

## A CONCEPTUAL FRAMEWORK FOR DEVELOPING COMMUNITIES OF PRACTICE FOR CLEAN SPORT EDUCATION

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**Abstract.** *Communities of practice have been suggested to provide an ideal teaching structure that can promote knowledge and skill development. Existing evidence on clean sport education indicates that several educational interventions against doping have been developed so far. However, stakeholders and researchers are not always informed about them. This results in poor coordination of anti-doping efforts made by organizations and stakeholders. The present paper proposes and implements an alternative approach to clean sport education by enabling synergies between academic experts and coaches interested in being informed about clean sport education. More specifically, this paper describes for the first time a face-to-face Community of Practice for Clean Sport Education. The aim of the implemented community of practice was to assist coaches to be better educated about anti-doping. The implementation of a Community of Practice for Clean Sport Education confirmed the ability of this teaching approach to effectively engage coaches in anti-doping education. Participants in the community of practice showed an increased interest in learning more about anti-doping education and set specific learning goals, were helped to better identify what they would prefer to learn, received resources that they were not aware of, were committed to learning about anti-doping and developed a network of people interested in anti-doping. Overall, the community of practice was effective in mobilising people to engage in awareness-raising activities and increase their knowledge about clean sport education.*

**Keywords:** *community of practice, education, performance- and appearance-enhancing drugs, anti-doping.*

### Introduction

Doping use is among the most important concerns of sport authorities nowadays. A literature review indicated that between 14% and 39% of athletes competing in elite level intentionally engaged in doping (de Hon et al., 2015). Another study using the random response technique (RRT) for athletes competing in two international sporting events (the 13th IAAF World Championships in Athletics in Daegu, South Korea, in August 2011, and the 12th Quadrennial Pan-Arab Games in Doha, Qatar, in December 2011) showed that doping prevalence was between 43.6% and 57.1% (Ulrich et al., 2018). A research in five European countries (Cyprus, Germany, Greece, Italy and UK) demonstrated that approximately 20% of low-level athletes and exercisers in the age group between 16 and 25 years had used doping substances at least one time (Lazuras et al., 2017). A review of the literature has shown that high-school athletes and even non-competitive amateur athletes and exercisers are likely to begin to use anabolic-androgenic steroids (AAS) as early as the age of 10 (Nicholls et al., 2017). Therefore, the need for efforts to tackle this phenomenon is apparent. In this respect, several anti-doping education interventions have been developed. However, the anti-doping education is not concerted at the moment, and stakeholders are not aware of or do not have access to existing educational interventions. In this paper, we present

an innovative approach for coordinating the anti-doping fight, with a special focus on anti-doping education. The conceptual basis of this approach, called Community of Practice (CoP), will be presented and an example of how it can be implemented will be described.

### *Communities of practice as an alternative approach to anti-doping education*

The term “communities of practice” was developed around 20 years ago, but the origins of the concept are rooted in humanity’s evolutionary history, when primitive communities learned how to share knowledge and exchange practices about a wide range of behaviours relevant to the species’ survival and development, from hunting to crafting and manufacturing, printing and, more recently, innovating (Lave & Wenger, 1991; Lave & Wenger, 2001; Wenger, 1998; Wenger, 2010). This knowledge did not happen in schools or formal educational settings; rather, for many centuries, informal communities of practice consisted of people who had a common interest and created informal groups where they could share knowledge, learn about each other’s practices and come up with innovative ways of dealing with problems (Wenger, 2010). It was not until the late 1990s that this natural form of learning was emphasised by social anthropologist Jean Lave and educator Etienne Wenger as a way to enable effective learning in educational and other settings (e.g. corporate organizations) (Rogoff et al., 2003; Wenger, 1998; Wenger, 2010). According to Wegner-Trayner and Wenger-Trayner (2015), “communities of practice are groups of people who share the same concern or have the same passion for an activity they do and they want to learn how to do it better”.

The guiding principle of a CoP is that learning is not necessarily a top-down process with knowledge flows from an expert (e.g. teacher) to recipients without prior knowledge on the subject matter (i.e. pupils, students, trainees). Learning is rather “situated”, and the “situated learning” approach suggests that knowledge flows are bidirectional, and knowledge is shaped and used dynamically as the members of a learning community share ideas and practices relevant to the subject matter they are interested in (Wenger, 1998; Wenger, 2011). From this perspective, learning occurs through social interactions and the active involvement of “learners” in the initiation, development and sustainability of the CoP (Lave & Wenger, 2001; Wenger, 2010).

According to Wenger et al. (2002), the three key points of communities of practice are:

1. Knowledge resides in the “act of knowing”. Expertise is the result of “static” knowledge and the experience that has been gained through practice. Communities of practice serve as a dynamic and living repository of accumulated knowledge.

2. Knowledge is tacit as well as explicit. In addition to formal and explicit knowledge that can be delivered through manuals and formal training, tacit (or implicit) knowledge represents the accumulated knowledge that is embodied in experiences and involves a deep understanding of complex and context-specific problems. Tacit knowledge is valuable and irreplaceable and should be treated as equally, if not more important than explicit knowledge.

3. Knowledge is social and dynamic. Although the subjective experience of knowing a subject matter can be largely individual, knowledge itself is a social asset that we get to earn through social interactions with others with more expertise and different practices - in fact, the involvement of people/actors with different perspectives, knowledge assets and practices

is often used to stimulate innovative solutions. In addition, knowledge is changing at a fast pace, and individual actors (e.g. individual employees, individual organizations) cannot follow the fast-pacing knowledge generation. Communities of practice provide the framework where knowledge can be captured, contextualised and re-used in ways that serve the individual and collective learning needs of involved parties.

There are three essential elements to form a community of practice: domain, community and practice. More specifically: a) domain reflects a setting with clear boundaries that includes a sense of a common identity and provides the common ground for interaction; b) community represents the social interactions that lead to learning (Snyder & Wenger, 2004); and c) practice describes the knowledge and skills that are learnt and developed through the interactions of the communities members (Wenger, 1998).

Overall, communities of practice are considered to provide an ideal learning structure that can promote knowledge and skill development. The interplay between teachers and learners provides unique advantages that facilitate learning and results in more sustainable learning outcomes (Cruess et al., 2018; Wenger et al., 2002). The present paper discusses the formulation and implementation of a community of practice aiming to increase coaches' knowledge about anti-doping education. Before setting the context of anti-doping education used in the created community of practice, a brief description of existing anti-doping education that is used in the communities of practice will be given below.

### *Educational approaches to doping prevention*

Education is a useful tool to address the doping problem across the different levels of sports, from professional sports to amateur/grassroots sports, where anti-doping efforts tend to be limited (Barkoukis, 2015; Lazuras & Barkoukis, 2020). The Adolescents Training and Learning to Avoid Steroids (ATLAS) and Athletes Targeting Healthy Exercise and Nutrition Alternatives (ATHENA) are the most usually studied anti-doping interventions (Elliot et al., 2008; Goldberg & Elliot, 2005; MacKinnon et al., 2001). These programmes refer to adolescent athletes and include the use of different forms of performance- and appearance-enhancing drugs (PAEDs), both legally (nutritional supplements) and illegally (prohibited doping substances). They consist of a series of lectures facilitated by the coach and have been developed to inform adolescents about the use of various types of PAEDs (nutritional supplements, prohibited doping substances), targeting different psychological variables depending on gender. The ATLAS programme includes sessions and activities to tackle drive for muscularity in male adolescents and the side effects of anabolic-androgenic steroids, while ATHENA includes sessions and activities to tackle drive for thinness in female adolescents, with an emphasis on fat burners (Bahrke, 2012; Elliot et al., 2004; Elliot et al., 2008; Goldberg & Elliot, 2005; Goldberg et al., 1996; Goldberg et al., 2000).

Studies that investigated the effectiveness of ATLAS and ATHENA provided evidence for both short- and long-term outcomes. With regard to short-term effects, compared to the control condition, athletes who participated in the ATLAS intervention showed lower levels of interest in engaging in AAS when being pressured by their peers and more negative beliefs about AAS, gained a better understanding of nutritional supplement use and showed more positive beliefs about their use, and improved their body image (Goldberg et al., 1996).

Regarding long-term effects, they were retained 9 to 12 months post-intervention and involved: greater awareness of the negative side effects and health risks of AAS use; improved self-efficacy to resist using doping substances under social pressure; decreased acceptance of messages promoting the use of prohibited PAEDs; negative attitudes towards athletes using PAEDs; and decreased intentions to use PAEDs.

However, a meta-analysis (Ntoumanis et al., 2014) supported that the effectiveness of ATLAS and ATHENA was rather modest in altering male and female athletes' beliefs and attitudes related to the use of prohibited PAEDs. Thus, a call for new anti-doping interventions was made, which resulted in several efforts to develop effective anti-doping education. For instance, Barkoukis et al. (2016) designed and assessed an intervention addressing the use of PAEDs in sports. This school-based intervention included 10 active learning and cooperatively working sessions led by students, which engaged them in numerous exploratory, problem-solving and decision-making activities about: nutritional supplements and prohibited substances; the adverse effects of using prohibited substances; nutrition as a safe alternative to the use of PAEDs; historical, cultural and moral aspects of using PAEDs in sports; and psychological mechanisms of doping use. The intervention was found to be effective in altering students' attitudes towards the use of nutritional supplements and increasing norm salience concerning the use of nutritional supplements and doping in sports (Barkoukis et al., 2016). An awareness-raising intervention containing information about healthy nutrition as a safe alternative to PAEDs through a simple pamphlet was developed and evaluated by James et al. (2010). Participants read and absorbed messages through pamphlet for one day. Exposure to these messages raised participants' awareness of healthy nutrition and positively changed their attitudes towards healthy nutrition, as compared to control group participants. An intervention that emphasised ethical decision-making as a way to reduce athletes' risk to use PAEDs was developed by Melzer et al. (2010). The intervention consisted of six sessions, each of them containing three dilemmas. The sessions were delivered online and each dilemma targeted moral reasoning and ethical decision-making. A comparative study between the ethical decision-making intervention and an awareness-raising intervention did not fully support the effectiveness of this intervention. Other educational efforts include the SAFE YOU programme, which aims to develop online anti-doping educational resources for trainers, educators, coaches and professionals involved in the promotion of sport, as well as to provide information applications for mobile phones and interactive videos that can be used by athletes in order to learn about the side effects of doping and how to make informed choices against doping. DELTS (Doping E-Learning Tools) is another educational approach focusing on the side effects of doping, whereas My-choice aims to influence specific psychological variables related to the decision towards doping, such as moral disengagement and self-regulatory efficacy. In addition, the Coaches and Sport Integrity course includes sections on anti-doping education focusing on definitions and the side effects of doping, psychological drivers of doping in competitive and recreational sport and education against doping. This course was developed for pre- and in-service coaches. In the same line, the CoachMADE intervention was developed to educate coaches about the optimal interpersonal coaching style that could positively influence athletes against doping use (Ntoumanis et al., 2018).

### *The present study*

The abovementioned literature suggests that several educational interventions against doping have been developed so far. However, stakeholders and researchers are not always informed about them. This results in poor coordination of anti-doping efforts made by organizations and stakeholders. The present paper proposes and implements an alternative approach to anti-doping education by enabling synergies between academic experts and coaches interested in being informed about clean sport education. More specifically, this paper describes for the first time a face-to-face Community of Practice for Clean Sport Education. The aim of the implemented community of practice was to develop the knowledge management context needed to transform existing anti-doping educational resources into meaningful, relevant, timely, impactful and sustainable tools for coaches. This aim was achieved by: a) identifying and using relevant empirical evidence to guide the development of the first Community of Practice for Clean Sport Education in Europe; b) developing a face-to-face Community of Practice for Clean Sport Education to enable synergies and collaborative learning about state-of-the-art clean sport education for coaches; c) enabling knowledge sharing and the emergence of best practices, with an emphasis on protecting clean athletes from doping use; d) increasing coaches' awareness of the benefits of using communities of practice for clean sport education.

### **Methodology**

#### *Desk research and co-creation workshops*

The present study utilised desk research on the development and benefits of communities of practice in applied settings (e.g. organizational, clinical, educational) and, accordingly, derived the most relevant features that could be contextualised and used for the development of communities of practice for clean sport education. Also, co-creation workshops with coaches were conducted in order to identify the needs and contextual features of the envisaged local communities of practice. This methodology is ideal because it relies on best practices in the development and utilisation of communities of practice (through desk research) and also contextualises this knowledge (through co-creation workshops) to the specific needs of coaches. The co-creation workshop reflections provided important insights into the socio-cultural aspects of clean sport education practices and policies. This has ensured that the community of practice reflects the actual needs of involved coaches, thus maximising the quality of outcomes and ensuring the feasibility of the community of practice.

#### *Participants in the community of practice*

The CoP moderator made an invitation through social media (Facebook, Instagram) to attract participants who have genuine interest in sharing knowledge and exchanging practices about clean sport education. A great amount of people related to sport-expressed interest. At the end, six participants were selected based on their professional sport background. The aim of the moderator was to ensure pluralism in the CoP.

All participants were coaches who had been athletes themselves in the past. Participants represented different sports. Participant 1 was a former martial art athlete before becoming a gym owner and an accredited taekwondo, boxing and kick-boxing coach. Participant 2 was a chief guide in a mountaineering team, an active climber and a climbing instructor. Participant 3 was working in a fitness measurement centre and was the coach of a youth basketball team. Participant 4 was a physical education teacher in primary education and an accredited athletics coach, being in charge of a grassroots track and field club. Participant 5 was a CEO (chief executive officer) and the founder of a Para Sport club, a coach for Paralympic athletes, a table tennis coach and an adapted physical educator teacher. Participant 6 was a former national decathlon champion and a student at the Faculty of Physical Education and Sport Science, who was working voluntarily as an athletics coach in sport academies.

### *Community of practice arrangements*

The first step for the community of practice to start was to provide participants with all necessary information about their rights and responsibilities during the work of the community of practice and obtain their consent to participate in the community. The moderator set some potential dates for the first meeting, and participants chose the one that suited them best. The first introductory meeting took place in a central area in Thessaloniki in order to be easily accessible to all participants. In this meeting, participants received a leaflet with their role and responsibilities in the community of practice, introduced themselves to the moderator and the other participants and obtained their consent to participate. The modus operandi of the community of practice was discussed. The moderator explained the tasks and provided options on how to implement these tasks. Participants discussed and decided a set of actions towards implementing the community of practice. A large part of the meeting was devoted to establishing rapport and trust between the moderator and participants and between participants. The dates and place of the meetings were discussed and decided.

### *Workshop content of the community of practice*

In the first working meeting of the CoP, the moderator presented the working framework of the community of practice and the roles and responsibilities of the participants. In addition, specific topics of interest to participants were presented, such as legislation issues (e.g. what doping is, how it is defined, what its legal consequences are), anti-doping education (e.g. need for education, type of education, existing educational material), reporting doping (e.g. utility of reporting, ways of reporting, existing reporting systems). Participants discussed these topics, identified their major needs and defined the actions to be pursued for combating doping as members of the CoP. More specifically, they decided to focus on anti-doping education because this was the topic they felt the most important in the anti-doping fight and they were less knowledgeable. As their main action for the community of practice, they decided to have a thorough search for existing educational material in Greek and inform colleagues about this material. In the “Results” section, a more thorough description of the content of the first working meeting is presented.

In the second working meeting, existing educational materials in Greek were presented to the participants and a discussion followed on their effectiveness in changing athletes' mindset and usability in practice. Participants decided to promote these educational materials to their athletes and fellow coaches in order to help them be educated against doping. A more detailed description of the actions in the second working meeting is presented in the "Results" section.

## Results

### *First working meeting of the CoP*

The first working meeting lasted two hours. Participants shared personal experiences each one on their field as well as their views and personal beliefs with respect to doping. All of the participants highlighted the great need of preventing doping in sport and the promotion of clean sports. Participants displayed exceptionally good rapport and shared a common interest in several topics relevant to doping. After a thorough and intriguing discussion, participants identified some specific needs for doping education in sport. They all agreed that it was very important for all coaches and, more importantly, coaches of both Olympic and Paralympic sports to be properly and fully informed about the updated annual list of prohibited substances and methods launched by WADA. Two CoP members, having heard of examples of athletes who were banned for doping due to not being aware of the prohibited list, acknowledged that more emphasis should be put on this topic. In addition, one CoP member underlined the importance of exploring whether a gateway from legal nutritional supplements to prohibited substances existed and all members agreed with this point of view. Moreover, they suggested that the use of nutritional supplements could lurk the danger of doping use in young athletes.

Furthermore, four participants highlighted the pivotal role of sport psychology in understanding and tackling doping in sport. Two of them suggested that thorough research on the psychological drivers of athletes who intended to or used prohibited substances could play a key role in the effective prevention of doping. Moreover, the entire CoP suggested that highly knowledgeable professionals should communicate the need of combating doping to all bodies and stakeholders involved in sport. This was expected to raise greater awareness and could result in a concerted effort for doping prevention that would be more powerful and efficient as compared to individual efforts. Last but not least, all of the participants agreed that there was a need for conducting more frequent doping control tests. As doping control is one of the strongest weapons in the fight against doping, an increase in its frequency could be proven beneficial. They suggested that this could also function as a reinforcement to clean athletes' motivation to continue competing clean.

All participants also identified some actions that could be effective in combating doping. It was agreed that participation in conferences and the positions taken by organizations and stakeholders in sports conferences could be useful to communicate the importance of doping prevention. Furthermore, the promotion of anti-doping mentality in such conferences was deemed as an important step in increasing awareness of academic and sporting communities about doping prevention. Such events offer a great opportunity for coaches and academics

who are involved in the fight against doping to communicate the importance of clean sport to interested people. These events provide them with the opportunity to sensitise the audience and inform about the harmful effects of doping and its negative consequences on sport.

In addition, other relevant actions could also prove to be valuable in this regard. Three participants proposed actions like seminars, educational programmes and workshops to be organized in order to provide information about clean sport education and anti-doping policies not only to those who are involved in sport but also to the wider audience. Moreover, one participant proposed the establishment of links between agencies interested in combating doping. This could result in the enrichment of doping prevention efforts, as the exchange of ideas and viewpoints could benefit the development of new strategies.

At the end of the first working meeting of the CoP, all participants agreed on the actions that the community would pursue. Each member would enrich their knowledge about the updated list of prohibited substances and methods launched by WADA. They would also inform their colleagues and athletes about the list of prohibited substances and methods. In addition, each participant would make some research and gather information about the role of nutritional supplements in the decision to take prohibited substances and methods. Lastly, participants decided to look up for more information about the existence of educational material and educational policies that have been developed for doping prevention. All participants committed to performing the decided activities. It was decided that the moderator would alert participants and make frequent contacts with them to discuss progress of the tasks and to kindly remind them what needed to be completed.

#### *Second working meeting of the CoP*

The second meeting lasted two and a half hours. Participants were very engaged during the whole meeting and showed great interest in all topics addressed. They were excited to discuss the topics of the community and were involved in the discussion with enthusiasm. They all endorsed the need of cultivating the mentality of young athletes with an emphasis on “well-being” rather than on winning at all costs. Athletes should be encouraged to take part in sport with an interest in strengthening their physical and psychological health and gain pleasure from their participation. On the other hand, the idea of winning at all costs should be discouraged because such an attitude might foster the risk of engaging in actions that might be unethical, unhealthy and undermine their well-being.

Four participants showed genuine interest in and were eager to hear about doping-related projects, therefore they asked the moderator to share with them the material of such projects. The moderator was aware of such educational material from the desk research performed before the arrangements of the communities of practice. Participants argued that being informed about these projects (their aim and content, their results and the efforts made concerning doping) would equip them with a better understanding of anti-doping education. Hence, this would enable them to share this knowledge with people in their field that were involved in sport, such as fellow coaches and athletes. Furthermore, being aware of these interventions would allow them to provide these people with interesting and well-documented information that would be beneficial and raise their awareness of doping-related issues.



All of the participants highlighted once again the need to put pressure on stakeholders for a stricter doping control system including more frequent doping controls. A stricter doping control system should be set in order to address the trafficking of prohibited substances within sports venues. In addition, they suggested that doping control tests should be modernised and advanced so as to become more efficient in the detection of banned substances and methods. This could be an important step in combating doping in sport.

Furthermore, two participants also discussed the issue of body stereotypes promoted by the media and the unrealistic ideal body images promoted in modern societies. They all suggested that there was a great need to put pressure on the state to control pharmaceutical companies and restrict the promotion of such body stereotypes. As substance use for appearance purposes also constitutes a serious problem in sport, such actions are necessary for the effective prevention of doping, especially in recreational sport.

Following a consensus about the negative impact of doping in sport, the entire CoP suggested some measures that should be taken to tackle doping in both recreational and competitive sports. Firstly, they suggested the need for a concerted effort aiming to inform the general public about doping in an understandable and easily accessible manner. Such actions could be carried out in recreational events (e.g. city runs) where people that are not necessarily involved in competitive sport but have general interest in sport participate. Events like these provide the opportunity of communicating important anti-doping messages to a large number of people at the same time. In addition, they suggested the development of education campaigns targeting elite and professional athletes by informing them about doping with plain messages. This could be achieved in the courts and stadiums where they train and compete. Two participants suggested that scientific terminology should be avoided as it might decrease athletes' interest and that it was essential for messages to be communicated using plain language, which was understandable by all athletes of all ages.

In general, a pluralism of views due to the different professions and lifestyles of the community members was observed. Participants chose four related overlapping topics with respect to doping for further personal examination. They all agreed to gather information about the actions and results of research programmes that have developed educational material against doping (e.g. SAFEYOU, CSI, GAME, DELTS). Furthermore, they decided to disseminate and promote this educational material among athletes and fellow coaches at their sport (i.e. martial arts, outdoor recreational sports, sports and mobility centres, track and field, Paralympic sports). In addition, all participants agreed to personally investigate and be updated on the side effects of the main doping substances and methods used in their sport and the area in which they worked. Finally, all participants arranged to contact both the moderator and the other participants after the meeting in order to exchange useful links, material and information that could be used for the aforementioned actions.

## **Conclusion**

Communities of practice have proliferated as an innovative student-centred teaching approach that facilitates the teaching process and increases interest in learning. This assertion was confirmed by the implementation of a community of practice for clean sport education. Participants in the community of practice demonstrated an increased interest in learning more

about anti-doping education and set specific learning goals. All participants were interested from the beginning in learning about anti-doping, hence they decided to take part in the community of practice. The community of practice helped them better identify what they would prefer to learn, provided resources that they were not aware of, made them commit to learning about anti-doping, introduced them to other people with the same interest in anti-doping and developed a network of people interested in anti-doping. Therefore, the community of practice was effective in mobilising people to engage in awareness-raising activities and increase their knowledge on a topic of interest that they would not study without their participation in the community of practice.

## References

- Bahrke, M. S. (2012). Performance-enhancing substance misuse in sport: Risk factors and considerations for success and failure in intervention programs. *Substance Use & Misuse*, 47(13-14), 1505-1516. <https://doi.org/10.3109/10826084.2012.705674>
- Barkoukis, V. (2015). Moving away from penalization: The role of education-based campaigns. In V. Barkoukis, L. Lazuras, & H. Tsorbatzoudis (Eds.), *The psychology of doping in sport* (pp. 215-229). Abingdon: Routledge.
- Barkoukis, V., Kartali, K., Lazuras, L., & Tsorbatzoudis, H. (2016). Evaluation of an anti-doping intervention for adolescents: Findings from a school-based study. *Sport Management Review*, 19(1), 23-34. <https://doi.org/10.1016/j.smr.2015.12.003>
- Cruess, R. L., Cruess, S. R., & Steinert, Y. (2018). Medicine as a community of practice: Implications for medical education. *Academic Medicine*, 93(2), 185-191. <https://doi.org/10.1097/ACM.0000000000001826>
- de Hon, O., Kuipers, H., & van Bottenburg, M. (2015). Prevalence of doping use in elite sports: A review of numbers and methods. *Sports Medicine*, 45(1), 57-69. <https://doi.org/10.1007/s40279-014-0247-x>
- Elliot, D. L., Goldberg, L., Moe, E. L., DeFrancesco, C. A., Durham, M. B., McGinnis, W., & Lockwood, C. (2008). Long-term outcomes of the ATHENA (Athletes Targeting Healthy Exercise & Nutrition Alternatives) program for female high school athletes. *Journal of Alcohol and Drug Education*, 52(2), 73-92. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2598770/>
- Elliot, D. L., Goldberg, L., Moe, E. L., DeFrancesco, C. A., Durham, M. B., & Hix-Small, H. (2004). Preventing substance use and disordered eating: Initial outcomes of the ATHENA (Athletes Targeting Healthy Exercise and Nutrition Alternatives) program. *Archives of Pediatrics & Adolescent Medicine*, 158(11), 1043-1049. <https://doi.org/10.1001/archpedi.158.11.1043>
- Goldberg, L., & Elliot, D. L. (2005). Preventing substance use among high school athletes: The ATLAS and ATHENA programs. *Journal of Applied School Psychology*, 21(2), 63-87. [https://doi.org/10.1300/J370v21n02\\_05](https://doi.org/10.1300/J370v21n02_05)
- Goldberg, L., Elliot, D., Clarke, G. N., MacKinnon, D. P., Zoref, L., Moe, E., Green, C., & Wolf, S. L. (1996). The Adolescents Training and Learning to Avoid Steroids (ATLAS) prevention program: Background and results of a model intervention. *Archives of Pediatrics & Adolescent Medicine*, 150(7), 713-721. <https://doi.org/10.1001/archpedi.1996.02170320059010>

- Goldberg, L., MacKinnon, D. P., Elliot, D., Moe, E. L., Clarke, G., & Cheong, J. (2000). The Adolescents Training and Learning to Avoid Steroids program: Preventing drug use and promoting health behaviors. *Archives of Pediatrics & Adolescent Medicine*, 154(4), 332-338. <https://doi.org/10.1001/archpedi.154.4.332>
- James, R., Naughton, D. P., & Petróczi, A. (2010). Promoting functional foods as acceptable alternatives to doping: Potential for information-based social marketing approach. *Journal of the International Society of Sports Nutrition*, 7: 37. <https://dx.doi.org/10.1186%2F1550-2783-7-37>
- Lave, J., & Wenger, E. (2001). Legitimate peripheral participation in communities of practice. In *Supporting lifelong learning* (Vol. 1: Perspectives on learning, Chapter 7, pp. 121-136). Routledge. <https://doi.org/10.1017/CBO9780511815355.006>
- Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge University Press.
- Lazuras, L., & Barkoukis, V. (2020). Performance- and appearance-enhancing drug use in sport: A psychological perspective. In G. Tenenbaum & R. Eclund (Eds.), *Handbook of sport psychology* (pp. 1169-1187). Wiley. <https://doi.org/10.1002/9781119568124.ch57>
- Lazuras, L., Barkoukis, V., Loukovitis A., Brand, R., Hudson, A., Mallia, L., Michaelides, M., Muzi, M., Petróczi, A., & Zelli, A. (2017). “I want it all, and I want it now”: Lifetime prevalence and reasons for using and abstaining from controlled Performance and Appearance Enhancing Substances (PAES) among young exercisers and amateur athletes in five European countries. *Frontiers in Psychology*, 8: 717. <https://doi.org/10.3389/fpsyg.2017.00717>  
(Corrigendum – 2018: *Frontiers in Psychology*, 9: 1162. <https://dx.doi.org/10.3389%2Ffpysg.2018.01162>)
- MacKinnon, D. P., Goldberg, L., Clarke, G. N., Elliot, D. L., Cheong, J., Lapin, A., Moe, E. L., & Krull, J. L. (2001). Mediating mechanisms in a program to reduce intentions to use anabolic steroids and improve exercise self-efficacy and dietary behavior. *Prevention Science*, 2(1), 15-28. <https://doi.org/10.1023/A:1010082828000>
- Melzer, M., Elbe, A. M., & Brand, R. (2010). Moral and ethical decision-making: A chance for doping prevention in sports? *Etikk i Praksis – Nordic Journal of Applied Ethics*, 1, 69-85. <https://doi.org/10.5324/eip.v4i1.1741>
- Nicholls, A. R., Cope, E., Bailey R., Koenen, K., Dumon, D., Theodorou, N. C., Chanal, B., Saint Laurent, D., Müller, D., Andrés, M. P., Kristensen, A. H., Thompson, M. A., Baumann, W., & Laurent, J.-F. (2017). Children’s first experience of taking anabolic-androgenic steroids can occur before their 10th birthday: A systematic review identifying 9 factors that predicted doping among young people. *Frontiers in Psychology*, 8: 1015. <https://doi.org/10.3389/fpsyg.2017.01015>
- Ntoumanis, N., Ng, J. Y., Barkoukis, V., & Backhouse, S. (2014). Personal and psychosocial predictors of doping use in physical activity settings: A meta-analysis. *Sports Medicine*, 44(11), 1603-1624. <https://doi.org/10.1007/s40279-014-0240-4>
- Ntoumanis, N., Gucciardi, D. F., Backhouse, S. H., Barkoukis, V., Quested, E., Patterson, L., Smith, B. J., Whitaker, L., Pavlidis, G., & Kaffe, S. (2018). An intervention to optimize Coach Motivational Climates and Reduce Athlete Willingness to Dope (CoachMADE): Protocol for a cross-cultural cluster randomized control trial. *Frontiers in Psychology*, 8: 2301. <https://doi.org/10.3389/fpsyg.2017.02301>
- Rogoff, B., Paradise, R., Mejía Arauz, R., Correa-Chávez, M., & Angelillo, C. (2003). First-hand learning through intent participation. *Annual Review of Psychology*, 54, 175-203. <https://doi.org/10.1146/annurev.psych.54.101601.145118>

- Snyder, W. M., & Wenger, E. (2004). Our world as a learning system: A communities-of-practice approach. In C. Blackmore (Ed.), *Social learning systems and communities of practice* (pp. 107-124). London: Springer. [https://doi.org/10.1007/978-1-84996-133-2\\_7](https://doi.org/10.1007/978-1-84996-133-2_7)
- Ulrich, R., Pope, H. G., Cléret, L., Petróczi, A., Nepusz, T., Schaffer, J., Kanayama, G., Comstock, R. D., & Simon, P. (2018). Doping in two elite athletics competitions assessed by randomized-response surveys. *Sports Medicine*, 48(1), 211-219. <https://doi.org/10.1007/s40279-017-0765-4>
- Wenger, E. (2011). *Communities of practice: A brief introduction*. <http://hdl.handle.net/1794/11736>
- Wenger, E. (1998). *Communities of practice. Learning meaning and identity* (6th ed.). Cambridge University Press. <https://doi.org/10.1017/CBO9780511803932>
- Wenger, E. (2010). Communities of practice and social learning systems: The career of a concept. In *Social learning systems and communities of practice* (pp. 179-198). Springer. [https://doi.org/10.1007/978-1-84996-133-2\\_11](https://doi.org/10.1007/978-1-84996-133-2_11)
- Wenger, E., McDermott, R. A., & Snyder, W. (2002). *Cultivating communities of practice: A guide to managing knowledge*. Harvard Business Press.
- Wenger-Trayner, E., & Wenger-Trayner, B. (2015). *Introduction to communities of practice: A brief overview of the concept and its uses*. <https://wenger-trayner.com/introduction-to-communities-of-practice/>