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The Impact of Agile Management and Technology in Teaching and Practicing Physical Education and Sports

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Abstract: The context of the COVID-19 pandemic has caused educational institutions and sports clubs to change their management strategy. Due to the modernization of computer technology, physical education and sports (PES) teachers decided to include this technology in their teaching activity to help students and athletes to acquire PES-specific transversal skills and digital skills, and also to increase the attractiveness of the lessons. The present research aims at assessing the challenges and opportunities of technology and adopting an Agile Management style to improve the teaching, learning, and practice of PES. Therefore, a survey was conducted on PES teachers and trainers, as they have a clear perspective on the field and their views are therefore very important and relevant to our study, even if they do not have solutions for all the challenges facing them. They were asked to share their professional opinions regarding the implementation of digital methods and applications on the sportive results of performance sportsmen, athletes, and students. The survey, conducted on 144 respondents, contained mostly multiple-choice questions rated on a Likert scale and open-ended questions allowing respondents to offer solutions and express their opinion freely. This article demonstrates the positive influence of Agile Management in the choice and implementation of technology dedicated to PES.

Keywords: physical education and sports; Agile Management; VR/AR (Virtual Reality/Augmented Reality); MOOCs (Massive Open Online Courses); gaming; mobile apps

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1. Introduction

Physical education is a very important aspect of the training of children, acting through multilateral development and physical and educational contents [1]. The development of physical education and sports activity has brought to the fore the application of modern science and technology in the field of computers, which can achieve a close connection with the quality of teaching and the perception of information by students [2].

The way in which physical education and performance sports become modern has been analyzed and put into practice through studies, which have highlighted the usefulness of the development of computerization. This leads to increased teaching quality, especially through its application by students or athletes [3]. Computer technology creates a different learning environment, applies other types of learning, facilitates new methods and increases interest in new ways of learning skills and knowledge at the level of students and athletes [4]. The application of technology in the field of informatics has also created support for the development of programs [5]. The application of the technology in PES also involves the training of the participants in this educational process, ensuring an intensification of the training through active methods and information [6].

In the context of the COVID-19 pandemic and the global restrictions imposed by the authorities of the countries involved, several technologies have been implemented to promote physical education and sports. In Romania, learning and practicing PES using IT (Information Technology) tools have created some difficulties, a fact confirmed by statistics, which show that in the first month of lockdown, only six out of ten students benefited from online learning [7]. Meanwhile, in other countries, advanced technologies were already in use, including video feedback with activity or pedagogical control, which allowed for the establishment of ways of technical training and adjustment for the disadvantages caused by online education. [8].

To counteract the spread of the virus, the lockdown and social distancing were acutely felt by students in physical education and sports, but also by professional athletes. They lost, following the interruption of face-to-face training, adaptations specific to the sport practiced and manifested low-performance capacity [9]. The replacement of traditional education with distance learning has raised questions about how the virtual environment has affected professional self-efficacy in terms of the ease of use of IT and self-confidence [10].

Against the background of this global situation, some authors, through their studies, found that experienced trainers in the field of PES handled this problem much better, managing to maintain a close link between trainers and students or athletes [11], whereas other authors noticed that training at home was rather difficult: either the location was unsuitable for exercise, or the athletes had difficulty trying to set up an internet connection for technical or financial reasons [12]. Some studies have shown that PES teachers/coaches need to develop and master IT, focusing on interaction and play so that students and athletes feel more motivated to actively participate in online training sessions [13], while studies conducted in academia have highlighted issues of interest such as teachers' views on online teaching methods and the availability of digital tools [14]. Other studies have drawn attention to the need for the creation of a relationship of trust and empathy between PES trainers and students and athletes so that the training process has good results under online conditions employing specific technology [15].

As a result of our above-mentioned comments, our study on how to apply PES technology becomes a necessity. Given this context, the purpose of the paper is to find out if there are PES management strategies appropriate to answering the challenges and opportunities brought about by the COVID-19 pandemic. The authors also look for alternative Agile Management solutions and technological applications in PES that improve teaching, learning, and practice in PES. Thus, we decided to assess whether athletes' and students' interest in PES can be stimulated by using games, such as GoNoodle, or virtual orienteering apps. Another assumption we decided to test is whether students and athletes can engage in movement with the help of video clips. Videos represents a tool through which they learn theoretical elements and tactical structures as well as maintaining their physical fitness [16,17]. In this context, universities/sports clubs should be flexible and adopt an Agile Management style. In our article, we demonstrate the positive influence of Agile Management in physical education and sport (PE).

2. Theoretical Background

In physical education and sport, due to the modernization of computer technology, teachers have decided to include PES-dedicated applications in their teaching activity, to help students and athletes to acquire transversal PES skills, due to the better, more attractive lessons [18] that are a consequence of using digital technology.

The games on special platforms are known as Exergaming and have become very interesting in physical education, but also in physical activities, being used both by students and by sportsmen [19]. They have become a form of motivation, both for students and athletes. Digital games have taken shape and have become an excellent tool, through which a transfer of knowledge can also be achieved, based on understanding and practice [20].

When these e-games are presented and taught during learning or in training classes, they can achieve increased interest as well as a clearer understanding of the movements of

the body and the paths that a movement describes, which develops kinaesthesia and leads to an increased interest in practicing classes, but also helps in the development of creativity, which is extremely important in physical education, especially in sports, where it plays an essential role in finding solutions to solve certain ever-changing tasks [21].

There are authors [22] who have argued that these types of exercises are very attractive and useful, creating opportunities for teachers, coaches, and students of sports, both in physical education and in sports activities. They have positive effects, both for beginners and for advanced athletes, achieving an increase in perceptual-motor capacities, strength, and coordinative capabilities, starting from interest and pleasure, which are realized through their involvement in the application of these e-games [23].

At the level of sports games, exergames are successfully used; these simulate certain technical and tactical elements, which achieve a positive transfer, leading to increased efficiency in certain procedures involving hitting a ball, rejecting it accurately, apprehending it, and releasing it in a well-established direction [24]. For this, special devices have been created to track the activity of the body, which draws certain movements and for which tools for correction of these movements have been created, leading to the formation of improved motor skills within the scope of movement efficiency [25].

The use of video-type formats, with the purpose of training education, attracted a fairly large number of teachers/coaches, who adapted and applied them in the activities of the training [26]. Digital technology greatly influences the lives of children, which should become an advantage for teachers in attracting and teaching children with video games and sports video programs, which overlap their need to use this technology.

The need for progress has led coaches and teachers of physical or sports activities, to rethink their training strategies by introducing area videos as part of their lessons. This has had excellent results related to the reproduction and correction of movement accuracy execution [27]. It is an external source of feedback because it provides information about one's own body, facilitating proprioceptive actions, which lead to the development of the kinaesthetic sense [28].

Many studies have demonstrated the effectiveness of using videos for the achievement of a correct movement over short periods of skill formation, both in the physical education classes [29] and in specific sports activities [30]. A large part of the studies carried out, which aimed to highlight the link between motor learning and the help of videos, showed positive results, including an improvement in motor capacity, carried out by and involving auto-evaluating participants [31]. These feedback videos play their own image during the execution of certain physical movements and manage to optimize the training route during learning [31–33].

In the last two years, people have had to follow some preventive measures, including physical distancing, to protect themselves against COVID-19 infection. Looking for some interesting ways to be active in protected conditions, orienteering/base point sports became an option to have a good time and strengthen health at the same time. According to Stănescu [34], orienteering has become a leisure sport in modern people's life and a popular active practice in daily life. A good reason for this practice is the chance for people of different ages to spend a healthy and fun time in outdoor areas. When applied to orienteering, the internet is useful in positioning people on a route and providing convenience for emergency services. Orienteering can be practiced at a competitive or amateur level, even at an older age. The practitioner has to use the environment, a map, and the route [35].

At orienteering base points, people are involved in walking or running efforts, in parks, forests, and towns.

We have to say that more and more people use new technologies for all kinds of activities, including sports activities. The current application also stimulates people's interest in guidance/orientation. Applications such as augmented reality can be used at present in orienteering. Other authors [36] have found that most of their survey's answers appreciate the use of mobile applications on smart devices in orienteering. There are some interesting applications used in orienteering. For example, MapRun is a virtual orienteering

course for a smartphone that guides the practitioner when walking or running according to the route designed on the map.

The British strategy Every Junior Matters [37] proposes to improve orienteering for young people, which is challenging for those teenagers that do not practice physical exercise. Specialists consider that new technologies such as MapRun and Virtual Orienteering provide more fun and social opportunities and encourage teenagers to be active. Moreover, the British federation cooperates with the French and Swedish Orienteering federation on teenage programs.

Another author [38] underlines the use of wearable technology in education. In this regard, these applications can be used in a different branch of education, such as orienteering. Students can work individually or in groups, by the same or by personalized routes. Students and teachers use a variety of wearable devices. This technology offers biological information arising from physical activities during the courses. Orienteering practice uses new intelligent applications for current devices, to make a better accessible sports activity for people, strongly based on the Internet and GPS (Global Positioning System).

In the evolution of a university or sports club towards an agile organization, understanding quality plays an important role. The strategic principles for future changes in Agile Management are [39–41]:

1. Personal commitment to quality in everything that is achieved within the company.

This approach is a prerequisite for managing quality of life. Quality starts with driving at all levels: university management and sports leadership, operational management, student learning, and athletes' coaching. Leaders pursue quality, prioritizing it, and create a culture of trust, open communication, collaboration, and continuous learning. Quality is the responsibility of each individual, especially in sports, where the performance depends mostly on the performer's activity and behavior. Quality is not just a keyword; it becomes a basic attitude. All athletes, trainers, and associate personnel take responsibility for their actions [42] in their struggle to achieve the highest performance.

2. Early process testing so that it can be learned quickly.

The quick response to change is more important in many cases than over-planning down to the last detail. In this context, PES teachers and coaches have decided to embrace the advantages brought by technology: they have adopted online video classes and PES-dedicated software applications such as GoNoodle, Orienteering, VR/AR sports games, etc [35]. In higher education institutions (HEIs), the theoretical background was offered to students through e-learning platforms such as Blackboard, Moodle, etc. MOOCs also offer a good perspective, especially for autodidact students and athletes that decide to take supplementary courses and extra-specialization. Early process testing requires a culture that allows mistakes. Thus, teachers and coaches are stimulated to adopt learning by doing and through problem-solving methodology, allowing students and athletes to learn from their own mistakes. Agile quality management is transforming from a zero-flawed culture into a new culture of error ("Fail Fast - Learn Fast"). Virtual simulation in VR/AR environments allows athletes to take part in intensive training and get real-time feedback from the application, which can be set for each sportsperson's particularities.

3. Real-time information and openness

The globalization and facilities brought by the IoT have prompted managers to solve difficult problems in a short time. HEIs' rectors can access a huge amount of data regarding students' evolution, different types of courses, new methodologies, and policies regarding education at the European level, as well as specific assets for PES, new mobile applications dedicated to PES, etc. Clubs juggle with information regarding competitions calendars, participants, different types of training with more efficient results, hygienic regime, etc. The leader must make the decision based on the specific requirements of the institution (sports club, school, university, league, etc.) and its state of affairs [43]. The volume and complexity of data to be analyzed, the speed of response to market requirements, the high quality and identity of athletes and training methods, fierce competition, complex restrictions on

resources, and the regulation of the circular economy are all factors that have led managers to base their decisions on complex analyses, using Business Intelligence solutions [44] that offer interactive dashboards and a complex panorama on the current situation.

4. Systematic prevention, risk management, and improvement.

This principle concerns risk management and continuous improvement. The higher the speed and complexity, the greater the risk of making errors. The key to active risk management is trust and ownership. Teachers, coaches, and associated personnel can address risks openly and proactively and, if necessary, receive support to avoid or mitigate them. People are more creative when they are relaxed and have a mindful state of mind [45].

Neuroscience highlights the importance of employee (teachers, coaches, and associated personnel) involvement in the planning process, providing a high degree of assertion. The habit of learning through reflection, i.e., from one's own mistakes or those of colleagues, is specific to the agile paradigm. Leaders need to be patient and know that achieving a change of mindset in their employees (reshaping the brain to create new habits) requires compensatory pathways and creates a safe environment that fosters change [46,47].

5. Quality competence for all staff members.

Quality is ensured by students, athletes, teachers, coaches, associated personnel, and management teams at the same time on different levels. The quality itself is seen in the transversal skill, competencies, and especially the performances of each individual, in the desire to cooperate and in the ability to work as a team [43].

3. Research Methodology

3.1. The Research Context and Aim

The context of the COVID-19 pandemic urges education institutions and sports clubs to change their management strategies and get used to new technology to reach students and athletes at a distance. Physical education and sports (PES) require physical presence, direct interaction, and practice to reach performance. These challenges can be answered by changing the classical management into Agile Management and getting used to technology (educational platforms, MOOCs, VR/AR, gaming, HRM (Heart Rate Monitor), CoachMyVideo, MyOMaps, GoNoodle, etc).

The research aim is to evaluate what are the challenges and opportunities brought by technology and Agile Management that enhance physical education and sports (PES) teaching, learning, and practicing. It has the following main objectives:

- Identification of the challenges and opportunities brought by the COVID-19 pandemic that may guide a new type of teaching and learning
- Analyzing the extent to which pre-existing PES management strategies are adequate to this content
- Finding new alternative solutions enhanced by Agile Management to enhance the teaching, learning, and practice of PES
- Identification of different technological solutions/applications that will enhance appropriate learning and teaching in PES

3.2. Research Process: Sample, Data, Variable, and Hypothesis

The research was based on a survey applied especially on PES teachers and trainers developing activities mainly in Spiru, Haret University (45%), Ovidius University from Constanta (30%), and the University from Craiova (25%). Most of the participants were teachers (42%) or trainers (33%), and the others were performance sportsmen and athletes (25%). The teachers were prevailingly female (59%), and the trainers were prevailingly male (62%). The survey was addressed online through a Google Form for 6 months (March-August 2021) and it was spread by the deans of the universities above to their teachers and different federations.

This is preliminary research, bearing in mind that the sample was not representative, but it offers very important information for future extended research. Google forms were

used to collect the data, ensuring the anonymity of the survey. The survey was filled in by 144 respondents, but only 100 records were validated because 44 answers were incomplete, or the teachers/trainers had less than 6 months' experience in the field. The survey sections were: (a) PES outputs, (b) technology in PES, and (c) Agile Management.

The survey was designed to be user-friendly, with questions in a logical order, to have coherence and to offer the respondent a flow of information from general to individual, based on the funnel principle. To achieve the purpose of this research, the survey included filter questions that were used to select the appropriate category of respondents for this research. Many questions were measured on a Likert scale. The survey for this research was distributed and administered online and was built using a Google Form.

PES teachers and trainers have a clear insight on the field and thus their opinions are very important and relevant for our study, even if they do not have solutions for all the challenges that face. The survey contained mostly multiple answer questions evaluated on a Likert scale (−2 unimportant at all; −1 unimportant; 0 neutral; 1 important; 2 very important) and contained open questions to allow respondents to offer a solution and express their opinion freely, since the survey was anonymous. The open questions were not introduced in this study because they did not offer relevant information. We intend to develop a future focus group study that might involve innovative insight into PES management, teaching, and learning.

SmartPLS software offering a structural equation modeling was used for data analysis, providing an accurate interpretation of a sample of 100 records. The study contains both formative and reflective latent variables with simultaneous interactions.

We based the analysis on three variables. The PES Outputs is a reflexive variable, formed by ten items regarding PES outputs on human health, as can be seen in Table 1. Our model was inspired by other performance growth models developed by different authors [48–52]. They focus their attention on physical quality execution, enjoyment of practicing sports, students' and athletes' learning satisfaction, exercise commitment, students' physical health, psychical equilibrium, and ethical conduct. These models also take into account infrastructure and technological support.

Table 1. Variable name, code, and signification.

Variable	Variable Codification	Variable Explanation/Definition
PES Output	1Health	PES is important in health
	1Fitness	physical fitness
	1Body	body shaping
	1Control	physical, educational, social control
	1Movement	assimilation of movement concepts
	1PsihicDev	personal, psychosocial, and moral development
	1IndGroupActiv	individual, collective (recreational) activities
	1ToleranceCoopRespect	promotes tolerance, cooperation, and respect
	1WinLose	positive attitude towards victory and defeat
	1Discrimination	removes cultural, gender, and ethnic discrimination
Agile Management	9AGEngagement	Personal commitment to quality in HEIs activities
	9AGTeting	Early testing of the process so that it can be learned quickly
	9AGInfo	Real-time information (BigData, Blockchain, BI, IoT, 5G, etc)
	9AGPreventRisk	Systematic prevention, risk management, and improvement
	9AGCompetency	Quality competence for all staff members
Technology in PES	Teh1app	Applications for sports training or physical education:
	Teh2Games	Dedicated games, such as GoNoodle
	Teh3Video	Video clips/classes used for training
	Teh4coechipier	Peer (or group) learning and assessment and using ICT
	Teh5VRAR	VR/AR apps and courses dedicated to PES
	Teh6HRM	Instant Heart Rate- Heart Rate Monitor"
	Teh6MobilApp	Mobile App dedicated to PES
	7Coach My Video	Video recording app
	8MyOMaps, MapRun, Go Orienteering, Virtual-O, Catchingfeatures, Orienteering Compass & Map	Organization of real sports orientation competitions on virtual routes

Agile Management is a formative variable, analyzing how flexible management in PES can be implemented in a pandemic context. It is formed by 5 items regarding people's

engagement in PES, early testing methodology, access to real-time information, risk management and prevention in PES, and the competency of PES personnel. The PES Technology is also a reflexive variable, with 14 items regarding PES applications, games, video, VR/AR, Heart Rate Monitoring, and sports orientation competitions on virtual routes, as presented in Table 1.

The hypotheses of the research are:

H1: *Agile Management has a positive influence on the technology dedicated to PES.*

H2: *PES technology enhances PES outputs.*

H3: *Agile Management has a positive influence on the role of PES in a sustainable economy and a society supported through technology.*

3.3. Results

Construct Reliability and Validity

SmartPl's software offered us a large pallet of tests that allow us to interpret and assume the research results [51,52]. Along these lines, to evaluate the consistency of our model, we made the validation steps presented in Table 2. The analyzed variables have very high values for composite reliability, Cronbach's Alpha and rho_A (higher than 0.7- the minimum level accepted) and for Average Variance Extracted (higher than 0.- the minimum level accepted). We may affirm that Agile Management has great importance in choosing the appropriate PES technology, and this technology enhances the PES Outputs (Figure 1).

Table 2. Validation Steps/tests.

Variable/Test	Cronbach's Alpha	Rho_A	Composite Reliability	Average Variance Extracted
Agile Management	0.877	0.879	0.877	0.589
PES Output		1		
PES Technology		1		

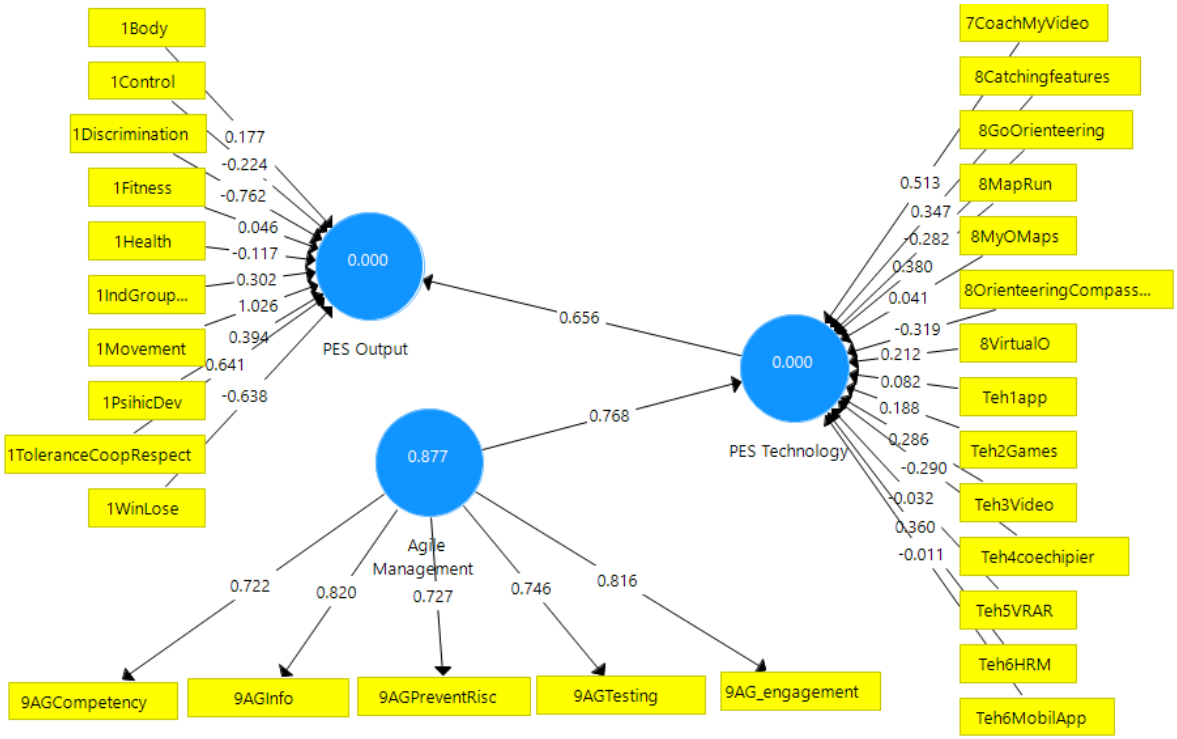

Figure 1. Cronbach Alpha Analysis and Path Coefficients.

To make sure of the validity of the survey, we checked whether the items it was made of (the questions) contributed to the constitution of the significance of the hypothesis it

started from. A survey is safe and consistent when each of the composing items correlate with the additive result of all items (overall score). Normally, the value of the Cronbach's alpha index tends to increase as the number of items (questions) increases. However, it is useless to keep items whose contribution to the overall score is null, small, or, on the contrary, goes in a different direction than this one. Identifying and eliminating these items or modifying them in the spirit of the measured attribute is one of the objectives of the analysis of items. It has a recursive character, with successive evaluations of the relationships between items and between items and the overall score, and the operation of the selection of items according to their relationship with it. The basic criterion for this operation is the value of the Cronbach's alpha index, which has a range of variation between 0 and 1. A scale, to be considered consistent, must reach a value as close as possible to 1; the level of 0.70 is accepted as the threshold limit by most researchers. However, the value of Cronbach's alpha cannot be less than 0.60.

The Cronbach's Alpha Analysis shows that the survey questions were very well chosen–the factors (sub-indicators) that influence Agile Management (0.877) represent the analysis because they all have very high values (higher than 0.7). Talking about technology, there are some items with negative values:

- 8GoOrienting, Oriented Compass, Teh6MobileApp–these apps are not considered to be very appropriate solutions by PES teachers and trainers.
- Tech6coechipier–team spirit is very difficult to develop in an online environment.
- the5VR/AR- PES teachers/trainers do not have access to these technologies and can not evaluate their advantages, disadvantages, and impact on student and athlete education/training.

The mean extracted variance (AVE) of the Agile Management latent variable is 0.589, which is higher than the acceptable threshold of 0.5, so the convergent validity is confirmed. The Path coefficients have high values too (Figure. 1): Agile Management -> PES Technology is 0.768 and PES Technology -> PES Output is 0.656, and an indirect effect is observed in Agile Management -> PES Output (0.459). The model is statistically significant because the Fornell-Larcker Criterion is present (Table 3). The Fornell-Larcker Criterion evaluates the amount of variance between the latent model's variables. It takes into account the convergent validity of the measurement model as a result of the Average Variance Extracted (AVE) and Composite Reliability (CR). It enforces the discriminant validity meaning that the R2 of each construct's AVE is higher than its correlation with another construct [53].

Table 3. Fornell-Larcker Criterion.

	Agile Management	PES Output	PES Technology
Agile Management	0.767		
PES Output	0.459		
PES Technology	0.768	0.656	

All the validation steps presented in Table 2 allow us to consider that the indicators of the constructs, PES Output, Agile, and PES Technology, were positively correlated. There is a strong positive correlation between Agile Management and PES Technology (0.768) and between PES Technology and PES Output. An indirect medium influence can be observed between Agile Management and PES Output. The estimated Chi-Square for our model (468.142) is greater than the saturated model (467.526); thus, we may affirm that the H1 and H2 hypotheses are accepted (Tables 4 and 5). H3 can be accepted as an indirect effect.

Table 4. Latent Variable Correlation.

Latent Variable	Agile Management	PES Output	PES Technology
Agile Management	1.000	0.459	0.768
PES Output	0.459	1.000	0.656
PES Technology	0.768	0.656	1.000

Table 5. Model Fit.

	Saturated Model	Estimated Model
Chi-Square	467.526	468.142

The significance of variables was measured by the Variance Inflation Factor (VIF) of each construct, which was performed with 5000 samples. SmartPL's software was set to 95% reliability in a bootstrapping procedure. The bootstrapping outputs are presented in Table 6. The P-Values in the bootstrapping test were smaller than 0.01, meaning that the overall Variance Inflation Factor (VIF) excludes the multicollinearity between variables. VIF (variance inflation factors) value evaluates the multicollinearity that is present when independent variables of the model are correlated. They offer redundant information about the dependent variable. When the VIF value is 1, there is no collinearity between predictors (independent variables). When it is less than 3, we can assume a strong model, but if it is higher than 5, multicollinearity is present [54,55].

Table 6. Bootstrapping significance.

Mean, STDEV, T-Values, P-Val...					
	Original Sample	Sample Mean	Standard Devia	T Statistics	*p* Values
Agile Management → PES Technology	0.768	0.804	0.049	15.832	0.000
PES Technology→ PES Output	0.656	0.748	0.066	10.021	0.000

All these criteria allow us to affirm that our H1 and H2 are accepted. Agile Management has a positive influence in choosing and implementing the technology dedicated to PES. In its turn, PES technology enhances PES outputs, facilitating appropriate distance online PES teaching, coaching, and learning. In the end, we can observe that Agile Management left a positive indirect footprint on PES outputs

4. Discussion

The H1 (Agile Management -> PES Technology) reveals that the Agile Management style applied in PES increases employees' engagement (teachers, trainers, administrative and medical personnel) and their commitment to quality in the process of teaching and education. Agile Management also facilitates real-time information and openness based on relevant and refreshed data supported by modern technology such as BigData, Blockchain, Business Intelligence Solutions (BI), the Internet of Things (IoT–interconnected devices of different types and using different technologies), and modern communication (5G, videoconferences, mobile apps, virtual classrooms, VR/AR teaching/training applications, etc). Agile management facilitates personnel and students' quality competencies and new transversal skills adapted to new sustainable economy requirements, due to early testing of the process, learning by doing during the process, systematic prevention, risk management, and HEIs' activity improvement. Overall, Agile Management in PES is in accordance with the New Skills Agenda for Europe—Recommendation on Key Competences for Lifelong Learning [56].

Agile management in PES is supported by PES dedicated technology such as dedicated sport/training apps, mobile apps, gaming, VR, and AR courses/apps for training, and video conferences. Thus, teachers need to familiarize students with applications for sports training or physical education and try to stimulate the interest of students and athletes in PES by using games in the teaching process, such as GoNoodle [57]. Students can be stimulated to move with the help of video clips through which they learn a technical element and tactical structures or maintain their physical condition. Technology will allow students to work together and thus encourage positive attitudes, taking the example of colleagues (teammates); this can be done through peer (or group) learning and assessment and using IT (tablet, laptop, PC, etc.). Additionally, logging into fitness sites and participating in computer games in VR/AR, on rainy days, or during pandemic times, is an appropriate way

to stimulate the practice of PES. Distance student effort monitoring can be done through applications such as "Instant Heart Rate- Heart Rate Monitor". Teachers and coaches have to use modern dedicated software such as Coach My Video for classes/video recording that will help them to benefit from the advantages brought by technology in the distance learning process (very important during times of pandemic crises and cooperation between universities). This aim is stimulated by the EU through Erasmus+ financing and KA2 - Strategic Partnerships in the Field of Education and Training [58]. Teachers and coaches can get used to different applications such as MyOMaps, MapRun, Go Orienteering, Virtual-O, Catchingfeatures, and Orienteering Compass & Map for the organization of real sports orienteering competitions on virtual routes.

The H2 (PES technology - PES outputs) emphasized that the technology described above enhances the positive impact of PES on human health, reflected into a sustainable society and economy, supported through technology. PES will ensure the health of the young generation, contra-balancing their dependence on devices. Physical education and sports classes help the appropriate management of their effusion of energy and creativity, stimulating immunity and brain oxygenation, helping in heart hardening/developing, and developing a strong muscular system and skeletal bones that will ensure a correct posture. Overall, PES provides students' physical fitness and body shaping on the one hand, and on the other hand promotes tolerance, cooperation, and respect between them and other members of society, as well as removing cultural, gender, and ethnic discrimination. The competition experience helps PES students to develop a positive attitude towards victory and defeat, understanding that the real competition is with themselves not with others, resulting in a positive impact on an ethical society. Besides the assimilation of movement concepts, PES facilitates personal physical, educational, and social control and personal, psychosocial, and moral development, especially due to education through collective (recreational) activities. Thus, PES outputs are in accordance with Sustainable Development Goals (SDGs) [59].

If agile management adopts PES dedicated technology that has a positive impact on PES output, then, as a consequence, Agile Management has a positive influence on PES outputs that will ensure a sustainable economy and society.

5. Conclusions

The present research emphasizes the need for the introduction of information technology by physical education and sports teachers in their teaching activity, to help students and athletes to achieve performance in learning and practicing physical education and sports. It can offer broad, technology-based approaches that can significantly involve students and athletes in physical activity. It can be considered a support element for an increased appreciation of students and athletes in the application of skills, which can lead to a positive transfer from one activity to another. The analysis of the items from the survey, in which respondents from the categories of teachers and PES trainers participated, highlights both the advantages of technology over the teaching of physical education and sports, as well as its disadvantages. The disadvantages are the difficulty of developing, in an online environment, the team spirit necessary for the evolution and achievement of performance peaks as well as the possibility that these technologies have negative implications, given that some applications such as GoOrienting, Oriented Compass, and MobileApp are not considered to be a very suitable solution by PES teachers and trainers, while others, such as VR / AR-PES, are not accessible to PES teachers and trainers.

The advantages would be the ability of students and athletes to create a new meaning for their training hours, where, in addition to implementing certain instructions, they can also have a visual image of what they are about to repeat and learn. The development of the ability to perceive at a deeper level what they have to put into practice is an impact that technology has (video analysis), which leads to the involvement and creation of new attitudes of students and athletes towards physical education and sports training. By applying these types of cognitive and motor learning, the teacher contributes significantly

to the achievement of a learning environment, which in turn contributes to increasing the quality of the ability of students and athletes.

The use of technology and the change of the classic management strategy into agile management by educational institutions and sports clubs lead to improved PES results, facilitating the teaching, training, and learning of PES at a distance. Finally, we can see that Agile Management has left a positive indirect impact on PES results and, last but not least, that Agile Management has a positive influence on the choice and implementation of dedicated PES technology.

Our research might represent a starting point or a pillar for both theoretical and practical approaches and the application of technology and agile management in PES. The theoretical approach comes with new and accurate information on mobile applications dedicated to PES and Agile Management principles adapted to PES. The practical approach of our study helps teachers' and trainers' efforts to form a healthy population, reduce discrimination, and develop ethical behavior within the students population, employing technology and the integration of Agile Management in PES. The most important contribution of this paper is the design of a reliable model regarding the influence of technology and Agile Management on PES that was validated by all statistical analyses.

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