



Evaluation of intervention programs based on physical activity and sport for drug use prevention: a multi-criteria perspective

Evaluación de programas de prevención del consumo de drogas basados en actividad física y deporte: una perspectiva multicriterio

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Abstract

Introduction. Drug consumption is an ongoing social problem today. Intervention programs for the prevention of drug use by adolescents based on physical activity and sport have recently attracted a lot of attention, and the evaluation of such programs constitutes a multi-criteria decision-making problem that can be addressed using the decision analysis methodology.

Objective. The purpose of this article is to address the problem structuring stage by constructing a hierarchy of objectives that takes into account all key aspects related to the evaluation of sports-based prevention programs.

Methodology. The decision analysis methodology was followed.

Results. The constructed hierarchy consists of four dimensions: i) the facilities where the program is to be developed, their versatility and management formulas; ii) the experience of the applicant organization; iii) the technical proposal, which includes the personnel working on the program, the program methodology, the methodology of the intervention sessions, the evaluation methodology and the program dissemination, and iv) the organization's financial solvency and budget soundness. It also establishes the attributes indicating the extent to which the intervention programs achieve the different criteria under evaluation.

Conclusions. This paper could be used as a reference for institutions launching calls for proposals in this area to evaluate the quality of the proposals received. Additionally, thanks to this work, a customized decision support system (IPASDU) will be available in the near future to facilitate the decision-making on intervention program evaluation and the analysis of the robustness of the results.

Keywords

Drug use prevention; intervention programs; multi-criteria decision-making; physical activity and sport.

Resumen

Introducción. El consumo de drogas sigue siendo un problema social a nivel internacional. Los programas de prevención del consumo de drogas entre los adolescentes basados en la actividad física y el deporte han suscitado recientemente un gran interés, y la evaluación de dichos programas constituye un problema de toma de decisiones multicriterio que puede abordarse utilizando la metodología del análisis de decisiones.

Objetivo. El presente artículo tiene como objetivo abordar la etapa de estructuración del problema mediante la construcción de una jerarquía de objetivos que tenga en cuenta todos los aspectos clave relacionados con la evaluación de programas de prevención basados en deporte.

Metodología. Se siguió la metodología del análisis de decisiones.

Resultados. La jerarquía construida consta de cuatro dimensiones: i) las instalaciones donde se desarrollará el programa, su versatilidad y fórmulas de gestión; ii) la experiencia de la organización solicitante; iii) la propuesta técnica, que incluye que incluye el personal que trabaja en el programa, la metodología del programa, la metodología de las sesiones de intervención, la metodología de evaluación y la difusión del programa, y iv) la solvencia financiera y la solidez presupuestaria de la organización. También se establecen los atributos que indican en qué medida los programas cumplen los diferentes criterios evaluados.

Conclusiones. Este documento podría servir de guía a las instituciones para evaluar la calidad de las propuestas recibidas en convocatorias del ámbito de la prevención. Además, este trabajo servirá para desarrollar un sistema de ayuda a la decisión personalizado (IPASDU) que facilitará la toma de decisiones sobre la evaluación de programas de prevención basados en deporte y el análisis de la solidez de los resultados.

Palabras clave

Actividad física y deporte; prevención del consumo de drogas; programas de intervención; toma de decisiones multicriterio.

Introduction

Drug consumption is still an ongoing problem for society today, and its harmful effects at the individual, family and social levels are of concern to national and international organizations. According to the 2023 World Drug Report published by the United Nations Office on Drugs and Crime (UNODC), the trend in drug consumption within the population increased by 23% from 2011 to 2021 (UNODC, 2023).

The drug use and prevention phenomenon has been studied in depth and is a field where giant steps have made since the mid-twentieth century (Becoña, 2002). National and international organizations working in this field have emerged all over the world. For example, the Plan Nacional sobre Drogas (PNSD) was set up in Spain in 1985; the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) was founded in Europe in 1993; the National Institute on Drug Abuse (NIDA) was established in the USA in 1974 and the Substance Abuse and Mental Health Services Administration (SAMHSA) in 1992; the Canadian Centre on Substance Use and Addiction (CCSA) was set up in Canada in 1988; and the United Nations Office on Drugs and Crime (UNODC) was created in 1997.

Among other tasks, these organizations have worked on compiling, organizing and ordering the most up-to-date evidence on drug use prevention, which they then published in the form of manuals that are a worldwide reference in this field (Schinke et al., 2001; Robertson et al., 2003; CCSA, 2010a, 2010b; Kröger et al., 2012; Bühler & Thrul, 2015; UNODC & WHO, 2018; EMCDDA, 2019).

In many cases, drug use commences during adolescence and increases and is most prevalent at the age of 18 (Tarter, 2002; OEDT, 2022; SAMHSA, 2023). Drug use during adolescence has a bearing on psychological development, risky sexual behavior, aggressive behaviors, poor academic performance and/or school dropout (Bryant et al., 2023, Hale et al., 2014; Murillo-López et al., 2025; NIDA, 2014). For this reason, prevention-level interventions aimed at adolescents are an optimal and necessary strategy to prevent, delay or reduce drug use (Bühler & Thrul, 2015).

There is consensus at present that any intervention or decision to be made should be evidence-based (Schinke et al., 2002). Evidence-based prevention (EBP) is the use of systematic decision-making processes or service delivery that have been shown, through available scientific evidence, to be able to improve measurable outcomes in the target population (EMCDDA, 2019). An evidence-based program will have been designed based on the available evidence on what works and what does not work in prevention: objectives, program content and components, theoretical rationale, evaluation methods, providers, etc. (Brotherhood & Summall, 2011; Gottfredson et al., 2015; Griffin & Botvin, 2010; Schinke et al., 2002). Therefore, the scope and design of these programs based on current evidence should be tested to assess their quality. The creation of standards and principles has served as a guide for designing prevention interventions and can be used to assess the quality of program design and assure their success.

Programs that have been successfully implemented with positive results are referred to as evidence-based programs (EP) (Drisko & Grady, 2015). The growth of EP motivated public agencies, especially in the USA, to create web clearinghouses to provide access to this information for stakeholders. These databases are important for this research as they have each developed a system that makes it possible to evaluate the quality of the programs already implemented based on certain criteria, which are scored and classified according to their quality.

For example, the standards evaluated by the Blueprints for Healthy Youth Development (BHYD) database (<https://www.blueprintsprograms.org/program-search/>) refer to the specificity of the intervention (identification of the target population and its characteristics, rationale, structure, content), quality of the evaluation (based on non-randomized controlled trials), impact of the intervention achieved (statistical significance, effect size, harmful effects for participants) and readiness for dissemination (dissemination and replication materials). The evaluated programs are classified into three groups ranging from lowest to highest quality: promising, model and model plus. In this case, the quality of the program is evaluated once it has been implemented and results have been reported.

Other clearinghouses including programs for drug prevention are Crime Solutions (218 programs, <https://crimesolutions.ojp.gov/rated-programs#-1>), State Clearinghouse for Military Family Readiness (255 programs, <https://www.continuum.militaryfamilies.psu.edu/search>), What Works for Health (58 programs, <https://www.countyhealthrankings.org/take-action-to-improve-health/what-works-for-health>) and Xchange (6 programs, https://www.euda.europa.eu/best-practice/xchange_en).



Many authors have highlighted the usefulness of physical activity and sport (PAS) in achieving prevention (Goldberg et al., 2000; Elliot et al., 2006; Mackinnon et al., 2001; McKiernan, 2016; UNODC & WHO, 2018; Sanders, 2020). PAS-based programs can reduce risk factors, increase protective factors and impact on use and intentions to use. Note, however, that neither the principles of EBP nor the clearing-house evaluation systems include criteria to evaluate drug prevention programs based on PAS. Thus, we face a new challenge: the development of evidence-based standards accounting for the use of PAS for drug prevention.

There are three paradigms for intervening in universal and selective drug use prevention through physical activity and sports (PAS): preventive sport (PS), prevention combined with sport (PCS) and prevention through sport (PTS). According to Schafer (1969) and Segrave & Hastad (1982), the mere practice of PAS, without the need for any modification, can be a protective factor against deviant behaviors, including drug use. This paradigm is denoted as preventive sport (PS). PAS can be a complement to prevention programs or be integrated into multiple health behavior change interventions (MHBCI) along with other healthy behaviors (Prochaska et al., 2008; Prochaska & Prochaska, 2011). This paradigm is denoted as prevention combined with sport (PCS). Finally, following the new pedagogical-psychological models that are being adopted in PAS (Hellison, 1995; Siedentop, 1998), PAS modified based on psychological foundations could be a tool for prevention. We refer to this paradigm as prevention through sport (PTS).

Asensio-Hernández et al. (2025) systematic review classify PAS interventions according to the above three paradigms and provides a better interpretation of the effectiveness and scope of PAS for the prevention of drug use.

The use of PAS for the purpose of prevention has attracted the interest of leading organizations in this field, and the design of programs of this type has increased in recent years. However, researchers have cautioned that prevention should not be based solely on the promotion of PAS (Lisha & Sussman, 2010; Moore & Werch, 2005; Walczak, 2023). They indicate that program design should be planned and organized, and the intervention should serve an educational and psychosocial purpose (Collingwood, 1997; Ekholm, 2019).

Although public and private institutions are providing large sums of money to support PAS-based intervention programs, there is no established (o clear) procedure for assessing their design quality and awarding funding to the best proposals. Many (sometimes conflicting) criteria have to be taken into account, the relative importance of criteria (weights) plays a key role, and the analysis has to account for the possibility of imprecision and uncertainty in both the performance of the intervention program under evaluation and weight elicitation, respectively.

Thus, a formal analysis is required. To do this, we propose the use of the decision analysis (DA) methodology, whose aim is to structure and simplify the task of making hard decisions as well and as easily as possible depending on the decision type (Belton, 1990). DA is a systematic and logical procedure, based on a set of axioms, for rationally analyzing complex decision-making problems (Keeney & Raiffa, 1976).

In this paper, we focus on the first stage of the DA cycle, problem structuring, which consists of building an objective hierarchy that accounts for all the key aspects regarding the evaluation of intervention programs and establishes attributes to indicate the extent to which criteria are achieved by the intervention programs under consideration.

According to experts in this field, the quality of intervention programs based on PAS for the prevention of drug consumption should be assessed on the basis of four fundamental dimensions: i) the facilities where the program is to be developed, their versatility and management formulas; ii) the experience of the applicant organization in terms of projects and collaborations and its relationship with the neighborhood or city targeted by the program; iii) the technical proposal, which includes the work team, program and results dissemination, and the methodology underlying the program, intervention sessions and evaluation; and iv) the organization's financial solvency and budget soundness.

The four dimensions are analyzed in detail in this paper, providing specific objectives/criteria for their measurement and identifying attributes to indicate the extent to which they are achieved by the intervention programs under evaluation.

The paper is structured as follows. Section 2 describes the decision analysis cycle, together with IPASDU, a decision support system aimed at evaluating PAS-based intervention programs. The criteria associated with the four dimensions (sport facilities, applicant organization, technical proposal, and economic proposal) are described in detail in Section 3. Finally, some conclusions and future research lines are provided in Section 4.

This study is framed within the problem structuring phase of the DA methodology, and its objective is to devise a hierarchy of objectives that addresses all the key aspects for the evaluation of sport-based drug prevention programs.

Method

The decision analysis (DA) methodology is used to evaluate intervention programs based on PAS for the prevention of drug consumption. As pointed out above, its aim is to structure and simplify the task of making hard decisions as effectively and as easily as possible considering the decision type (Belton, 1990).

DA was developed on the assumption that the alternatives (intervention programs) will appeal to the expert depending on the likelihood of the possible performances of each alternative and the expert preferences concerning the possible performances. Existing information, collected data, models and professional judgements are used to quantify the likelihoods of a range of performances, whereas utility theory (von Neumann & Morgenstern, 1947) is used to quantify preferences. What makes DA unique is how these factors are quantified and formally incorporated into the problem analysis.

The Generic Multi-Attribute Analysis (GMAA) system (Jiménez et al. 2003, 2006) is a decision support system based on the DA methodology that has been widely used in many complex real-world problems in a decision-making context with partial/incomplete information (Jiménez et al., 2007, 2013). IPASDU is a web-based adaptation of the GMAA system focused on the evaluation of Intervention Programs based on PAS for Drug Use prevention. IPASDU integrates additional weighting methods based on ordinal information. Although still under development, an initial operational prototype addressing an illustrative problem through six artificial intervention programs is available at <https://vps155.cesvima.upm.es/shinyapps/ipasdu/>.

The DA methodology consists of the following steps: i) structure the problem (build an objective hierarchy and establish attributes to indicate the extent to which the lowest-level objectives are achieved); ii) identify the feasible alternatives (intervention programs) and their performances in terms of the attributes; iii) quantify preferences by assessing single attribute utility/value functions, which represent the preferences concerning the possible alternative performances, as well as eliciting weights representing the relative importance of criteria; iv) evaluate intervention programs by means of an additive multi-attribute utility function; and v) conduct sensitivity analyses to check the robustness of the results.

This paper focuses on the first stage of DA cycle: structuring the problem. We build an objective hierarchy based on the four dimensions (sport facilities, applicant organization, technical proposal, and economic proposal), including all the key aspects to be considered to evaluate the intervention programs. Then, we associate attributes with the lowest-level objectives to indicate the extent to which they are achieved by the intervention programs under evaluation.

Specific objectives/branches in the hierarchy can be deactivated based on the requirements of the intervention program evaluation process and IPASDU automatically reassesses weights across the objective hierarchy representing tradeoffs between objectives. IPASDU also offers predefined continuous and discrete attributes, which can be adjusted by the DM.

Next, feasible alternatives must be identified, along with their performances in terms of the attributes associated with the lowest-level objectives in the hierarchy. IPASDU allows the DMs to introduce and update intervention programs and their performance data, or alternatively, to import them from an Excel archive. Uncertainty about the performances is allowed in continuous attributes by means of (uniformly distributed) intervals.

In the next step, the decision-makers (DMs) preferences are quantified. This implies, on the one hand, assessing the component utilities for each attribute in order to represent the DM preferences concerning the respective performances. Utilities must be provided for the possible discrete attribute values, whereas a component utility function must be defined for a continuous attribute.

IPASDU incorporates two assessment methods to build up a component utility function, a direct assessment and a gamble-based method. The direct assessment is used when there is a deep knowledge about the attribute and it is clear for the DM the shape of the component utility function. The DM is reminded of the attribute range and the most preferred endpoint and asked to provide up to five values within the range with the corresponding utilities. Then, a piecewise linear utility function is built.

The lottery-based method is used when the DM has little knowledge or experience with the topic. It is based on the combination of two slightly modified procedures for utility evaluation, a certainty equivalent method (fractile method; Holloway, 1979) and a probability equivalent method (extreme gambles method; Schlaifer, 1969), in which the DM must respond to indifference conditions between lotteries and sure amounts.

Besides, weights representing tradeoffs between the objectives must be elicited. Different weighting methods are available in the literature, ranging from direct assignment, through the SWING (Von Winterfeldt & Edwards, 1986) and tradeoff-based methods (Keeney & Raiffa, 1976), to methods based on ordinal information (objectives under consideration are ranked in order of importance from the most to the least important) (Chergui & Jiménez-Martín, 2024). Each method requires different information from the DM.

Weights will be elicited hierarchically, i.e., an elicitation process will be carried out at the different levels and branches of the objective hierarchy, and different weight elicitation methods could be used depending on the type of objectives under consideration, the DM involved and the information that he/she is willing/able to provide.

Finally, the attribute weights over the decision, which will be used afterwards in the additive multi-attribute model, are computed by multiplying the local weights in the path from the respective lowest-level objectives until the overall objective.

IPASDU provides a direct assignment for weight elicitation, allowing the DM to specify weight intervals, that are subsequently normalized. It also provides several methods based on ordinal information, which require the DM to rank the objectives from most to least important. These methods additionally allow the incorporation of information about the strength of the differences between the ranked criteria, either through a ranking of differences (Aguayo et al., 2014) or by using a semantic scale (Danielson & Ekenberg, 2017).

IPASDU accounts for what is known as decision-making with partial/incomplete information (Da Silva et al., 2023), since the DM may find it difficult to answer the probability questions that are posed in order to assess component utilities or compare criteria (some weighting methods are too cognitively demanding) or may not want to reveal his/her preferences in public. Thus, the DM will be allowed to provide imprecise responses in the preference assessment, which may lead to classes of component utility functions (or utility intervals for discrete attribute values) and weight intervals, respectively.

IPASDU will offer predefined component utilities and weights, which can be adjusted by the DM.

An additive multi-attribute utility model will then be used to evaluate the intervention programs. The overall utility of the i -th intervention program (IP^i) is computed as follows:

$$u(IP^i) = \sum_{j=1}^n w_j u_j(p_{ij}),$$

where p_{ij} is the performance of the i -th intervention program in the j -th criteria, $u_j(p_{ij})$ refers to the DM preferences concerning that performance, and w_j is the attribute weight over the decision the j -th criteria.

The additive model is considered to be a good approximation in most real decision-making problems for the reasons described in Raiffa (1982) and Stewart (1996). Accordingly, intervention programs can be ranked based on the above overall utilities. However, an interval rather than a precise overall utility will be derived for each intervention program in a decision-making context with partial/incomplete information. In this case, the average overall utilities will be used to derive the intervention program ranking, whereas the width and overlap of the overall utility intervals will provide information on the robustness of this ranking (Jiménez et al., 2006).

Finally, sensitivity analysis (SA) is performed. SA constitutes a means of stimulating the DM to think more deeply about his problem. It can be useful to identify which of his/her opinions or judgments are critical so that he can study them further or to derive further information about the robustness of the ranking of alternatives.

IPASDU provides a range of SA tools, which include evaluating non-dominated and potentially optimal alternatives to narrow down the number of intervention programs under consideration (Mateos et al., 2007), assessing weight stability intervals to identify those to which weights the results are more sensitive (O'Shea et al., 2026), and applying Monte Carlo simulation techniques to attribute weights (Mazurek and Strzałka, 2022) to the robustness of the ranking of intervention programs.

Results

As pointed out in Section 1, the quality of intervention programs based on PAS for the prevention of drug consumption should be assessed on the basis of four fundamental dimensions: i) the facilities where the program is to be developed, their versatility and management formulas; ii) the experience of the applicant organization in terms of projects and collaborations and its relationship with the neighborhood or city targeted by the program; iii) the technical proposal, which includes the work team, program and results dissemination, as well as the methodology underlying the program, intervention sessions and evaluation; and iv) the economic proposal, including the applicant organization's financial solvency and budget soundness.

In the supplementary data (<https://doi.org/10.5281/zenodo.17983824>) the four dimensions are analyzed in detail, providing specific objectives/criteria for their measurement, and identifying attributes to indicate the extent to which they are achieved by the intervention programs under evaluation. This section indicates the table in the supplementary material that should be consulted to obtain more detailed information on each dimension. In some cases, the criteria are evaluated directly using the information provided by the applicant organization. In other cases, the information provided by the applicant organization is analyzed by an expert to evaluate complex aspects where several criteria have to be taken into account simultaneously and decide the extent to which the respective criteria are achieved. A document is generated to guide the expert through the evaluation process, highlighting the key aspects to be considered and proposing possible ratings for different performances by the applicant organization.

Facilities

Any intervention program must plan the spaces and infrastructures in which it is to be developed (Brotherhood and Sumnall et al., 2011). If the program includes PAS, the sports infrastructures and facilities to be used are the most important, as they will condition the range of activities that can be carried out and will imply greater demands at the management level. This dimension will account for the following criteria (see Table 1): number of spaces and multifunctionality, type of management, administrative formula for space management and use of natural spaces. Table 2 shows the characteristics of these criteria.

Experience of the applicant organization

The organization proposing the intervention program may have features that increase the probability of program success (see Table 3), such as its proximity to the program's target population, specialization in the issue under consideration (prevention of drug use in adolescents), and previous experience. Table 4 shows the characteristics of these criteria.



Technical proposal

The technical proposal includes numerous personnel-related criteria (the organization's staff working on the program and their specific training, functional chart, equality plan and external personnel) (see Table 5 and Table 6), program methodology (rationale, physical activity and sports paradigm, program objectives and contents, dosage and regulatory framework) (see Table 7 and Table 8), methodology of the intervention sessions (see Table 9 and Table 10), evaluation methodology (outcome-focused evaluation, and monitoring and control plan) (see Table 11 and Table 12) and dissemination (see Table 13 and Table 14).

Economic proposal

The evaluation of the economic proposal of intervention programs involves (see Table 15) the applicant organization's financial solvency and budget soundness. Table 16 shows the characteristics of these criteria.

Discussion

This research is in line with the growing interest of agencies and authors in using sport as a strategy/tool to prevent adolescent drug use. In 2016, the Canadian Centre on Substance Abuse conducted a review of the most important sport-based prevention programs in Canada (McKiernan, 2016). In 2018, the United Nations Office on Drugs and Crime (UNODC) & World Health Organization (WHO) highlighted in their International Standards on Drug Use Prevention the need to better understand how to use sport for prevention. This same organization launched in 2020 the Line up, live up program to prevent youth crime through sport (Sanders, 2020). This growing interest has also been reflected in the academic field. We can find three systematic reviews on sport-based prevention programs have recently been published (Klamert et al., 2023; Simonton et al., 2018; Thompson et al., 2020). Overall, these reviews indicate that although sport-based programs may produce preventive effects, there is substantial heterogeneity in program design, research methodology, and reported outcomes.

Although the agencies mentioned in the previous paragraph have published highly valuable manuals in the field of prevention, none has released a sport-specific prevention manual or a compilation of evidence-based variables to be considered when designing sport-based prevention interventions. This study addresses this gap by offering an extensive, thematically organized, and theoretically grounded set of variables.

McKiernan's (2016) manual, which includes a systematic review, was the first to suggest that sport can serve as an ideal setting for prevention when it is used as a "vehicle" for behavior change and combined with psychological or educational strategies. Although this manual represents an important starting point for understanding how the paradigm or approach to the use of sport can shape the quality of a prevention program, it does not address the identification of variables needed to design evidence-based sport-based prevention programs.

The WHO manual (2018) includes a section on the use of sport for prevention, emphasizing the need to combine sports practice with educational prevention strategies and urging practitioners to avoid designing programs based solely on sport. The remaining sections compile a series of variables or aspects to be considered in prevention programs, but not from the perspective of sport.

The Line Up, Live Up program (Sanders, 2020) is the first sport-based prevention program designed by international organizations, demonstrating the growing interest in using sport as a prevention tool. The program presents a high-quality design described in the document itself (theoretical basis, objectives, strategies, activities); therefore, including a reference framework with the key variables required to design future programs of comparable quality would have been highly valuable.

Regarding academic publications (Klamert et al., 2023; Simonton et al., 2018; Thompson et al., 2020), although the authors conducted systematic reviews of the effects of sport-based prevention programs published to date, the program descriptions do not include all sport-related characteristics that would be expected, nor do they provide an analysis focused on the sport-use paradigm that would allow for a



deeper evaluation of the effects achieved. The review by Simonton et al. (2018) is particularly noteworthy for its focus on universal prevention programs and the large number of interventions included. Thompson et al. (2020) review has strong methodological value but includes only five prevention programs. The review by Klamert et al. (2023) covers different intervention formats but focuses on early intervention.

The systematic reviews mentioned above could improve their quality by incorporating analyses based on the sport-use paradigm adopted and by providing a more detailed description of sport-related variables. The variables proposed in this study would allow for a more in-depth examination of programs, strengthening conclusions about their effects and enabling meaningful comparisons based on program characteristics.

In short, the hierarchy presented in the results section may serve as a guide for the development of new programs, becoming a useful resource for agencies, researchers, and practitioners in the social field. Moreover, this hierarchy incorporates the dimension “Paradigm for the use of physical activity and sport,” which offers an innovative perspective on the different ways sport can be used in prevention. This perspective is aligned with the current recommendations of international organizations: avoid programs based solely on sport participation and prioritize interventions that include educational or psychological strategies (UNODC & WHO, 2018; Sanders, 2020). In this sense, the hierarchy provides an updated theoretical framework for designing sport-based prevention programs.

Although these agencies emphasize the importance of incorporating sport into the field of prevention, they have not addressed the development of a digital tool capable of evaluating the quality of program design, nor have they proposed weighting criteria for the variables included in such a tool. Providing this would allow for a more precise assessment of program design quality, improve decision-making regarding which programs should receive funding, and even identify the strengths and weaknesses of submitted programs in order to guide improvement strategies.

Furthermore, although the clearinghouses mentioned earlier are useful tools for assessing the quality of already implemented programs, they are not designed to evaluate the quality of newly developed interventions. In this context, agencies responsible for funding sport-based prevention programs may use IPASDU to identify the best-designed proposals, ensuring that invested resources translate into a positive societal impact.

Finally, although the IPASDU tool is designed to evaluate drug-prevention programs, the WEB-MAUT-DSS model can be used to develop new tools that assess the quality of the design of social programs or interventions—whether sport-based or not—targeting a wide range of issues. For example, it could support the design of sport-based anti-doping prevention programs, sport-based mental health promotion initiatives, or sport-based bullying prevention programs.

Conclusions

In this paper, we have proposed a framework for the evaluation of intervention programs based on physical activity and sport for the prevention of drug use based on the decision analysis methodology. Specifically, we have proposed an objective hierarchy based on four dimensions: the facilities where the program is to be developed, the experience of the applicant organization, the technical proposal, and the organization’s financial solvency and budget soundness. Moreover, the attributes indicating the extent to which the different criteria are achieved by the intervention programs under evaluation are established.

This objective hierarchy covers all the key aspects that could be considered for the evaluation of the intervention programs and how they can be measured. It could be used as a reference for institutions launching calls for proposals in this area to evaluate the quality of the proposals received. Additionally, a first version of a customized decision support system (IPASDU) is already available to facilitate the decision-making on intervention program evaluation and the analysis of the robustness of the results.

As future research lines, we propose to focus on the DA stages that have not been addressed in this paper, specifically the quantification of DM preferences. This involves assessing component utilities for

each attribute to represent the DM preferences concerning the performances (component utility function in the case of continuous attributes or utilities for any discrete attribute values) of the intervention programs and eliciting weights representing the relative importance of criteria. To do this, different methods will be used to elicit weights from national and international experts in the above four dimensions depending on the information that the respective experts are willing/able to provide.

A current need remains to identify the variables that should be considered when designing sport-based intervention programs, in order to more accurately determine the quality of their effects and/or improve the design of existing or future programs. This study not only addresses this gap but also provides the foundations and rationale for developing a decision-analysis-based digital tool that can support institutions and administrators in making more informed decisions, such as determining which programs should receive funding.

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