Web-based anti-doping education: A needs analysis for achievement sport athletes

by Rika Sepriani

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Rika Sepriani[abcd]* , Bafirman[cde] , Mudjiran[abc]

Universitas Negeri Padang, Indonesia

ABSTRACT

This research is motivated by the many outstanding sports athletes who do not understand doping. Increasing the understanding of high-achieving sports athletes about doping can be done through online anti-doping education. The purpose of this study was to assess the need for web-based anti-doping education in high-performance athletes. This research is a quantitative descriptive study that included 40 athletes from five sport branches: powerlifting (7 athletes), weightlifting (8 athletes), athletics (4 athletes), soccer (12 athletes), and sepak takraw (9 athletes). Purposive sampling was used as a sampling technique. The instruments used in this study included a doping knowledge test and a web-based educational accessibility questionnaire for athletes. The data were analyzed using a descriptive quantitative method in the form of percentages. There were 40 people who participated in this study, with 26 male and 14 female respondents. Based on the research result, of the 40 participating athletes, one person (3%) had high doping knowledge, eight people (20%) had sufficient doping knowledge, and thirty-one people (78%) had less doping knowledge. Meanwhile, the achievement rate for web-based education accessibility questionnaires for achievement sports athletes was 89.75%. As a result, it can be concluded that web-based anti-doping education is needed and can be carried out on achievement-sport athletes. For this reason, related parties can conduct anti-doping education for every athlete in sports so that athletes can understand doping and prevent the use of doping by athletes.

Keywords: Needs analysis; education; anti-doping; athlete; achievement sport

Corresponding Author: Rika Sepriani, Department of Physical Education, Faculty of Sport Science, Universitas Negeri Padang, Padang, Indonesia
Email: rikasepriani@fik.unp.ac.id

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INTRODUCTION

Doping is the use of illegal substances or methods to improve athletes' performance (Motram & Chester, 2018; Yildiz & Yildiz, 2019). According to the World Anti-Doping Code (WADC) 2021, doping is defined as a violation of one or more anti-doping rules, specifically the use or attempted use of prohibited substances or methods in competition (WADA, 2021c). The World Anti-Doping Agency (WADA) issued doping rules in the World Anti-Doping Code (WADC) to regulate the use of doping in sports. According to a 2020 WADA report on the number of doping rule violations worldwide, WADA recorded 1.923 doping rule violations in 2018, an increase from the previous year, with exact numbers of 1.776 in 2017 and 1.595 in

2016. The ten sports with the most violations were bodybuilding, cycling, athletics, weightlifting, powerlifting, wrestling, rugby, boxing, football, and swimming (WADA, 2020).

The prohibited list details compounds and methods not permitted to be used in sports, such as anabolic agents, growth factors, beta-2 agonists, hormones and metabolic modulators, diuretics and masking agents, stimulants, narcotics, cannabinoids, and glucocorticoids (Bezuglov et al., 2021; Heuberger & Cohen, 2019; WADA, 2021b). Methods that are prohibited from use are methods of manipulating blood and its components, methods of chemical and physical manipulation, and doping of genes and cells (Bezuglov et al., 2021; Kinahan et al., 2017; WADA, 2021b). The use of beta-blocker compounds is permitted if athletes use these compounds in treatment, which is demonstrated by the Therapeutic Use Exemption (TUE) (WADA, 2021b). In 2018, the most violations of prohibited compounds and methods were discovered in anabolic agent compounds (44%), stimulants (15%), diuretics and marker compounds (14%), hormones and metabolic modulators (9%), glucocorticosteroids (7%), b-2 agonists (4%), cannabinoids (3%), peptide hormones (3%), narcotics (1%), beta-blockers (0.04%), oxygen transfer enhancers (0.07%), and physical and chemical manipulation (0.02%) (WADA, 2018).

There have been numerous doping rule violations in the sports world, including the BALCO scandal in 2003, the Lance Armstrong case in 2012, and the Maria Sharapova case in 2016 (Motram & Chester, 2018). The number of doping cases in Indonesia is constantly growing. PON XVI in 2004 had five doping cases; PON XVII in 2008 had five doping cases; PON XVIII in 2012 had seven doping cases; and the next PON in West Java in 2016 had twelve doping cases (Sepriani et al., 2022).

The use of doping in sports has been banned in Indonesia. The government will cooperate with the Indonesia Anti-Doping Organization (IADO) to monitor doping in Indonesia. IADO is one of the National Anti-Doping Organizations (NADO), which act as WADA's representatives in each country to control doping. Athlete doping supervision aims to prevent athletes from using doping to overcome the potential negative effects and risks of doping use and to achieve doping-free sports. The anti-doping program relies heavily on education (Motram & Chester, 2018; WADA, 2021a). Education on the use of doping in sports is deemed critical in order to increase athletes' knowledge and understanding of doping while also improving their health.

Education can be done conventionally or online. In the era of the Industrial Revolution 4.0, as it is today, online education is the best choice because it can be done anywhere and anytime (Zakir & Hidayat, 2018). Online education has several advantages, such as low cost, interactive applications, multimedia components, direct feedback, and ease of use (Coşkun et al., 2020). This study is the first step in developing anti-doping education that will be conducted online to increase anti-doping knowledge and understanding among high-achieving athletes.This research will make a positive contribution to increasing athletes' knowledge and understanding of anti-doping so that they can create safe and clean sports in Indonesia.

To design an educational model, researchers must understand how needs are related to education. Needs analysis is the first step for researchers to obtain an educational model. Education must be adjusted to the target audience (Tarsikah & Wulandari, 2022). In this study, researchers analyzed the needs related to the anti-doping education that will be developed, especially the analysis related to athlete knowledge about doping and athlete accessibility to the anti-doping education that will be developed. Research related to doping has been carried out by previous researchers where the athlete's anti-doping knowledge was still low (Effendi, 2015; Kuswahyudi et al., 2020; Sepriani et al., 2022). Looking at the needs analysis, no research has been found related to web-based anti-doping education for high-achieving sports athletes. This research is expected to provide a positive contribution to the development of anti-doping education in athletes (Blank et al., 2015; Kim & Kim, 2017; Ozkan et al., 2020). In Indonesia, the development of information and communication technology (ICT) has increased to the point that in 2019, the percentage of Indonesians accessing the internet reached 73.75% (Sepriani et al., 2021a). The development of an anti-doping educational model by utilizing information technology will be an option for increasing the anti-doping knowledge of athletes in Indonesia.

METHOD

This study employed a quantitative descriptive research method to examine the need for web-based anti-doping education among high-achieving athletes in sports. An athlete's doping knowledge test instrument and a web-based educational accessibility questionnaire for achievement sports athletes were used to assess the need for web-based anti-doping education for achievement sports athletes. The doping knowledge test is based on the 2021 World Anti-Doping Code (WADC), which includes definitions of doping, anti-doping agencies, doping compounds and methods, as well as the risks associated with them, doping tests, and doping sanctions. The doping knowledge test is a multiple-choice test with four answer options. A correct answer is worth one point, while an incorrect answer is worth zero points. The accessibility questionnaire was designed to assess athletes' availability and ability to implement web-based education. This questionnaire includes information about the availability of facilities and infrastructure, as well as the athlete's ability to complete web-based education.

Purposive sampling was used to collect data. Athletes sampled in the study met the inclusion criteria: West Sumatran athletes aged 17–25, registered with the sports branch management, and willing to participate in research voluntarily. This study was conducted in five sports: weightlifting, powerlifting, athletics, sepak takraw, and soccer, yielding a sample size of 40 athletes. Data were analyzed using a quantitative descriptive method in the form of percentages.

RESULTS AND DISCUSSION
Respondent Characteristics
Respondent by Sports Branches

This study included 40 participants from five sports branches: powerlifting (7 participants), weightlifting (8 participants), athletics (4 participants), soccer (12 participants), and sepak takraw (9 participants). Graph 1 shows detailed information.
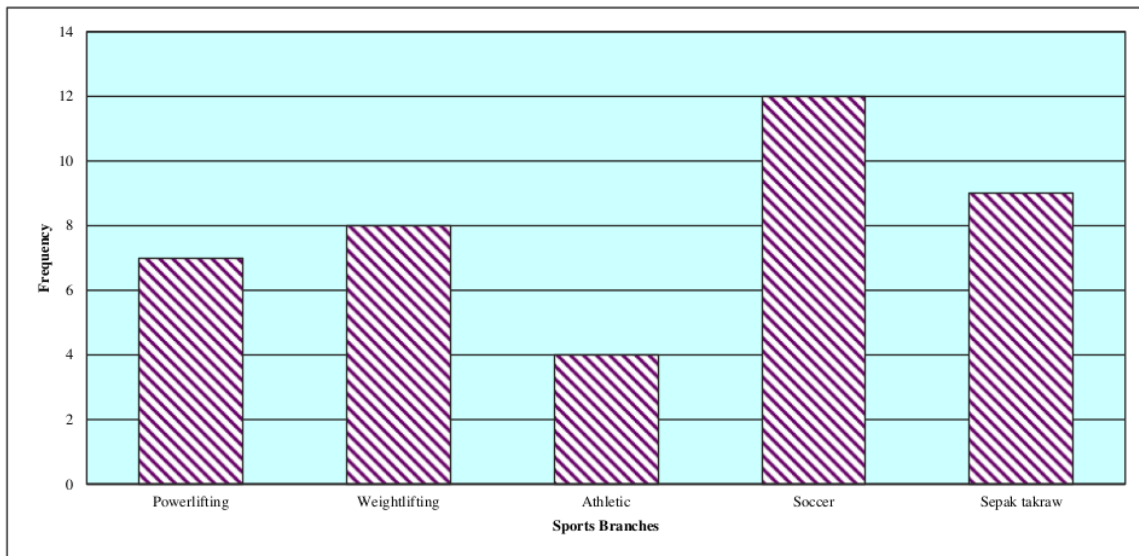
Graph 1. Respondents by Sports Branches

Respondents by Gender

There were 40 people who participated in this study, with 26 male and 14 female respondents. Graph 2 shows detailed information.
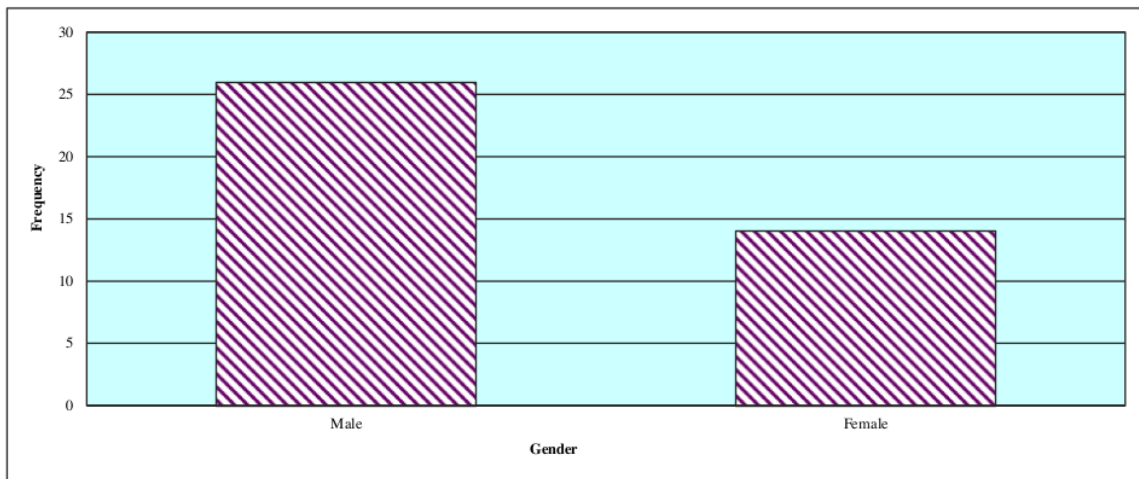
Graph 2. Respondents by Gender

Sports Athlete Doping Accomplishment

According to research on athletes' doping knowledge conducted on 40 athletes in weightlifting, powerlifting, athletics, soccer, and sepak takraw, the highest score is 19, and the lowest score is 4. The average is 11.65, with a standard deviation of 3.9194. One athlete (3%), eight athletes (20%), and thirty-one athletes (78%) were among the 40 athletes who became research respondents.Table 1 contains additional information.

Table 1. Athletes' Doping Knowledge Level

No	Classification	Fa	Fr
1	Good	1	3%
2	Fair	8	20%
3	Less	31	78%
	Total	**40**	**100%**

Accessibility of web-based education

Based on research done on 40 athletes in weightlifting, powerlifting, athletics, soccer, and sepak takraw about how easy it is to get a web-based education, the following information was found:

Table 2. Accessibility of Web-Based Education

No	Question	Fa		Fr	
		Yes	No	Yes	No
1	Do you have a computer or laptop?	11	29	27.5%	72.5%
2	Do you have a smartphone?	40	0	100%	0%
3	Do you have internet access?	39	1	97.5%	2.5%
4	Do you provide funds to enable internet access?	33	7	82.5%	17.5%
5	Have you ever accessed the internet?	38	2	95%	5%
6	Can you access the internet using a smartphone or laptop?	40	0	100%	0%
7	Can you operate a laptop or computer?	29	11	72.5%	27.5%
8	Can you operate a smartphone?	40	0	100%	0%
9	Have you ever learned how to use an application on a laptop or smartphone?	40	0	100%	0%
10	Can you use online learning apps?	37	3	92.5%	7.5%
11	Do you have any problems using online learning apps?	12	28	30%	70%

In response to the first question about athlete availability, 11 respondents (27.5%) said they had a computer or laptop, while 29 respondents (72.5%) said they did not have a computer or laptop. In response to a question about smartphone availability, as many as 40 athletes (100%) said they had one. In response to questions about internet access, 39 respondents (97.5%) said they had it, while 1 respondent (2.5%) said they did not. In response to the question about the availability of funds to access the internet, 33 respondents (82.5%) provided funds, while 7 respondents (17.5%) did not. When asked if they had ever used the internet, 38 respondents (95%) said yes, while 2 respondents (5%) said no. However, they all (100%) said they could access the internet via a laptop or smartphone. Of the 40 athletes who responded to the survey, 29 (72.5%) said they could access the internet using a laptop, while 11 (27.5%) said they could not. While 40 people (100 percent of respondents) can access the internet using a smartphone. On the question of whether you can use a laptop or computer, 29 respondents (72.5%) said yes, and 11 (17.5%) said no. However, as many as 40 respondents (100%) can use a smartphone. When asked, "Have you ever learned to use an application with a laptop or smartphone?" 40 respondents (100%) said yes. When asked if they could use online learning applications, 37 respondents (92.5%) said yes, while 3 respondents (7.5%) said no. When asked if they had any difficulties using online learning applications, 12 respondents (30%) said yes, while 28 respondents (70%) said no. According to the questionnaire responses, the level of accessibility of web-based anti-doping education was 89.75%, which was classified as "very good".

Education refers to all planned efforts to convince others, either individuals or groups, to do what education actors expect (Aisah et al., 2021). Education is a process of progressing from not understanding the value of knowledge to understanding it (Suliha, 2016). The key to a doping-free sport is anti-doping education. Doping is prohibited because, in addition to having a negative impact on an athlete's career and future, it is also harmful to the athlete's body. Anabolic steroid doping can cause masculinity in women, and testicular atrophy in men can lead to kidney and liver tumors. Doping narcotic analgesics can lead to dependence and respiratory depression; doping diuretics can lead to dehydration and muscle cramps; and erythropoietin doping can lead to hypertension and blood thrombosis (Motram & Chester, 2018; Vlad et al., 2018).

This study aimed to examine the need for web-based anti-doping education for achievement-sport athletes. Athletes are sports actors who excel at the regional, national, and international levels of competition. Athletes are people who exercise to improve their body's strength, endurance, speed, agility, balance, flexibility, and strength long before the match begins (Sepriani et al., 2021b; Setiyawan, 2017). Meanwhile, achievement sports are sports that foster and develop athletes specifically in a programmed, tiered, and sustainable way through the competition. Sports achievement aims to achieve the highest level of achievement possible (Adnan & Indah, 2019).

This study was carried out in five sports branches: powerlifting, weightlifting, athletics, soccer, and sepak takraw. These sports are among the top ten in the world with the most doping cases. This study had 40 participants, with as many as seven people participating in powerlifting, eight people participating in weightlifting, four people participating in athletics, twelve people participating in soccer, and nine people participating in sepak takraw. There were 26 male athletes and 14 female athletes among the 40 athletes. Testing athletes' doping knowledge and questionnaires on the accessibility of web-based education for athletes were used to assess the need for web-based anti-doping education for achievement-sport athletes.

Knowledge is the result of knowing, which happens after someone senses a specific object. Sensing is accomplished through the five human senses of sight, hearing, smell, taste, and touch (Zulkarnay et al., 2018). Thinking is the process by which knowledge is obtained. The thinking process progresses from low-level to high-level thinking (AlHajri & Mohamed, 2022; Asi, 2018). Knowledge is influenced by a variety of internal and external factors. Internally, age, intelligence, experience, and interests influence knowledge; externally, information, education, environment, work, and economics influence knowledge (Rahayu & Osman, 2019). According to the study's findings, out of 40 athletes, one had good knowledge (3%), eight had sufficient knowledge (20%), and 31 had less knowledge (78%). This finding is consistent with previous research, which found that athletes' doping knowledge was still low (Effendi, 2015; Kuswahyudi et al., 2020; Sepriani et al., 2022). Knowledge is a crucial domain for shaping one's actions. Before a person

behaves in a new way, a series of events occur within that person: awareness, attraction to the stimulus or object, and weighing whether or not the stimulus is good for him or her (Sepriani, 2019). Knowledge has an impact on how a person acts and behaves (Nicholls et al., 2020b). Less knowledge will encourage someone to behave contrary to the established rules.

According to the World Anti-Doping Agency (WADA), education is the primary focus of an anti-doping strategy (Medina et al., 2019). Article 18 of the World Anti-Doping Code (WADC) 2021, which focuses on education and mandates international sports federations and national anti-doping bodies to provide anti-doping education to athletes and athlete support personnel, supports this statement (Murofushi et al., 2018; Woolf, 2020). The rapid development of ICT today can also be used in developing educational models. Web-based learning can promote more effective learning (Belazoui et al., 2021; Cholid et al., 2016; Soussi, 2020). The Web is a collection of web pages or internet services that include multimedia resources for streaming information over the internet. The web contains a wealth of information in the form of text, still or moving images, animation, sound, and/or a combination of all of these elements, both static and dynamic, that form a network of interconnected buildings, each of which is linked by web pages for computer users with internet access (Astuti et al., 2020; Yildiz et al., 2020). Accessibility, or the user's ability to access web-based education, is important to understand so that the developed web-based education model can function properly.

According to research on the accessibility of web-based anti-doping education for achievement sports athletes, all (100%) of the 40 respondents had smartphones. However, only 11 respondents (27.5%) reported having a laptop, and only one respondent (2.5%) reported not having internet access. These athletes had internet access via laptops or smartphones, and all used online learning applications. According to the answers given by athletes to the questionnaire, the accessibility of web-based education for achievement sports athletes is 89.75%, which is in the "very good" category, implying that achievement sports athletes who become respondents can carry out web-based education as expected.

Education as a process can be done traditionally or through the use of information and communication technology (ICT). In today's Industrial Revolution 4.0 era, education through the use of information and communication technology (ICT) is the best option. In the Fourth Industrial Revolution, digitalization permeates all aspects of life. In Indonesia, the advancement of information and communication technology (ICT) has increased, with 73.75% of Indonesian citizens accessing the internet in 2019 (Sepriani et al., 2021a). Education through the use of information and communication technology (ICT) has several advantages, including low cost, interactive applications, multimedia components, direct feedback, and ease of use. Web-based education has been shown to improve healthy behavior and health literacy (Coşkun et al., 2020).

The results of the research that has been obtained are used as a reference in compiling anti-doping education for high-achieving athletes. Athletes' knowledge that is still low about doping can indicate that anti-doping education is needed by athletes so that their knowledge about doping increases and the use of doping in athletes can be prevented. Hurst et al. (2020) stated that anti-doping education can prevent intentional or unintentional use of doping in the short and medium terms. Anti-doping education should always be provided to athletes to maintain anti-doping values (Blank et al., 2015; Gatterer et al., 2020; Nicholls et al., 2020a). The high level of accessibility for web-based education indicates that anti-doping education can be carried out online using an anti-doping website, which is a continuation of this research.

CONCLUSIONS

Based on the research conducted, it can be seen that achievement sports athletes' doping knowledge is generally in the "fair" category, and the accessibility of web-based education for achievement sports athletes has a very good level of achievement. The research was limited to five sports, weightlifting, powerlifting, athletics, soccer, and sepak takraw. From this study, it can be concluded that web-based anti-doping education for sports athletes is needed to increase the knowledge of doping athletes. This research will be a reference in the development of online anti-doping education that contributes to increasing anti-doping knowledge in athletes so that the use of doping in athletes can be prevented.

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CONFLICT OF INTEREST

In writing this article, the author affirms that there were no conflicts of interest.

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