-enhancing drugs | 0.89 | .88 | .44 |
| 8 | The risks related to doping are exaggerated | 1.05 | 1.24 | .54 |
| 9 | Athletes have no alternative career choices, but sport. | 1.30 | 1.77 | .55 |
| 10 | Recreational drugs give the motivation to train and compete at the highest level. | 0.63 | .49 | .54 |
| 11 | Doping is an unavoidable part of the competitive sport | 0.79 | .83 | .54 |
| 12 | Recreational drugs help to overcome boredom during training | 0.62 | .45 | .54 |
| 13 | There is no difference between drugs, fiberglass poles and speedy swimsuits that are all used to enhance performance | 0.77 | .91 | .53 |
| 14 | Media should talk less about doping | 1.08 | 1.20 | .52 |
| 15 | The media blows the doping issue out of proportion | 1.73 | 1.77 | .61 |
| 16 | Health problems related to rigorous training and injuries are just as bad as from doping | 1.88 | 1.91 | .61 |
| 17 | Legalizing performance enhancements would be beneficial for sport | 0.75 | .64 | .53 |

### *Data processing method*

Frequency analysis was performed to confirm the demographic characteristics of the research subjects, and the Rasch model was applied to confirm the validity and reliability of ethical sensitivity and doping attitude and dispositions. In addition, an independent sample *t*-test was performed to confirm the difference between ethical sensitivity and doping attitude and dispositions according to demographic characteristics, and pairwise parameter comparison values were used using multi-group analysis of path analysis to confirm the effect of ethical sensitivity on doping attitude and dispositions and the moderating effect. Excel 2016, Winsteps 3.65.0, AMOS 18 were used for data processing and all statistical significance levels were set to .05.

## Results

Table 3 is the result of comparing the ethical sensitivity of sports according to gender, athlete's experience, and national team status. As a result, there was a statistical difference in ethical sensitivity only in the intentional behavior gender factor ($t$=2.281, $P$=.023). Women had higher ethical sensitivity index than men. All other factors showed no statistically significant difference.

**Table 3:** Comparative analysis of ethical sensitivity according to gender, athlete experience, and national team status

| *Division* | | | *N* | *M* | *SD* | *t* | *p* |
|---|---|---|---|---|---|---|---|
| Intentional act | Gender | Male | 194 | 4.88 | 1.81 | 2.281 | .023 |
| | | Female | 137 | 5.49 | 3.02 | | |
| | Athlete experience | Less than 7 years | 194 | 5.02 | 2.39 | 1.059 | .290 |
| | | More than 7 years | 137 | 5.30 | 2.42 | | |
| | National team status | Yes | 25 | 5.52 | 2.42 | .838 | .403 |
| | | No | 306 | 5.10 | 2.40 | | |
| Intensional collusion | Gender | Male | 194 | 3.81 | 1.53 | 1.743 | .082 |
| | | Female | 137 | 4.19 | 2.39 | | |
| | Athlete experience | Less than 7 years | 194 | 3.86 | 1.83 | 1.278 | .202 |
| | | More than 7 years | 137 | 4.13 | 2.07 | | |
| | National team status | Yes | 25 | 4.24 | 2.01 | .726 | .469 |
| | | No | 306 | 3.95 | 1.93 | | |

Table 4 is the result of comparing doping attitude and dispositions according to gender, athlete experience, and national team status. As a result, the difference according to doping attitude and dispositions was statistically significant only in the gender factor ($t$=2.488, $P$=.013), and it was analyzed that the doping attitude and dispositions index of women was higher than that of men.

**Table 4:** Comparative analysis of doping attitude and dispositions according to gender, athlete experience, and national team status

| *Division* | | *N* | *M* | *SD* | *t* | *P* |
|---|---|---|---|---|---|---|
| Gender | Male | 194 | 15.6 | 5.81 | 2.488 | .013 |
| | Female | 137 | 17.6 | 8.95 | | |
| Athlete experience | Less than 7 years | 194 | 16.3 | 7.14 | .522 | .602 |
| | More than 7 years | 137 | 16.7 | 7.62 | | |
| National team status | Yes | 25 | 16.0 | 6.47 | .344 | .731 |
| | No | 306 | 16.5 | 7.41 | | |

In Table 5, path analysis was conducted to confirm the effect of ethical sensitivity of Taekwondo athletes on doping attitude and dispositions. As a result, the intentional behavior factor was found to have a statistically significant effect with $t$=9.989, $P$<.001. In addition, intentional collusion was statistically significant effect with $t$=2.852 and $P$=.004.

**Table 5:** Effect of taekwondo athletes' ethical Sensitivity on doping attitude and dispositions

| *Path* | *Unstandardized* | | *Standardized Estimate* | *C.R(t)* | *P* |
|---|---|---|---|---|---|
| | Estimate | S.E | | | |
| Intentional behavior → doping attitude and dispositions | 1.840 | .184 | .602 | 9.989 | <.001 |
| Intentional collusion → doping attitude and dispositions | .652 | .229 | .172 | 2.852 | .004 |

In Table 6, multiple group analysis of path analysis was conducted to examine the moderating effect of athlete career and national representative status on the effect of ethical sensitivity of Taekwondo athletes on doping attitude and dispositions. In the case of intentional behavior among ethical sensitivities, it was found to have a statistically significant effect on doping attitude and dispositions in both athlete experience and national team status. In addition, the pairwise parameter comparison value in the athlete's career was .817, and the national representative was -.630, which was analyzed to be included in the range of ±1.96, indicating that there was no moderating effect. In intentional collusion, both athlete career and national team status had a statistically significant effect on doping attitude and dispositions. The pairwise parameter comparison value in the athlete's career was .696, and the national representative was -1.671, which was analyzed to be included in the range of ±1.96, indicating that there was no moderating effect.

**Table 6:** Effect of Taekwondo Athletes' Ethical Sensitivity on doping attitude and dispositions: Verification of the Effect of Adjusting Athlete's Experience and National Team Status

| ***Division*** | | | ***Unstandardized*** | | ***Standardized Estimate*** | ***C.R*** | ***P*** | ***pairwise parameter comparison*** |
|---|---|---|---|---|---|---|---|---|
| | | | Estimate | S.E | | | | |
| Intentional behavior | Athlete experience | Less than 7 years | 1.682 | 0.261 | 0.563 | 6.440 | <.001 | 0.817 |
| | | More than 7 years | 1.988 | 0.269 | 0.63 | 7.391 | <.001 | |
| | National team status | Yes | 1.638 | 0.266 | 0.612 | 6.166 | <.001 | -0.630 |
| | | No | 1.869 | 0.198 | 0.606 | 9.436 | <.001 | |
| Intentional collusion | Athlete experience | Less than 7 years | 0.826 | 0.341 | 0.212 | 2.425 | <.001 | 0.696 |
| | | More than 7 years | 0.534 | 0.314 | 0.145 | 1.699 | .089 | |
| | National team status | Yes | 1.271 | 0.320 | 0.394 | 3.971 | <.001 | -1.671 |
| | | No | 0.596 | 0.246 | 0.155 | 2.420 | 0.016 | |

## Discussion

In this study, ethics and doping attitude and dispositions were investigated for Taekwondo athletes in order to investigate the relationship between ethical sensitivity and doping of Taekwondo athletes. The importance of ethical sensitivity in the field of sports has already been reported by many prior researchers (2), and doping attitude and dispositions had a direct effect on doping (10, 12). This paper therefore aims to confirm the relationship between the two variables from an ethical point of view. A discussion of the results is as follows.

First, because of analyzing the difference in ethical sensitivity and doping attitude and dispositions according to demographic statistics of Taekwondo athletes, there was a statistically significant difference only by gender. There was no difference between ethical sensitivity and doping attitude and dispositions according to gender, suggesting contradictory results to the results of

this study (2, 10). Compared to the previous studies, which was conducted on all sports athlete, this study only includes Taekwondo athletes. This can therefore be attributed as a characteristic of Taekwondo where female athletes are judged to be ethically insensitive than male athletes and to have higher scores for doping attitude and dispositions.

On the other hand, because of confirming the relationship between the ethical sensitivity of Taekwondo athletes on doping attitude and dispositions, both intentional behavior and intentional collusion were found to have a statistically significant effect. Ethical sensitivity can be interpreted as having a direct relationship with doping attitude and dispositions, and it is judged that it is necessary to emphasize the ethical aspect along with the anti-doping aspect of athletes. In particular, Taekwondo have a higher doping attitude and dispositions than sports such as swimming, cycling, basketball, and volleyball (10), and the frequency of positive doping is also reported as high (13, 14). Therefore, in the case of Taekwondo, education and research on doping prevention is considered necessary continuously.

In addition, in this study, it was checked whether there was a difference in the effect of ethical sensitivity on doping attitude and dispositions depending on the athlete's career and national team status. This is the result of confirming whether two variables act as a moderating effect in the relationship between athletes' ethics and doping attitude and dispositions. As a result, there was no statistically significant difference according to athlete experience and national team status. Ethics and doping attitude and dispositions of athletes were expected to have a positive aspect as their experience increased, but the results were different from the expected results of this researcher. It was judged that there would be a difference in the national team status because the national team athletes were systematically conducting education on ethics or doping than the general athletes, but in this result, there was no difference.

However, in this study, there is a limitation in that it was not possible to confirm the specific details by classifying only the seven-year career and the national team status. Therefore, it is judged that meaningful information can be generated if the careers of the athletes are further subdivided in the future, and if the national team experience is also classified and investigated in detail.

Finally, this study confirmed the effect of the ethical sensitivity of Taekwondo athletes on doping attitude and dispositions and the moderating effect on the athletes' career and national team status. This paper carries significance in that most of the preceding studies report studies based on a single content. Further research can be conducted using this research as basic data and by improving the aforementioned limitations.

## Conclusion

Ethical sensitivity has a positive linear correlation with PEAS. In other words, enhancing the ethical sensitivity of sports players will enhance athletes' ethical consciousness and prevent unethical behavior, and furthermore, doping.

## Journalism Ethics considerations

Ethical issues (Including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc.) have been completely observed by the authors.

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## Conflict of interest

No potential conflict of interest was reported by the authors.

## References

1. International Olympic Committee (2015). Olympic movement code on the prevention

of the manipulation of competitions. Available from https://www.olympic.org/news/ioc-publishes-unprecedented-olympic-movement-code-for-preventing-competition-manipulation

2. Choi CH (2018). Ethical Sensitivity of Adult Athletes to Sports Manipulation. *Journal of the Korean Data Analysis Society*, 20 (2): 949-959.
3. Rabouin EM (1996). Walking the Talk: Transforming Law Students Into Ethical Transactional Lawyers. *DEPAuL Bus. LJ*, 9, 1.
4. Jeon MS, Lee JY, Yun HJ (2020). Taekwondo Athletes' Ethical Sensitivity Depending on Ethical Education. *Taekwondo Journal of Kukkiwon*, 11 (1): 1-18.
5. Park JH (2021). Relationship between Autonomy Support and Basic Psychological Needs, Self-Regulation Motivation, and Doping Intention for Taekwondo Athletes. *The Journal of Korean Alliance of Martial Arts*, 23 (2): 77-89.
6. World Anti-Doping Agency (2015). The World Anti-Doping Code. Available from http://www.wada-ama.org/
7. Kim EK, Kim TG (2013). Attitudes and Dispositions toward Doping in Adolescent Elite Athletes. *The Korean Journal of Sports Medicine*, 31 (2): 99-106.
8. Petróczi A (2006). Measuring attitude toward doping: Further evidence for the psychometric properties of the Performance Enhancement Attitude Scale. *In 14th Congress of the European Association for Sport Management. Nicosia, Cyprus.*
9. Petróczi A, Aidman, E (2009). Measuring explicit attitude toward doping: Review of the psychometric properties of the Performance Enhancement Attitude Scale. *Psychology of Sport and Exercise*, 10 (3): 390-396.
10. Kim EK, Kim TG (2014). Attitudes and Dispositions toward Doping in Korean National Players. *The Korean Society of Sport Science, 23*, 215-224.
11. Linacre JM (2002). Optimizing rating scale category effectiveness. *J Appl Meas*, 3 (1): 85-106.
12. Alaranta A, Alaranta H, Holmila J, Palmu P, Pietilä K, Helenius I (2006). Self-reported attitudes of elite athletes towards doping: differences between type of sport. *Int J Sports Med*, 27 (10): 842-846.
13. Ntoumanis N, Ng JY, Barkoukis V, Backhouse S (2014). Personal and psychosocial predictors of doping use in physical activity settings: a meta-analysis. *Sports Med*, 44 (11): 1603-1624.
14. Moran A, Guerin S, Kirby K, MacIntyre T (2008). *The development and validation of a doping attitudes and behaviour scale*. World Anti-Doping Agency & The Irish Sports Council.